

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-397/95-30

License: NPF-21

Licensee: Washington Public Power Supply System
3000 George Washington Way
P.O. Box 968, MD 1023
Richland, Washington

Facility Name: Washington Nuclear Project-2

Inspection At: Richland, Washington

Inspection Conducted: September 25-28, 1995

Inspectors: L. T. Ricketson, P.E., Senior Radiation Specialist
Plant Support Branch

M. P. Shannon, Radiation Specialist,
Plant Support Branch

Approved: Jan Barnes
for B. Murray, Chief, Plant Support Branch

11-14-95
Date

Inspection Summary

Areas Inspected: Reactive, announced inspection of the radiation protection program's response to events related to high high (greater than 1000 mrem/hr) and very high (greater than 500 Rads/hr) radiation area doors, including: initial determination of event significance, event investigation, root cause analysis, resolution of problem evaluation requests (PER), comprehensiveness of corrective actions, communications, verification, procedural adequacy, and potential for significant exposure.

Results:

Plant Support

- The dispositioning manager for PER 295-0492 was not sensitive to the significance of the event. This affected the comprehensiveness and the timeliness of the implementation of corrective actions. Improvements in the PER process have been made since the occurrence of the events (Section 2.1).

- The licensee's investigation of events described in PER 295-0492 and PER 295-0955 were not thorough. The events were not viewed as significant; therefore, less effort was devoted to determining the causes. Had more detailed investigations been performed, an adverse trend involving personnel performance and a poor verification program may have been identified. The investigation of PER 295-0927 was more thorough. However, the investigation determined only what happened during the event, not what caused the event (Section 2.2).
- The radiation protection manager did not follow the guidance in Procedure PPM 1.3.12A, Revision 2, concerning the root-cause analysis and, therefore, did not meet management expectations. The licensee missed an opportunity to identify an adverse trend and a problem with the verification program (Section 2.3).
- Radiation protection personnel did not meet management expectations for resolving problem evaluation requests in a timely manner (Section 2.4).
- A violation of Technical Specification 6.12.2 was identified involving the failure to lock a door controlling access to an area with radiation levels greater than 1000 mRem/hr (Section 2.5).
- Communication of information regarding the first event was poor and may have contributed to the second event (Section 2.6).
- A Non-Cited Violation was identified involving the failure to follow a procedure. Radiation protection personnel missed two earlier opportunities to identify the procedural violation. The oversight program for high high and very high radiation areas continued to be weak, in part because, management's expectations with regard to high high and very high radiation area surveillances did not include the rigorous and consistent use of the guidance provided to ensure that technical specification requirements were met (Section 2.7).
- The procedure for the control of access to high high and very high radiation areas did not address all regulatory requirements (Section 2.8).
- The potential for personnel radiation exposure in excess of regulatory limits occurring as a result of the events was low (Section 2.9).

Summary of Inspection Findings:

- Violation 397/9530-01 was opened (Section 2.5).
- A Non-Cited Violation was identified (Section 2.7).

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting
- Attachment 2 - Chronology of Events

DETAILS

1 BACKGROUND

From May 7 to August 17, 1995, three potential violations occurred involving doors to areas controlled in accordance to Technical Specification 6.12.2. A special NRC inspection was performed to evaluate the potential for unplanned personnel radiation exposure associated with each event and to review the corrective actions taken by the licensee for each of the following three events.

1.1 Event 1

On May 7, 1995, a door (C-115) to a high high radiation area on the 437-foot elevation of the radwaste building was discovered by licensee personnel to be unlocked. Radiation levels within the area were greater than 1000 millirems per hour. Technical Specification 6.12.2 requires such areas to be locked to control inadvertent personnel entry. A planned entry into the area was conducted earlier in the day by a mechanical maintenance worker under the observation of a radiation protection technician. The door was normally controlled by a padlock and a chain. The chain was usually passed through the hand wheel in a manner that prevented the wheel from being turned, thus, locking the door. On this day, the padlock was locked; however, the chain was not routed so that it restricted the movement of the wheel, and the door could have been opened. A radiation protection supervisor discovered the unlocked door and licensee personnel initiated PER 95-0492 to document the problem and track corrective actions.

