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REGION III

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Report No: 50-456/96021; 50-457/96021

Licensee: Commonwealth Edison (ComEd)

Facility: Braidwood Nuclear Plant, Units 1 and 2

Location: RR #1, Box 84
Braceville, IL 60407

Dates: November 30, 1996 - January 10, 1997

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EXECUTIVE SUMMARY

Braidwood Nuclear Plant, Units 1 & 2
NRC Inspection Report 50-456/96021; 50-457/96021

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection; in addition, it includes the results of an announced inspection by a regional radiation specialist.

Operations

Inspectors observed operators add lubricating oil to the 2B diesel generator. The operators were not aware that a procedure existed for adding oil to the diesel generators. The inspectors determined that the operators did not follow procedure BwOP DG-5 and BwAP 100-20. This is an example of a Violation of Technical Specification (TS) 6.8.1.a. (Section O4.1).

Maintenance

Inspectors observed the replacement of high efficiency particulate filters in the C train of the auxiliary building ventilation inaccessible plenum. The inspectors observed that no quality assurance tag was attached to the replacement filter as required by BwWP 800-6. This is an example of a Violation of TS 6.8.1.a. (Section M1.1).

Inspectors observed that while the conduct of the 2B RHR pump surveillance was performed in a competent and well controlled manner that the licensee failed to ensure that a required change to the surveillance procedure was made prior to use. This is an example of a Violation of TS 6.8.1.a. (Section M3.1).

Inspectors observed maintenance on the 1C heater drain pump. The work package was not present at the work site. The inspectors also observed that the foreman could not explain the purpose of procedural steps. The inspectors determined that maintenance personnel did not follow procedure BwAP 1600-1. This is an example of a Violation of TS 6.8.1.a. (Section M4.1).

Inspectors reviewed a licensee finding that spent fuel assemblies were mispositioned in the fuel pool. The inspectors determined that the fuel handlers did not follow procedure BwFP FH-4 which required the triple verification of fuel moves. This is an example of a Violation of TS 6.8.1.a. (Section M4.2).

The inspectors identified that several carts were secured to safety-related equipment in violation of BwAP 100-10 and, in one case, licensee personnel failed to take corrective action after the problem was identified by the inspectors. These represent an example of a Violation of TS 6.8.1.a for failure to follow procedures and a violation of 10 CFR Part 50, Appendix B, Criterion XVI, for failure to take corrective actions. (Section M4.3)

Engineering

The inspectors were notified of a leak on the 1A essential service water backwash line. The inspectors determined that the licensee was not in compliance with the American Society of Mechanical Engineers (ASME) code in that a through wall flaw had been identified and the component had not been removed from service nor had any corrective action been taken. The inspectors concluded that the failure to comply with the ASME Code, Section XI, was a violation of 10 CFR 50.55a(g)(4). (Section E1.1)

Plant Support

The inspectors observed a posted radiation hot spot in the Unit 1 moderating heat exchanger room outside of a posted radiation area. The inspectors determined that the licensee had not complied with BwRP 5010-1. This is an example of a Violation of TS 6.8.1.a. (Section R4.2)

The inspectors observed security guards failing to follow plant procedure BwRP 5822-8 regarding conducting a whole body frisk when exiting the auxiliary building. This is an example of a Violation of TS 6.8.1.a. (Section R4.3)

Report Details

Summary of Plant Status

Unit 1 entered the period out of service for a mid-cycle Steam Generator tube inspection outage. The unit was removed from service on October 11, 1996, and the scheduled outage duration was initially planned for 29 days. Upon inspection of the Steam Generators, the outage duration was changed to 50 days due to required repairs for all four Steam Generators. As a result of the Steam Generator tube inspections, all four Steam Generators were classified as Category C-3 per plant Technical Specification (TS) 4.4.5.2.e. Tube plugging and sleeving was required for the Steam Generators due to defective tube indications. Unit 1 was returned to service on December 3, 1996, and has operated at or near 100% full power since December 11, 1996.

Unit 2 entered the period at or near 100% full power and operated routinely for the entire period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. The inspectors observed the following plant evolutions:

- changing a chemical volume control system filter;
- clearing out-of-service tags and return to service of the Unit 1 seal injection filter;
- portions of auxiliary building and turbine building operator rounds;
- and the Unit 1 startup from a maintenance shutdown.

During these evaluations, the operators were observed to follow operating and radiation protection procedures. The inspectors observed the pre-job briefings and found them to be acceptable for the tasks performed. In general, the conduct of operations was performed in a safe, well controlled manner.

O4 Operator Knowledge and Performance

O4.1 Operators Unaware of Procedure for Adding Lube Oil to Diesel Generators

a. Inspection Scope (71707)

On December 19, 1996, the inspectors observed the addition of lubricating oil to the 2B Diesel Generator crankcase. Following the oil addition, the inspectors

discussed the evolution with system engineer, field supervisor, and shift engineer. The inspectors reviewed BwOP DG-5, "Diesel Generator Oil Addition," Revision 5, and BwAP 100-20, "Procedure Use and Adherence," Revision 5.

b. Observations and Findings

On December 19, 1996, the inspectors did not observe equipment operators using a procedure during the addition of lubricating oil to the 2B Diesel Generator crankcase. The equipment operators told the inspectors that there was no procedure for oil addition to the diesel generators. The operators added 55 gallons of Mobil Delvac 1340 oil to the 2B diesel generator to a final crankcase oil level of - 1/2 inch.

The inspectors later identified, obtained, and reviewed a copy of BwOP DG-5, "Diesel Generator Oil Addition." The inspectors performed a comparison of the observed operator actions with the procedural steps of BwOP DG-5 and identified one discrepancy between the as-left condition of the 2B Diesel Generator and procedure BwOP DG-5. Step F.4.a states that oil should be added to the blue line (0 inch) on the crankcase level sightglass. As mentioned above the inspectors observed a post addition crankcase level of -1/2 inch. The inspectors verified the acceptable range for crankcase oil level and found it to be -1 inch to +1 inch.

BwAP 100-20, steps D.8.d.1 and D.8.d.2 required the user to review the procedure prior to performance and have a copy available at the location. The inspectors verified that at the time of the oil addition there was not a copy of BwOP DG-5 in the 2A diesel generator room.

The inspector contacted the shift engineer and field supervisor to inform them that the equipment operators were not aware of the procedure for oil addition to the diesel generators. The field supervisor indicated that he had taken the following corrective actions: counseled the operators involved with the oil addition, reviewed the equipment operators action, and provided a reminder to the other operators of the procedure's existence.

c. Conclusions

The inspectors concluded that the equipment operators were not aware that a procedure for the addition of lubricating oil to the diesel generators existed. In being unaware of BwOP DG-5 existence, the equipment operators did not comply with procedure BwAP 100-20, Revision 5, steps D.8.d.1 and D.8.d.2. These steps require the user to review the procedure prior to performance and have a copy available at the location.

The inspectors concluded that the proper type of oil was added and the operator's actions in adding oil to the 2B Diesel Generator were consistent with the procedural steps of BwOP DG-5 with one exception. Step F.4.a states that oil should be added to the blue line (0 inch) on the crankcase level sightglass and the inspectors

observed a post-addition crankcase level of -1/2 inch. The conditions of this step were not met.

TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwOP DG-5 and to BwA 100-20 and therefore, the failure to follow BwOP DG-5 and BwAP 100-20 was an example of an inspector identified violation of TS 6.8.1a. (50-456/457/96021-01a(DRP)).

O8 Miscellaneous Operations Issues

O8.1 Review of June 1996 Institute of Nuclear Power Operations (INPO) Evaluation

The inspectors reviewed the evaluation report and determined that the results were generally consistent with the results of similar evaluations conducted by the NRC.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Safety-Related Ventilation Filter Replacement

a. Inspection Scope (62703)

On December 5, the inspectors observed the replacement of a part of the HEPA filter in the "C" train of the auxiliary building ventilation non-accessible plenum. The replacement was performed by non-licensed operators. The inspectors listened to the pre-job brief and interviewed the operators and the operations field supervisor. The inspectors also reviewed Action Request 960081934; BwWP 800-6, "Withdrawal, Marking and Return of Safety, ASME Code, and Regulatory Related Items," Revision 6; BwAP 1600-10, "Minor Maintenance Procedure," Revision 3; and BwAP 1600-1, "Action/Work Request Processing Procedure," Revision 30E2.

b. Observations and Findings

The non-licensed operators were told by the field supervisor during the prejob brief that the replacement filter could be found on the 451 foot level of the auxiliary building. The inspectors noted that when the operators arrived, there was no red quality assurance tag attached to the filter. The licensee used a red tag system to identify and provide traceability for safety-related parts and components. BwWP 800-6, Step F.2.c, stated in part that when a red tag was issued with a safety-related item the tag was to remain with the item until installation. The inspectors verified with the field supervisor after the evolution that the filters were in fact a safety-related part. The field supervisor later found the red tag associated with the installed filters. The tag had been removed by store room personnel before being issued to the operators.

The inspectors then followed the operators to the trash sorting room after the filter was replaced where the damaged filter was to be disposed of. The inspectors noted that there were six apparently identical filters in the trash sorting room that had no red tags attached to them. The inspectors discussed the additional filters with the system engineer the next day. These filters had been stored on a cart on the 477' level of the auxiliary building for about 6 months. The system engineer stated that he did not know why those filters were stored in that area. Licensee personnel planned to dispose of the filters because they had lost their traceability.

c. Conclusions

The inspectors concluded that the licensee's control of safety-related ventilation filters was poor. TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwWP 800-6 and therefore, the failure to follow BwWP 800-6 was an example of an inspector identified violation of TS 6.8.1a (50-456/457/96021-01b(DRP)).