1.2 Event 2

On August 9, 1995, licensee personnel discovered the same door (C115) on the 437-foot elevation of the radwaste building was not locked. This time the chain and the lock were on the floor nearby. An entry into the room was completed the previous afternoon by an equipment operator under the observation of a radiation protection technician. The licensee initiated PER 295-0927 to document the event.

1.3 Event 3

On August 16, 1995, the licensee identified that the door to the traversing incore probe room, an area that was posted and controlled as a very high radiation area, had only one lock instead of the two locks required by Procedure PPM 11.2.7.3. PER 295-0955 was initiated to document the event.

2 NRC REVIEW

The NRC inspectors reviewed the problem evaluation requests associated with the events, investigation reports, proposed corrective actions, correspondence by the quality assurance organization related to the corrective actions, applicable implementing procedures, radiation protection log book entries, key

control log entries, survey information, training materials, and applicable night orders from radiation protection management. In addition to performing document reviews, the inspectors conducted interviews and performed independent radiation surveys.

2.1 Initial Determination of Event Significance

When the events occurred, the licensee's corrective action program was implemented using the following procedures:

- PPM 1.3.12. "Problem Evaluation Request (PER)," Revision 20
- PPM 1.3.12A. "Processing Problem Evaluation Requests," Revision 2

Both procedures were revised again on September 18, 1995, after the events occurred.

At the time of the events, it was the dispositioning manager's (in this case the radiation protection manager's) responsibility to determine the significance of the events. Section 6.3 of Procedure PPM 1.3.12A stated that the dispositioning manager is to "Review the PER to verify whether or not a Root Cause Analysis is required. Attachment 8.8 should be used for guidance." Attachment 8.8, "Root Cause Analysis Screening Guide," included guidance in the areas of reactor operations (Section 1.1), health physics (Section 1.2), radwaste transportation (Section 1.3), and miscellaneous matters (Section 1.4).

Event 1

Even though the event described in PER 295-0492 was identified as being contrary to the requirements of Technical Specification 6.12.2 and might have presented the potential for significant personnel radiation exposure, it was not determined by the licensee to warrant a root-cause analysis. Because it was not considered significant, the search for all possible causes was not rigorous and the timely implementation of corrective actions was not emphasized. See Section 2.5 for a discussion of the corrective actions.

Event 2

PER 295-0927 was considered significant because the event represented a significant adverse trend or failure affecting a quality program or plant safety, according to the note in Block 19 of the problem evaluation request form.

Event 3

PER 295-0955 was not considered by the licensee to be significant. The event was seen merely as a procedural violation. A root-cause analysis was not determined to be necessary. No adverse trend in the verification program, as discussed in Section 2.7, was identified.

Event 3

PER 295-0955 was not considered by the licensee to be significant. The event was seen merely as a procedural violation. A root-cause analysis was not determined to be necessary. No adverse trend in the verification program, as discussed in Section 2.7, was identified.

The inspectors noted that major changes were made in the way problem evaluation requests were dispositioned with the issuance of Revision 3 of Procedure PPM 1.3.12A on September 18, 1995. Some of the changes included: The introduction of the concept of a "Significant PER," [Section 4.19]; the determination of the significance of problem evaluation requests during morning meetings of site management [Section 6.2]; and the requirement that all significant problem evaluation requests have a formal root-cause analysis performed [Section 6.4.6]. An attachment entitled, "Significant PER Screening Guide," replaced the "Root Cause Analysis Screening Guide." The new screening guide included as significant "Any operation or condition prohibited by the plant's Technical Specifications." Such guidance, if followed, would have served to raise the level of attention received by PER 295-0492; however, the events, which are the subject of this inspection, occurred before the implementation of Revision 3 of the Procedure PPM 1.3.12A.