M3 Maintenance Procedures and Documentation

M3.1 Residual Heat Removal Pump ASME Surveillance

a. Inspection Scope (61726)

The inspectors reviewed 2BwVS 5.2.f.3-2, "ASME Surveillance Requirements For Residual Heat Removal (RHR) Pump 2RH01PB," Revision 3E1, and observed the quarterly ASME surveillance run of the 2B RHR pump.

b. Observations and Findings

The inspectors verified that the quarterly ASME surveillance run of the 2B RHR pump on December 31, was conducted in accordance with 2BwVS 5.2.f.3-2 and satisfied applicable TS and Updated Final Safety Analysis Report (UFSAR) requirements. The inspectors observed pump operation and verified performance parameters were within the required bands with no long term trends apparent when compared to previous pump testing. The system engineer in charge of the surveillance noted that the effective revision (3E1) of 2BwVS 5.2.f.3-2 specified the wrong gage in Step F.2.6 in spite of a procedure change request approved on October 10, 1996.

The inspectors verified that the engineer's corrected copy corresponded to the approved procedure change request and the surveillance was completed.

c. Conclusions

The inspectors noted that while the 2B RHR pump surveillance was performed in a competent, well controlled manner that the licensee was slow to make required procedural changes. The licensee failed to comply with BwAp 1300-10,

"Permanent Procedure Preparation, Revision, Deletion, and Approval," Revision 2E2, Step 4.h.1, following the approval of the requested changes on October 10, 1996. T.S. 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. T.S. 6.8.1a applies to BwAP 1300-10 and therefore, the failure to follow BwAP 1300-10 was an example of a violation of T.S. 6.8.1a (50-457/96021-01c(DRP)).

M3.2 Essential Service Water ASME Surveillance Observation

a. Inspection Scope (61726)

On December 16, the inspectors observed the performance of 1BwVS 0.5-3.sx.1-1, "ASME Surveillance Requirements for 1A Essential Service Water Pump," Revision 0. The inspectors also reviewed 1 BwVS 0.5-3.sx.1-1, the UFSAR, and TS 3/4.7.4.

b. Observations and Findings

The inspector determined that the SX system engineer performed BwVS 0.5-3.SX.1-1 in accordance with the procedure. The inspectors found that all the data obtained met acceptance criteria. The surveillance procedure was well written and provided the necessary guidance for procedure performance. The inspectors observed that independent verifications were properly performed.

The inspectors reviewed Section 9.2.1.2 of the UFSAR and found that each SX pump shall be capable of providing 24000 gpm at 180 feet of water head. The inspectors observed that the surveillance acceptance criteria met the minimum design performance specified in the UFSAR.

c. Conclusions

The inspectors concluded that the system engineer performed the surveillance in accordance with the procedure and that all data obtained met acceptance criteria. The inspectors also concluded that the surveillance satisfied technical specification and UFSAR requirements.

M3.3 Instrument Maintenance Surveillance Performance Observation

a. Inspection Scope (61726)

On January 2, the inspectors observed the performance of BwIS 3.2.1-206, "Analog Operational Test of Auxiliary Feedwater Suction Loop 2P-AF055," Revision 4. The inspectors also reviewed BwIS 3.2.1-206, UFSAR Section 7.3.1.1.6, and TS 3/4.3.2.

b. Observations and Findings

The inspector found that Instrument Maintenance Department (IMD) personnel complied with all applicable sections of the procedure, that all data obtained met established acceptance criteria, and that IMD personnel performed independent verification of steps that changed the alignment of safety-related equipment. The independent verification actions were found to be in compliance with BwAP 100-18, "Braidwood Station Independent Verification Procedure," Revision 18. The inspectors also observed good communications by the IMD personnel with the control room.

The inspectors reviewed UFSAR Section 7.3.1.1.6 and found that auxiliary feedwater (AFW) was provided with an alternate suction from SX. This suction path was designed to automatically align normally closed motor operated valves if an actuation of a safeguards initiation relay occurs coincident with a low pump suction pressure. The scope of this surveillance tested the comparator circuit trip and reset setpoints for the 2B auxiliary feedwater pump suction pressure.

The inspectors reviewed TS 3/4.3.2 and determined that a minimum allowable suction pressure of 2.00 inches of mercury vacuum (13.72 psia) was specified for the comparator setpoint. The inspectors observed that the actual comparator trip setpoint was above the minimum required by TS.

c. Conclusion

The inspectors concluded that IMD personnel performed the surveillance in accordance with the procedure and that all data obtained met acceptance criteria. The inspectors also concluded that the surveillance satisfied TS and UFSAR requirements.