Conclusion

The PER dispositioning manager was not sensitive to the significance of the first event. This affected the comprehensiveness and the timeliness of the implementation of corrective actions. Improvements in the PER process have been made since the occurrence of the events.

2.2 Event Investigation

The inspectors interviewed licensee personnel and performed record reviews and determined the following concerning the licensee's investigation process:

Event 1

According to the mechanical maintenance worker involved in the event described in PER 295-0492, licensee representatives never interviewed him regarding details of the event. The radiation protection supervisor who validated PER 295-0492 confirmed this. The radiation protection technician involved in the event stated that he was interviewed a few days after the event.

Event 2

The event described in PER 295-0927 was recognized by the licensee as being significant and an incident review board was established on August 9, 1995, to review the circumstances surrounding the event. The incident review board interviewed the individuals involved and reviewed records related to the event. According to the incident review board report dated August 16, 1995, the incident review board concluded that the root cause of the incident was

unknown. Also according to the report, "... it was decided to deviate from the normal IRB process and, instead, have an independent investigator investigate the incident in hopes of resolving what occurred." The independent investigator interviewed personnel with known or potential knowledge of the event and concluded that the individuals involved "failed to lock the door."

Event 3

Although it was identified on August 17, 1995, that the traversing incore probe room door did not have two locks, the licensee did not determine, until prompted by the inspectors, that the second lock was removed from the door on August 1, 1995. Records were available to confirm that one lock was re-cored on that date and the other lock removed; however, the licensee had not taken action to determine the length of time the violation existed. The investigation also did not identify that radiation protection personnel performing weekly verifications of high high radiation area and very high radiation area controls (as discussed in Section 2.7) failed to identify the violation on August 7 and 14, 1995.

Conclusion

The licensee's investigation of events described in PER 295-0492 and PER 295-0955 were not thorough. The events were not viewed as significant; therefore, less effort was devoted to determining the causes. Had more detailed investigations been performed, an adverse trend involving personnel performance and a poor verification program may have been identified. The investigation of PER 295-0927 was more thorough. However, the investigation determined only what happened during the event, not what caused the event.

2.3 Root-Cause Analysis

Procedure PPM 1.3.48, "Root Cause Analysis," Revision 5, Section 1.0 states, "Root cause analysis is required when there is a 'Significant Condition Adverse To Quality,' as described in 10 CFR 50, Appendix B, Criterion XVI."

Procedure PPM 1.3.12A, Section 6.3, requires the dispositioning manager to "Review the PER to verify whether or not a Root Cause Analysis is required. Attachment 8.8 should be used for guidance." Attachment 8.8, Section 1.2 includes guidance that a root cause analysis is to be performed when a breakdown in the radiation safety program involving a number of violations that are related (or if isolated, that are recurring) that collectively represent a potentially significant lack of attention or carelessness toward licensed responsibilities.

Procedure PPM 1.3.12A, Section 6.3, also states, "PPM 1.3.48 should be used in the preparation of a root cause analysis determination and documented in a Root Cause Analysis report." Procedure PPM 1.3.48 included discussions on

root-cause analysis techniques such as: change analysis, barrier analysis, event and causal factor charting, fault-tree analysis, human performance evaluation system, and management oversight and risk-tree analysis. A root-cause analysis report format was provided with instruction to attach the reports to the associated problem evaluation request.

Event 1

Since the event was not recognized as significant, no formal root cause analysis was performed. The cause of the event described in PER 295-0492 was determined by the radiation protection organization to be failure to self-check (Root-Cause Code PE0205).