M3.4 Surveillance Run of 1B AFW Pump

a. Inspection Scope (61726)

The inspectors monitored the performance of the test at the 1B AFW pump during performance of procedure 1BwVS 0.5-3.AF.1-2, "Unit One Diesel Driven AFW Pump ASME Quarterly Surveillance," Revision 4, on January 2. The inspectors interviewed the system engineer acting as the test director and the plant equipment operator stationed at the AFW pump during the test. The inspector also performed a review of procedure 1BwVS 0.5-3.AF.1-2 for compliance with UFSAR design criteria and TS surveillance requirements.

b. Observations and Findings

The inspector observed the following:

- The test results met the acceptance criteria. The acceptance criteria met the TS and UFSAR requirements.
- The equipment operator at the pump utilized three-way communications techniques every time he talked with the unit nuclear station operator in the control room and used self-checking when operating plant equipment.
- Control room personnel made plant-wide announcements prior to starting or stopping the auxiliary feedwater pump.
- The system engineer acted as the test director for the surveillance and was present at the pump during performance of the entire test. The system engineer was knowledgeable on operation of the plant equipment and use of test equipment. Test equipment and instrumentation used in the test were within calibration due dates and were installed as required by the procedure.

c. Conclusions

The surveillance successfully tested TS and UFSAR requirements. Operations personnel and the system engineer were knowledgeable of system operation, testing setup, and testing methods.

M4 Maintenance Staff Knowledge and Performance

M4.1 1C Heater Drain Pump Maintenance

a. Inspection Scope (62703)

The inspectors observed the performance of maintenance on the 1C heater drain pump on January 2, interviewed the mechanical maintenance foreman in charge of the work, and reviewed BwAP 1600-1, "Action/Work Request Processing Procedure," Revision 30E2.

b. Observations and Findings

The inspectors observed that the work package 950009398-07 was not present at the work site. BwAP 1600-1, Step C.15.a.6, had a note that stated that a copy of the procedures for work being performed was a part of the minimum requirements for a work package field copy. A maintenance worker obtained the work package at the request of the inspectors.

The inspectors observed the following items:

- The work site foreman did not know the purpose of an unlabeled single sheet of notebook paper containing what appeared to be several measured dimensions that was slipped into the work package.
- A work package step, which called for recording suction and discharge piping deflection when the piping was unbolted from the pump, was marked as "not much" and signed off as complete. The foreman stated he did not know the purpose for the procedural step.
- The work package called for removal of the coupling adjustment nut, the coupling key, and the pump coupling, with care to be taken as no dents were allowed on the coupling. The inspectors observed the workers were removing one of the pieces with a hammer and chisel. The foreman, when questioned did not know what the procedure meant by no dents allowed and whether or not it applied to the piece that was removed with the hammer.

c. Conclusions

The inspectors concluded from the fact that the work package was missing from the job and the foreman was not knowledgeable about several steps of the procedure when questioned, that the work was poorly controlled. TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwAP 1600-1 and therefore, the failure to follow BwAP 1600-01 was an inspector identified violation of TS 6.8.1a. (50-456/457/96021-01d(DRP)).

M4.2 Mispositioned Nuclear Fuel

a. Inspection Scope (71707)

The inspectors reviewed a licensee finding of spent fuel assemblies being placed in the wrong location in the spent fuel pool. The Inspectors reviewed BwFP FH-4, "Fuel Movement In Spent Fuel Pool," Revision 4; BwAP 370-3, "Administrative Control During Refueling," Revision 15; Commonwealth Edison Nuclear Procedure Form 86-2616, "PWR Station NCTL;" and BwAP 2364-9, "Controlling Movements of Nuclear Fuel Into the Spent Fuel Racks," Revision 2. The inspectors interviewed a station nuclear engineer, a fuel handling supervisor and a fuel handler, and observed fuel handling operations.

b. Observations and Findings

During spent fuel movement operations within the spent fuel pool on December 1, two fuel assemblies were placed in the wrong locations. Both moves were made on the same shift by the same crew. The Nuclear Component Transfer List (NCTL) required fuel assembly S31W to be moved to spent fuel pool location C3-J4 but it

was placed in C2-J4. The NCTL required fuel assembly T70X to be moved to spent fuel pool location C4-I11 but it was moved to C4-J11. S31W was discovered to be out of position on December 3 and T70X on December 11.

Inspectors verified that shutdown margin of the spent fuel pool had been maintained by reviewing BwAP 2364-9, Data Sheet 1, which indicated that fuel assemblies S31W and T70X had more than the minimum burnout required for unrestricted storage in the spent fuel pool.

BwFP FH-4 required triple verification for fuel moves which was defined as "the process utilized to verify correct positioning of a fuel assembly compared to the NCTL, by a minimum of two fuel handlers and a qualified fuel handling supervisor, all of whom have independently verified and concur with the fuel assembly position." Interviews by the inspectors with two of the qualified personnel on shift the 1st of December indicated that contrary to BwFP FH-4, only the supervisor had read the NCTL for every move. The personnel involved did not have a complete and consistent understanding of the triple verification process.