Event 2

According to the note in Block 19 of the problem evaluation request form, the event described in PER 295-0927 represented a significant adverse trend or failure affecting a quality program or plant safety. The licensee recognized that the event was significant and planned to perform a formal root-cause analysis. However, it was decided that the independent investigation would suffice for the root cause analysis because, "nothing further can be gained or investigated." The guidance of Procedures PPM 1.3.12A and PPM 1.3.48 was not followed. None of the root-cause analysis techniques described in Procedure PPM 1.3.48 were used. Had licensee personnel performed barrier analysis as part of a root-cause analysis, they would have identified that one of the barriers, which did not work was the verification program. The verification program is discussed in Section 2.7.

The inspectors reviewed the results of the independent investigation and noted that the independent investigator, from the licensee's Nuclear Safety Issues Program, concluded that the individuals "failed to lock the door." The investigator made no conclusion concerning the cause of the event. The inspectors interviewed the investigator and determined that he was not aware that the investigation was substituted for a formal root cause analysis, and he stated that he had not conducted the investigation as he would a root cause analysis. The cause of the event was listed on the problem evaluation request resolution form as less than adequate human performance. Specifically, root-cause codes were listed as, "system alignment, tagout, restoration not verified" (PE0201), and "Documents not followed correctly" (PE0209).

Event 3

No formal root cause analysis was performed after the third event. The cause of the event described in PER 295-0955 was determined by the radiation protection organization to be procedural noncompliance (Root-Cause Code PE0209). Even though this event shared one of the same root-cause codes as the previous event, it was not seen as part of an adverse trend. Licensee personnel did not identify a problem with the verification program, as discussed in Section 2.7, and the event was seen as an isolated example.

Conclusion

The radiation protection manager did not follow procedural guidance outlined in the root-cause analysis implementing procedure and, therefore, did not meet management expectations. The licensee missed an opportunity to identify an adverse trend and a problem with the verification program.

2.4 Resolution of Problem Evaluation Requests

Procedure PPM 1.3.12A, "Processing Problem Evaluation Requests," Revision 2, Section 5.3, stated that the dispositioning manager "should disposition PERs within 30 days after initiation of the PER."

The inspectors constructed the time lines in Attachment 2 from document reviews and personnel interviews. This information demonstrates that a significant amount of time was expended before the PERs were dispositioned through the submission of appropriate and comprehensive corrective actions.

Conclusion

Radiation protection personnel did not meet management expectations of resolving the PERs in a timely manner.

2.5 Corrective Actions

The inspectors interviewed licensee personnel and performed record reviews in order to evaluate the licensee's corrective actions related to the three events.

Procedure PPM 1.3.12A, "Processing Problem Evaluation Requests," Revision 2, Section 6.4.4 states, "The corrective action should be completed within 60 days of PER disposition."

Event 1

The cause of the event described in PER 295-0492 was determined by the radiation protection organization to be failure to self check. The proposed corrective action was to replace the chains used to secure high high radiation area doors with padeyes (hasps). The corrective action, although appropriate for the specific problem, did not directly address the identified cause. This was first identified in a memorandum dated July 26, 1995, by quality assurance personnel reviewing the initial, proposed corrective actions. The inspectors agreed with this conclusion and noted that the padeyes were not installed until September 14, 1995, too late to prevent the second event. The licensee missed an opportunity to identify and correct problems caused by workers who did not understand management's expectations related to the verification process, as discussed in Section 2.7. The response from radiation protection personnel to the July 26 memorandum, on August 15, 1995, was, "The corrective

action for failure to self-check is addressed by PER 295-0201 that is addressing Human Performance Issue for WNP-2 plant wide basis." The August 15 response also stated PER 295-0927 would thoroughly address corrective actions related to the self-checking issue.

Event 2

The cause of the event described in PER 295-0927 was listed on the problem evaluation request resolution form as less than adequate human performance. Six corrective actions were originally proposed. In a memorandum dated September 18, 1995, the radiation protection manager was informed that the disposition of PER 295-0927 was incomplete. The memorandum stated, "Although the corrective actions that are already proposed may add improvement to the current Health Physics program, they do not identify a method by which future personnel errors of the same type can be minimized. The CAP [corrective action plan] #6, which is to 'Evaluate the need for improved training for personnel', does not adequately implement such [a] process at this time." The reviewers stated further, that an evaluation is a precursor to determining effective corrective action and does not ensure training will be performed. The inspectors agreed with the assessment. Also, the inspectors determined through interviews that there was no attempt made to notify the general working population of such problems in a timely manner, such as through safety meetings or site newsletters.

Event 3

The cause of the event described in PER 295-0955 was determined by the radiation protection organization to be procedural noncompliance. In a memorandum dated September 15, 1995, the radiation protection manager was notified of the return of PER 295-0955 because it did not contain corrective action. Radiation protection personnel indicated that appropriate corrective action would be addressed by PER 295-0927, CAP #6. As stated above, PER 295-0927, CAP #6 was found to be unacceptable.

For each of the PERs, the initial corrective actions were found to be unacceptable, when reviewed by quality assurance personnel, or nonexistent. The causes for all events were determined to fall under the general heading of "work practices," according to Procedure PPM 1.3.48, Attachment 8.6, indicating an adverse trend.

Technical Specification 6.12.2 requires, in part, that in addition to the requirements of Technical Specification 6.12.1, areas accessible to personnel with radiation levels such that a major portion of the body could receive in 1 hour a dose greater than 1000 mrem shall be provided with locked doors to prevent unauthorized entry. The inspectors determined that Events 1 and 2 were a violation of Technical Specification 6.12.2. Further, because the second example of this violation could have reasonably been expected to have

been prevented by corrective actions for the first example had they been implemented in a timely manner, the inspectors determined this licensee-identified violation did not meet criteria for exercise of discretion, as outlined in Section VII of the NRC Enforcement Policy (397/9530-01).

Conclusion

A violation of Technical Specification 6.12.2 was identified involving the failure to maintain a lock door for an area in which the radiation levels exceeded 1000 mrem/hr.

2.6 Communications

Based on information gathered through personnel interviews and records reviews, the inspectors evaluated the quality of the licensee's communications regarding these events.

Event 1

According to a statement to the inspectors made by the mechanical maintenance worker involved in the event described in PER 295-0492, the mechanical maintenance worker was not aware that he was involved with a high high radiation area control issue until informed by the inspectors on September 26, 1995. The incident evidently had not been discussed at safety meetings held within the maintenance department. During another interview with NRC inspectors, the radiation protection technician involved in the event stated that he was not aware that a problem evaluation request was written and was not aware of corrective actions that were taken to prevent recurrence. The licensee could produce no record of discussions, safety meetings, or general communications in which the plant workers were made aware of a Technical Specification violation and of corrective actions taken to prevent its recurrence.

Event 2

According to a statement made to inspectors by the radiation protection technician involved in the event described in PER 295-0927, he was not aware of the previous event (described in PER 295-0492). The inspector determined that verification, as it relates to high high radiation area and very high radiation area locks was not addressed in the licensee's general employee or radiation worker training.

Conclusion

Communication of information regarding the first event was poor and may have contributed to the second event.

2.7 Verification Program

The licensee relied on two forms of verification to ensure that Technical Specification required locks were in place. The first was the independent verification by a second person that doors to high high radiation areas and very high radiation areas were locked after entries to the areas were completed. The independent verifier did not have to be a radiation protection technician. Any worker could perform the verification. The second form of verification was performed by radiation protection technicians during weekly routine assignments. Radiation protection technicians were required to verify that high high radiation areas and very high radiation areas were properly locked. The licensee experienced problems with both forms of verifications.