The inspectors interviewed a nuclear station engineer in order to verify the rest of the fuel assemblies in the spent fuel pool were in the correct location and verified that the licensee had performed a piece count of the spent fuel pool which verified that spent fuel pool cell locations were filled or empty as required by the NCTL but did not check fuel assembly serial numbers. Licensee personnel stated that maintenance work on the refueling platform crane prevented the use of a camera to perform a serial number check of the pool and that a complete inventory of the fuel was planned for February 1997.

c. Conclusions

The inspector concluded that the fuel handlers and their supervisors had a poor understanding of the requirements for multiple verification of procedure steps. TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwFP FH-4 and the NCTL and therefore, the failure to follow BwFP FH-4 and the NCTL was a violation of TS 6.8.1a (50-456/457/96021-01e(DRP)).

M4.3 Improper Securing of Carts

a. Inspection Scope (62703)

During routine inspection of the auxiliary building the inspectors noted several problems with the securing of movable carts. The inspectors reviewed BwAP 100-10, "Conduct of Station Personnel," Revision 2; BwRP 6210-24, "Installation, Removal, and Tracking of Temporary Shielding," Revision 1; and Braidwood Policy Memo #65 which addressed the issue of unattended rolling carts and equipment/tools in areas of the plant containing safety-related equipment. The

inspector also interviewed operations and facilities maintenance, engineering, radiation protection, and plant management personnel.

b. Observations and Findings

BwAP 100-10, Steps c.4.d and c.4.e, list the requirements for securing moveable carts and equipment. During the inspection period the inspectors found several instances where carts and equipment were not secured in accordance with BwAP 100-10. Some examples of unsecured or improperly secured carts and equipment included:

1. The inspectors observed two shield racks, each consisting of six 1-foot by 6-foot lead blankets, tied off to safety-related duct work in the Unit 1 curved wall area of the auxiliary building on November 4, 1996 and reported the condition to operations personnel on that date. The inspectors observed the racks again on December 9 and noted that no corrective actions appeared to have been taken for the earlier concerns. One of the racks was very close to (and possibly in contact with) safety-related lines 1SI97AA and 1SI97BA. These are 3/4-inch lines supplying FTI 6A, safety injection (SI) Pump Minimum Flow, on the SI pump common minimum flow line. Additionally, both carts were within 1 foot of safety-related ventilation ductwork for the 1B charging and 1B SI pump rooms exhaust.

The shielding cart labelled with tag "1 of 2" was found attached with small diameter rope to support beams for ventilation exhaust ductwork from 1B charging and 1B SI pump rooms. This ductwork was safety-related. As stated in BwAP 100-10, Step c.4.d, unattended rolling carts are secured in order to prevent rolling into safety-related equipment during a seismic event.

The shielding cart labelled with tag "2 of 2" was found with one wheel locked with a clamp. Since all four wheels of the cart could pivot, the cart had a full range of motion around the wheel with the clamp. Immobilizing the cart with only one wheel locked was not in compliance with BwAP 100-10, Step c.4.e.2, which required a wheel brake on 50% of the wheels. Additionally, the cart was found very close, and possibly in contact with safety-related lines 1SI97AA and 1SI97BA. This cart was also within 1 foot of safety-related ventilation ductwork.

The inspector verified the carts were removed from the Unit 1 curved wall area on the afternoon of December 9, 1996.

In addition, several problems with the temporary shield request (BwRP 6210-24T1) 96-104 paperwork and installation were noted:

- Step 4 required listing the work description and work request (WR) number. Contrary to this, no WR number was listed for step 4.

Step 8 signoff for temporary shield walkdown by field supervisor was marked "N/A unless within or over small size piping." One of the shield racks was found close to (and possibly in contact with) 3/4-inch safety-related piping but were marked N/A. Additionally, both carts were found within 1 foot of safety-related ventilation ductwork for the 1B SI pump and 1B charging pump room exhaust.

Step 16 of 96-104 and the Attachment to 96-104 stated that the shielding was requested to shield workers from charging line 2CV01E-3. The shielding was placed in Unit 1 curved wall area. Upon notification of this discrepancy, radiation protection personnel indicated that the correct line being shielded was 1CV01E-3.

Attachment to 96-104, Step 2, required that the carts be adequately restrained to prevent sliding, rolling, or overturning. Both carts were found on December 9, 1996, without adequate restraints to prevent rolling or overturning.

Attachment to 96-104, Step 5, required that the racks be tracked and removed when the shielding is no longer required. Contrary to this, the Furmanite leak sealing work that the request was initially generated to support was delayed during the summer of 1996 and no work has been performed since. The temporary shielding was not removed when the Furmanite work was delayed and the shield racks remained in place until the licensee was questioned by the inspectors about the reasons for shielding in the area.

2. A work cart for instrument maintenance activities on the reactor containment fan cooler 1A & 1C SX outlet radiation monitor (OPR02J) was found attached to a support for the safety-related essential service water return header on December 17.
3. A frame/hoist used for floor plug removal was found attached to a safety-related piping support for essential service water piping on December 17. Movement of the frame was still possible.

The inspector reported the unsecured carts to operation r facilities maintenance personnel as the carts were discovered. The inspectors oke with the facilities maintenance individual in charge of the auxiliary building about the causes for recurring cart issues. He indicated that plant personnel sometimes do not understand that it is not acceptable to tie carts to safety-related equipment. He also indicated that there may be a general misunderstanding for the reasons that carts and rolling equipment must be secured.

c. Conclusions

Requirements for securing moveable carts and equipment as stated in BwAP 100-10, Conduct of Station Personnel, and Station Policy Memo #65 were

not satisfied on numerous occasions during the period. Carts and moveable equipment were left unsecured or tied to safety-related equipment.

Temporary shielding installed under shielding request 96-104 was not properly configured; administratively controlled, or physically restrained to protect safety-related equipment in the area of the shielding.

TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwAP 100-10 and BwRP 6210-24 and therefore, the failure to follow BwAP 100-10 and BwRP 6210-24 was a violation of TS 6.8.1a (50-456/457/96021-01f(DRP)).

The inspectors notified plant operating personnel of possible problems with the installation of shielding covered under shielding request 96-104 on November 4, 1996. No action was taken by plant personnel to investigate or rectify the conditions until December 9, 1996, when the inspector notified radiation protection personnel. Failure to take corrective actions in a timely manner is a violation of 10 CFR Part 50, Appendix B, Criteria XVI, (50-456/457/96021-02(DRP)).

M8 Miscellaneous Maintenance Issues (92902), (92700)

M8.1 (Closed) Inspection Followup Item (IFI) 50-456/96009-05: Unit 1 main turbine digital electro-hydraulic control (DEHC) software corruption caused a 42% load reduction during monthly testing of the turbine throttle and governor valves (TV/GV). The licensee had revised one parameter (as specified by the vendor) which controlled the rate of valve movement during the monthly TV/GV test. The same revision had been performed on Unit 2 with no problem. Analysis of software downloaded from the Unit 1 main turbine DEHC after the event revealed that sections of memory used by the valve management program had been corrupted. There was no pattern to the corrupt memory locations, which made it impossible to determine the cause of the corruption. Human error was evaluated and, due to the number of keystrokes required to cause a problem, was eliminated as a root cause. The floppy drive which was used for software loading and transfer was verified operational. The floppy drive check sum function was also verified operational. The DEHC computer system was taken through extensive diagnostics and the memory control modules were replaced as a precautionary measure. The removed memory control modules were tested extensively with not problems found.

The licensee undertook several steps to prevent recurrence. Power supply interruptions have caused the loss of automatic turbine control in the past. An uninterruptible power supply was approved for installation on the DEHC power supply. To allow check and analysis of the actual software in the DEHC core without downloading through a floppy drive, the licensee was designing a link between the DEHC core and a portable computer.

The inspector interviewed the Supervisor, Operations Analysis Department and verified that reasonable steps were being taken to prevent recurrence. This item is closed.

M8.2 (Closed) Licensee Event Report (LER) 457/96005-00: 2A AFW pump auto started during a surveillance at the remote shutdown panel. The operator failed to recognize that an AFW pump auto start would occur if the pump control switch was placed in local at the remote shutdown panel with an auto start signal present. The event was included in NRC Integrated Inspection Report 50-457/96009 as Non-Cited Violation 50-457/96009-04. The inspectors verified that the governing procedure, BwOS PL-R1, "Remote Shutdown Panel Control Power Checks," was revised to include a precaution that an auto start would result if the pump control switch was taken to local on the remote shutdown panel and an auto start signal was present. The operators involved were counselled and the inadvertent AFW pump start event was covered during licensed operator requalification training. The inspectors considered that the licensee's corrective action was appropriate. This item is closed.

M8.3 (Closed) LER 457/96006-00: The 2A Emergency Diesel Generator (DG) was declared inoperable based on the time elapsed between satisfactory samples obtained from the 2A DG Fuel Oil Storage Tank. This event was documented on NRC Integrated Inspection Report 50-457/96009 as Non-Cited Violation 50-457/96009-03. The licensee identified inadequate work practice as the primary cause in that no process existed to ensure the surveillance 31-day time limit was met. The inspector interviewed the maintenance staff supervisor and a fuel handling supervisor and reviewed 1986 diesel fuel sample records and verified that procedures were in place and in use to track and record surveillance results and that sample delivery and communications procedures with System Materials Analysis Department were improved. The inspectors considered that the licensee's corrective action was appropriate. This item is closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Unit 1 Essential Service Water Leak

a. Inspection Scope (37551)