In the events described in PER 295-0492 and PER 295-0927, workers signed the key log book verifying that the door (C115) to the high high radiation area was properly locked. In the first event, the individuals did not physically test the lock and chain to verify that the particular configuration kept the door from being opened. In the second event, the workers obviously did not communicate well and no observations or physical checks were performed. The inspectors identified no evidence of willful wrongdoing by the individuals responsible for locking the doors and performing the verification. There was no logical reason for the individuals to subject themselves to possible disciplinary action. However, the inspectors noted that there were variations in the worker's understanding of what was meant by the requirement to verify that the areas were properly locked. To some workers, verification meant physically checking the locks and chains; to others it was simply an observation or perhaps a verbal confirmation. As discussed in Section 2.6, management's expectations for the verification program as it relates to high high and very radiation area door locks were not included in the licensee's general employee or radiation worker training.

The radiation protection technicians that performed weekly verification checks on August 7 and 14, 1995, did not identify that there was only one lock on the door of the traversing incore probe room, an area controlled as a very high radiation area. This condition existed from August 1 until it was identified by licensee personnel on August 17, 1995. Event 3 was a violation of Procedure PPM 11.2.7.3 which stated, "Accessible very high radiation areas shall be maintained double-locked." The procedural requirements exceeded the requirements of Technical Specification 6.12.2 and 10 CFR 20.1602. The inspectors determined that this failure constitutes a violation of minor significance and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy.

Also, the weekly verifications did not identify until the week of the inspection (on September 27, 1995) that the lock at the wet well had not been re-cored at the same time as the other high high radiation area locks. Cores were changed in the other locks on approximately August 1, 1995. Re-cored

high high radiation area padlocks were wrapped with a bright green band to distinguish them from other locks and were highly visible. The inspectors were informed at the start of the inspection that all high high radiation area locks had been re-cored.

In NRC Inspection Report 50-397/95-21, the inspectors concluded that the oversight program for high radiation areas was weak. This was based on finding that radiation protection technicians were not aware of the number of areas, which were required to be verified. A checklist including each door to be verified as locked was not used for guidance. The licensee's record of weekly verification included a single verification signature and only stated that high high radiation areas and very high radiation areas were checked. The licensee took action to address this concern and during the current inspection, the inspectors were shown a checklist with 16 high high and/or very high radiation areas. Licensee representatives stated that the checklist was used for guidance but was not expected by management to be taken into the field or kept as an official record.

Conclusion

A Non-Cited Violation was identified involving the failure to follow a procedure. Radiation protection personnel missed two earlier opportunities to identify the procedural violation. The oversight program for high high and very high radiation areas continued to be weak, in part because, management's expectations with regard to high high and very high radiation area surveillances did not include the rigorous and consistent use of the guidance provided to ensure that technical specification requirements were met.

2.8 Procedures

Procedure PPM 1.2.2, "Plant Procedure Preparation," Revision 20, Attachment 20, defines the following terms:

Shall - Used to denote regulatory requirements, external commitments and selective specific management direction.

Should - Used to denote recommendations but not enforceable regulatory requirements and management expectations. (Management expects each employee using plant expectations to carry out "should" statements unless circumstances prevent or necessitate deviation. Departures from recommendations should be done after supervisory concurrence.)

The inspectors reviewed Procedure PPM 11.2.7.3, "High and Very High Radiation Area Controls," Revision 10, to determine if the procedure conformed to the above guidance and noted, as an example, that Section 5.2.6.e stated, "When exiting a high high radiation area, health physics personnel should lock the door."

This was inconsistent with Section 5.2.2, which stated, "Accessible high high radiation areas shall be maintained locked whenever reasonably possible." Not only was Section 5.2.6.e inconsistent with Section 5.2.2, but it was inconsistent with the regulatory requirement of Technical Specification 6.12.2 which states, in part, "In addition to the requirements of Specification 6.12.1, areas accessible to personnel with radiation levels such that a major portion of the body could receive in 1 hour a dose greater than 1000 mrem shall be provided with locked doors to prevent unauthorized entry . . . Doors shall remain locked except during periods of access"

Radiation protection personnel responded to inspectors' comments by initiating a procedure change form which changed the "should" in this section to the word "shall."