The inspectors were notified by the licensee that a small hole had developed in the 1A SX strainer backwash line that was leaking about 2 gallons per minute. The inspectors reviewed Generic Letter 91-18, Generic Letter 90-05, and American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1983 Winter addendum, Subsections IWD-3000 and IWB-3000.

b. Observations and Findings

The inspectors identified that ASME Section XI, Sections IWB-3112 (c), Table IWB-3410-1, IWB-3522, and IWB-3142 stated in part that a through wall flaw in Class C piping was unacceptable for continued service and corrective action was required prior to returning the component to service. Generic Letter 91-18 stated that an ASME Class 1, 2, or 3 component with a through wall leak must be considered inoperable unless it was ASME Class 3 piping that contained a substance less than 200 psig and less than 275 degrees F and the flaw was evaluated in accordance with Generic Letter 90-05. The inspectors verified that the leaking SX piping was ASME Class 3 and that the fluid within was less than 200 psig and 275 degrees F.

The leak was identified by the licensee on December 23 and the system was initially screened as operable by the shift engineer based on the amount of leakage. To isolate the leaking component the 1A SX pump would have to have been isolated which would have made the train inoperable. The inspectors identified that the licensee was not in compliance with the ASME code, on December 30, in that a through wall flaw had been identified and the component had not been removed from service nor had any corrective action been taken. The inspectors identified that the licensee had not declared the 1A SX train inoperable and had not performed an evaluation to demonstrate operability as discussed in Generic Letters 91-18 and 90-05 as of December 30.

Subsequent to several conference calls with the NRC the licensee completed an operability evaluation and performed the Generic Letter 90-05 evaluation on December 31. The licensee later determined that a code repair to the piping could not be performed within the 72-hour TS limiting condition for operation and submitted a relief request to the NRC on January 9.

c. Conclusions

The inspectors concluded that the licensee's understanding of the ASME code and the applicable generic letter guidance for dealing with the identified type of flow was poor and that NRC intervention was necessary to ensure the correct process was followed. The inspectors also concluded that the failure to comply with the ASME Section XI code was a violation of 10 CFR 50.55a(g)(4) which required that all components that are classified as ASME Code Class 3 must meet the requirements set forth in Section XI. (50-456/457/96021-03(DRP))

IV. PLANT SUPPORT

R4 Staff Knowledge and Performance in Radiological Protection and Chemistry Controls

R4.1 Reactor Coolant Filter Change

a. Inspection Scope (71750)

The inspectors observed the replacement of a reactor coolant filter of the chemical and volume control system on December 6, reviewed BwOP CV-10, "CV Filters- Isolation and Return to Service," Revision 8; BwOP WX-197, "Changing Plant Filters With The Filter Removal Machine," Revision 6; Radiation Work Permit 963000; and interviewed two operators and a radiation protection technician involved in the evolution.

b. Observations and Findings

On December 6, the inspectors observed that the radiation protection technician ensured that the workers and the inspectors were properly briefed and were in compliance with the radiation work permit and that they continuously monitored the radiation levels of the filter as it was transported to radwaste storage. The operators spread rags around the filter removal area to prevent any dripping fluid from contaminating the floor.

c. Conclusions

The inspectors concluded that the radiological precautions taken during the evolution were good.

R4.2 Unposted Radiation Area

a. Inspection Scope (71750)

The inspectors reviewed BwRP 5010-1, "Radiological Posting And Labelling Requirements," Revision 5, and observed radiological postings in the auxiliary building.

b. Observations and Findings

On January 2 the inspectors observed a posted radiation hot spot in the Unit 1 moderating heat exchanger room outside of a posted radiation area. The inspectors checked local radiation levels and verified that several parts of the room exceeded 5 mrem per hour. The licensee stated that the radiation area surrounding the room was de-posted when radiation levels decreased and that the technician had subsequently failed to post the door to the room as a radiation area. BwRP 5010-1 states "if an area exists which is accessible to personnel, and for which radiation levels exceed 5 mrem in any 1 hour at 30 centimeters from the source, then post "CAUTION, RADIATION AREA" signs at any entrance to the area."

c. Conclusions

The inspectors concluded that the failure to post the Unit 1 moderating heat exchanger room as a radiation area was a personnel error. TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwRP 5010-1 and therefore, the failure to follow BwRP 5010-1 was a violation of TS 6.8.1a (50-456/457/96021-01g(DRP)).

R4.3 Failure of Security Guard to Follow Whole Body Frisking Procedures

a. Inspection Scope

The inspector observed security personnel using installed whole body frisking monitors contrary to requirements posted on the monitors. As a result of the observation the inspector reviewed BwRP 5822-8, "Operation and Calibration of the IPM-7/8 Whole Body Frisking Monitor," Revision 2. The inspectors also interviewed radiation protection personnel and security management.

b. Observations and Findings

On December 18, the inspectors observed a security guard not following posted requirements for exiting the auxiliary building. A security guard entered a monitor and caused an alarm condition. Upon receiving the alarm, the guard proceeded to the next machine for frisking. The guard continued to alarm the IPM-7/8 machines for a total of five times, two separate machines twice and a third machine once. At the time of the fifth alarm, radiation protection personnel arrived at the area and the guard reported the condition.

The guard was subsequently cleared by radiation protection personnel. The alarming condition was caused by naturally occurring radioactivity (radon gas). BwRP 5822-8, Step f.1.h.2, stated that upon causing an alarm condition, a second frisk must be performed at the same monitor and that radiation protection personnel must be contacted if the second frisk attempt results in an alarm condition. The security guard did not attempt to contact a radiation protection technician after alarming the monitor the second time.

c. Conclusion

The inspectors concluded from discussions with radiation protection and security management that the procedural requirement for using the IPM-7/8 monitors were not widely known and when radiation protection technicians were present they frequently told workers to try another monitor.

TS 6.8.1a requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Revision 2, Appendix A. TS 6.8.1a applies to BwRP 5822-8 and therefore, the failure to follow BwRP 5822-8 was a violation of TS 6.8.1a (50-456/457/96021-01h (DRP)).

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments

a. Inspection Scope (71750)

The inspectors observed physical security measures for access control to protected areas. The inspectors interviewed the security administrator and observed security personnel controlling access to protected areas. The inspector reviewed procedure BwAP 900-4, "Access Control," Revision 12.

b. Observations and Findings

On December 30, 1996, the inspector observed the searching of individuals authorized for unescorted access to protected areas. This observation included security personnel's monitoring of metal and explosive detectors, x-ray surveillance of hand carried items, and occasionally pat-down searches. The inspector also observed security personnel controlling access to the lake screen house which included the escorting of individuals from the main plant site to the lake screen house, the admission of individuals to the lake screen house protected area, and the admission of a vehicle to the lake screen house protected area. The inspector found the security administrator and security personnel knowledgeable of access control requirements.

c. Conclusions

The inspector concluded from discussions with radiation protection and security management that the procedural requirement for using the IPm-718 monitors were

The inspectors concluded that the security personnel observed performed their responsibilities in an expeditious and professional manner consistent with the requirements of BwAP 900-4 and the Station Security Plan. The inspector concluded that BwAP 900-4 was well written and provided clear instructions to the user.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on January 13, 1997. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

H. G. Stanley, Site Vice President
*T. Tului, Station Manager
W. McCue, Support Services Director
*R. Flessner, Site Quality Verification Director
*R. Byers, Maintenance Superintendent
*D. Miller, Work Control Superintendent
*T. Simpkin, Regulatory Assurance Supervisor
*H. Cybul, System Engineering Supervisor
*J. Meister, Engineering Manager
*R. Wegner, Operations Manager
*M. Cassidy, Regulatory Assurance - NRC Coordinator

* Present at Exit Meeting.

NRC

R. Lanksbury, Chief, Reactor Projects Branch 3
C. Phillips, Senior Resident Inspector
J. Adams, Resident Inspector
D. Rich, Resident Inspector

IDNS

T. Esper

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 61726: Surveillance Observations
IP 62703: Maintenance Observation
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92700: Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902: Followup - Maintenance

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-456/457/96021-01a	VIO	failure to follow procedure
50-456/457/96021-01b	VIO	failure to follow procedure
50-456/457/96021-01c	VIO	failure to follow procedure
50-456/457/96021-01d	VIO	failure to follow procedure
50-456/457/96021-01e	VIO	failure to follow procedure
50-456/457/96021-01f	VIO	failure to follow procedure
50-456/457/96021-01g	VIO	failure to follow procedure
50-456/457/96021-01h	VIO	failure to follow procedure
50-456/457/96021-02	VIO	ineffective corrective actions
50-456/457/96021-03	VIO	failure to comply with ASME Code

Closed

50-456/96009-05	IFI	Unit 1 main turbine control software failure
50-457/96005-00	LER	2A AFW pump auto started during surveillance
50-457/96006-00	LER	2A DG declared inoperable due to missed oil sample

Discussed

50-457/96009-03	NCV	exceeded TS 4.8.1.1.2 diesel fuel oil sample frequency
50-457/96009-04	NCV	inadequate procedure

LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DEHC	Digital Electro-Hydraulic Control
DG	Diesel Generator
GL	Generic Letter
HEPA	High Efficiency Performance Air
IFI	Inspection Followup Item
IMD	Instrument Maintenance Department
IR	Inspection Report
LER	Licensee Event Report
mrem	Millirem
NCTL	Nuclear Component Transfer List
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
RHR	Residual Heat Removal
SI	Safety Injection
SX	Essential Service Water System
TS	Technical Specification
TV/GV	Turbine Throttle and Governor Valves
UFSAR	Updated Final Safety Analysis Report
VIO	Violation
WR	Work Request