The inspectors noted other examples of instructions that did not convey that regulatory requirements were the basis for the particular procedural step. Procedure PPM 11.2.7.3, Section 4.3, stated, "Provisions should be made for timely surveys to identify and post with precautionary notices, the areas and systems that may become high or very high radiation areas." Contrast this to 10 CFR 20.1501(a), which states, that each licensee shall make or cause to be made, surveys that may be necessary for the licensee to comply with the regulations in this part and are reasonable under the circumstances to evaluate the potential radiological hazards that could be present, and 10 CFR 20.1902, which states, that each licensee shall post each high and very high radiation area.

Procedure PPM 1.2.2 did not define the terms "will" and "must." However, Procedure PPM 11.2.7.3, Section 5.1.8, stated, "Personnel will receive, at a minimum, a briefing of the radiological conditions in the area prior to entry." The regulatory requirement, 10 CFR 19.12, states, that all individuals working in or frequenting any portion of a restricted area shall be kept informed of radiation in such portions of the restricted area and in precautions to minimize exposure.

Procedure PPM 11.2.7.3, Section 5.2.4 states, "Entry into high high radiation areas greater than or equal to 1000 mrem/hr will be controlled by the issuance of an approved RWP Technical Specification 6.12.1 requires, in part, that entrance into high radiation areas be controlled by requiring issuance of a radiation work permit.

Procedure PPM 11.2.7.3, Section 3.2, states, "Personnel must have received the required radiological training before being allowed to high or very high radiation areas." Technical Specification 6.12.1 requires, in part, that entry into such areas . . . may be made after the dose rate levels in the area have been established and personnel have been made knowledgeable of them.

Licensee representatives stated that, even though the terms "will" and "must" were not currently defined by procedure, they were interpreted as meaning "shall." Licensee representatives indicated that they would be considering ways to address the presence of such terms in their procedures.

The inspectors acknowledged that the licensee could implement management expectations with statements containing the word "should," and that the licensee could allow flexibility with respect to management expectations. However, the examples listed were instructions that were necessary to implement regulatory requirements. Therefore, using the licensee's definitions from Procedure PPM 1.2.2, "shall" was the proper term to ensure that licensee personnel understood the regulatory significance. In order to evaluate the action to be taken by the licensee with respect to undefined terms, such as will and must, and to evaluate more fully whether the wording contained in other radiation protection procedures correctly implements regulatory requirements, the inspectors identified an inspection followup item (397/9530-02).

Conclusion

The procedure for the control of access to high and very high radiation areas did not appropriately convey all regulatory requirements.

2.9 Potential For Significant Exposure

In order to determine whether there existed a substantial potential for personnel exposure to radiation in excess of regulatory limits, the inspectors toured the 437-foot elevation of the radioactive waste building, and on September 27, 1995, one of the inspectors, accompanied by a radiation protection technician, performed independent radiation measurements.

The radiation measurements made by the inspector were in good agreement with the licensee's measurements. General area radiation levels were approximately 1.6 rems per hour. The inspector identified one area that measured approximately 15 rems per hour at 30 centimeters and 500 rems per hour on contact. The inspector determined that it would be difficult to place a major portion of the whole body within 30 centimeters of this area and that it would be unlikely that personnel would be in such a position long enough to receive a radiation exposure in excess of regulatory limits. Should an individual be in the area long enough to receive an overexposure, it would be likely that the alarming dosimeter, required for entry into the radiological controlled area, would alert the individual before the exposure could occur.

During NRC Inspection 50-397/95-16, the inspectors noted that there had been 14 examples of individuals entering the radiological controlled area without alarming dosimeters. During this inspection, the inspectors found that the licensee had identified one additional example since the end of the refueling outage. The inspectors determined that the rate of personnel entry into the radiological controlled area without an alarming dosimeter was low, and the rate was decreasing as workers became more familiar with the use of the dosimeters.

The inspectors also noted that Door C115 was massive and opening the door was a laborious task, requiring that the hand wheel be turned many times. Thus the likelihood of an inadvertent entry to the high high radiation area was low. Had there been an inadvertent entry, it was unlikely that an individual would have received exposure in excess of regulatory limits.

Event 3 was unlikely to result in personnel radiation exposure because personnel entry was controlled by a second lock.

Conclusion

The potential for personnel radiation exposure in excess of regulatory limits occurring as a result of the events was low.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

- *P. Bemis, Director Regulatory and Industrial Affairs
- *V. Parrish, Vice President Nuclear Operations
 - T. Alton, Technical Specialist
 - D. Dinger, Health Physics Operations Supervisor
- *C. Foley, Licensing Engineer
 - J. Hunter, Health Physics Craft Supervisor
 - C. Leon, Technical Specialist
- *J. Muth, Manager Quality Support
- *W. Rigby, Health Physics Supervisor
 - V. Shockley, Assistant to the Radiation Protection Manager
- *J. Swailes, Plant General Manager
- *D. Swank, Manager Licensing
 - J. Tate, Equipment Operator
- *J. Wiles, Quality Assurance Engineer

1.2 NRC Personnel

- *R. Barr, Senior Resident Inspector

*Denotes personnel that attended the exit meeting. In addition to the personnel listed, the inspector contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on September 28, 1995. During this meeting, the inspector reviewed the scope and findings of the report. The licensee expressed the position that the wording used in its procedures, as discussed in Section 2.8, did not result in non-compliance with regulatory requirements. The licensee did not identify as proprietary, any information provided to, or reviewed by the inspector.



ATTACHMENT 2

CHRONOLOGY OF EVENTS

Event 1

May 7, 1995	Door C115 was discovered unlocked. PER 295-0492 was initiated. Proposed corrective actions were due in 30 days.
June 6 (30 Days)	A request was made by radiation protection personnel to extend the deadline to June 30, 1995
June 8 (32 Days)	A work order to install hasps on all high high radiation area doors was initiated.
July 14 (68 Days)	The radiation protection organization submitted a proposed corrective action that required the replacement of chains with padeyes or hasps.
July 26 (80 Days)	In a memorandum to the radiation protection manager from the regulatory support manager, the proposed corrective actions were returned and deficiencies in the actions were identified. The radiation protection organization was asked to respond on or before August 12, 1995.
August 15 (100 Days)	The radiation protection organization responded and stated that PER 295-0201 and PER 295-0927 would thoroughly address corrective actions related to the self-checking issue.
September 27 (143 Days)	PER 295-0492 was reopened to include additional corrective actions.

Event 2

August 8	Planned entry into a high high radiation through Door C115.
August 9 (1 Day)	Door C115 was discovered unlocked. PER 295-0927 was initiated.
August 11 (3 Days)	A nuclear safety issues program lead investigator was asked to independently investigate the incident.
August 16 (8 Days)	Memorandum containing the results of the independent investigation was sent from the incident review board chairman to the plant manager.
August 21 (13 Days)	Radiation protection manager approves proposed corrective action.
September 18 (41 Days)	In a memorandum to the radiation protection manager from the regulatory support manager, the proposed corrective actions were returned and deficiencies in the actions were identified. The radiation protection organization was asked to respond on or before October 8, 1995.
September 25 (48 Days)	The radiation protection organization submitted additional corrective actions.

Event 3

August 17	The door to the traversing incore probe room was identified as not having two locks are required by procedure. PER 295-0955 was initiated.
September 5 (19 Days)	The radiation protection organization responded with proposed corrective action.
September 15 (29 Days)	In a memorandum to the radiation protection manager from the regulatory support manager, the proposed corrective actions were returned and deficiencies in the actions were identified. The radiation protection organization was asked to respond on or before October 5, 1995.

