U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No:	50-155/96010(DRP)
Licensee:	Consumers Power Company
Facility:	Big Rock Point Nuclear Power Plant
Location:	10269 U.S. 31 North Charlevoix, MI 49720
Dates:	October 19 - November 29, 1996
Inspectors:	R. J. Leemon, Senior Resident Inspector C. E. Brown, Resident Inspector
Approved by:	Bruce L. Burgess, Chief Reactor Projects Branch 6

EXECUTIVE SUMMARY

Big Rock Nuclear Power Plant
NRC Inspection Report 50-155/96010

This routine inspection covered aspects of licensee operations, engineering, maintenance, and plant support.

Operations

- The inspectors observed good operator performance, pre-job briefings, and engineer support during the shutdown on October 23 and the startup on November 2, 1996. (Section O1.2)

- An Operations Supervisor (OS) directed that the inlet valve to the emergency condenser loop No. 1 be closed. The closure of the condenser inlet valve rendered the condenser loop inoperable. The OS did not recognize that the condenser loop was inoperable, and did not perform a procedurally required surveillance on the other emergency condenser loop. One example of a violation of NRC requirements was identified. (Section O2.1)

- The use of a procedure which did not ensure that modifications or repairs required for cold weather protection were completed prior to the onset of cold weather was considered to be a violation of NRC requirements. This was an inspector identified area of reoccurring weakness. (Section O2.2)

Maintenance

- A good safety focus was maintained when performing the packing adjustment and stopping the steam leak on loop No. 1 emergency condenser inlet valve (MO-7062). The steam leak was stopped by backseating the valve, which left the No. 1 emergency condenser in service so that it could perform its safety related function of cooling the reactor if needed. (Section M2.1)

- The inspectors identified that the licensee used an informal process to ensure that required surveillances were performed within the specified frequency. Several procedural weaknesses were also noted. The inspectors identified to the licensee that a monthly surveillance test on the reactor depressurization system had not been completed on schedule, and that the TS grace period would be exceeded the next day. As a result of the inspectors' questions, the licensee performed a review of past surveillances, and identified one example of a TS required monthly surveillance which had not been completed within its grace period. One violation was identified. (Section M3.1)

Engineering

- The inspectors concluded that the engineering analysis (EA) work sheet which determined the maximum torque value for reactor depressurization isolation valve packing gland nuts was adequate, based upon post maintenance test results. (Section E2.1)

- The licensee made operability determinations for a core spray isolation check valve and an emergency condenser loop which were subsequently reversed after review of the applicable portions of the FHSR. The inspectors considered these events to be indicative of a weakness in the licensee's use of the FHSR. (Section E3.1)

Plant Support

- Two contractor workers in the decontamination facility unnecessarily contaminated themselves and previously uncontaminated portions of the plant. The workers also fouled a fire barrier, and compensatory measures were not established within the required time. Two violations were identified. Licensee control of contractor activity had been identified in previous NRC inspection reports as an area of concern. (Section R4.1).

Report Details

Summary of Plant Status

The plant was operated at full power from the beginning of the period until it was shutdown on October 23, 1996, while the licensee verified that safety related electrical equipment in the containment would operate in a postulated post accident environment. The licensee restarted the plant on November 2, and paralleled the generator to the grid on November 3. Full power was attained on November 7, and the unit remained at power for the duration of the inspection period. The outage lasted 10 days and 19 hours.

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 conduct of operations was professional and performed in a safety-conscious manner, except as discussed in section O2.1. Specific events and findings are detailed in the sections below.

O1.2 Startup and Shutdown Observations

a. Inspection Scope

The inspectors evaluated the licensee's activities during startup and shutdown using inspection module 71707, direct inspector observation, and conversation with plant personnel.

b. Observations and Findings

On October 23, 1996, the inspectors observed licensee staff perform shutdown activities. The licensee performed a thorough crew briefing prior to the start of the shutdown. This briefing covered the reason for the shutdown, the expected plant responses during the shutdown, and the plant cool down rate to be established following the shutdown. On November 2, the licensee restarted the plant after an extensive and thorough reactivity briefing. Reactor criticality was achieved within three control rod notches of the predicted position, as desired.

Both the shutdown and the startup were characterized by clear operator communications, including the use of "repeat backs." Reactor engineering provided attentive and effective oversight, and ensured that the operators understood each reactivity evolution. Additionally, the reactor engineers advised the operators of every reactivity high-worth control-rod notch prior to an operator manipulating the affected rod so that the operator could keep the reactor period (rate of change of reactor power) within expected limits.

The shift supervisors maintained effective control over both the shutdown and the startup evolutions, and the operators used the appropriate procedures and control rod pull sheets.

c. Conclusion

The inspectors observed good operator performance, pre-job briefings, and engineer support during the shutdown on October 23 and the startup on November 2, 1996.

02 Operational Status of Facilities and Equipment

02.1 No. 1 Emergency Condenser Loop Inlet Valve (MO-7062) Closed

a. Inspection Scope

The inspectors reviewed the licensee's response to a packing leak on the No. 1 emergency condenser loop inlet valve (MO-7062).

The inspectors held discussions with the shift supervisor, control room operators, and engineers. The inspectors also reviewed station logs, daily orders, technical specifications (TS), the final hazards summary report (FHSR), and emergency condenser system (ECS) work order (WO) No. 12612275.

b. Observations and Findings

On November 7, 1996, with the unit at power, the licensee adjusted the valve stem packing nuts for MO-7062 in an attempt to stop a valve stem steam leak. The packing nuts were torqued to the maximum allowed value of 37 foot pounds; however, the steam leak continued. The operations supervisor (OS) then made the decision to close valve MO-7062 in an effort to reduce the stem leakage. The OS subsequently told the inspectors that he believed that MO-7062 would automatically reopen on an emergency signal, and that the safety function of MO-7062 was therefore not affected by the decision to close it. Based on this assessment, the OS considered the emergency condenser loop No. 1 to be operable.

FHSR section 6.8.2 contained the following discussion on the operation of the emergency condenser: "The motor operated inlet valves are normally open during power operation and the motor operated outlet valves open in about 9 seconds and the system is in full operation within 20 to 30 seconds. In the event that one tube bundle is isolated, the operable tube bundle will operate as described within 30 seconds. However, the motor operated inlet valve on the isolated loop requires about 31 seconds to open, thus the isolated, but serviceable, loop would come into service to remove decay heat in about 31 seconds as opposed to the 30 second minimum established for an operable loop. In the event one tube bundle is isolated but serviceable and the inlet valve is closed, AC power would be required to open the inlet valve, thus, on loss of station power only the outlet valve would open automatically and

no steam flow would occur in this loop." The motor operator for MO-7062 was powered from a non-safety related 480 VAC bus. Isolation of a leaking tube bundle loop was authorized by the TS.

On November 8, the site head senior engineer was informed that MO-7062 was closed. The head senior engineer recognized that closing MO-7062 rendered emergency condenser loop No. 1 inoperable, as discussed in USR section 6.8.2. The licensee promptly reopened MO-7062, returning emergency condenser loop No. 1 to an operable status, and wrote condition report (CR) C-BRP-96-974, "MO-7062 Declared Operable in the Closed Position." Valve MO-7062 was in the closed position for 22 hours and 39 minutes.

Procedure SOP-6, Volume 3, "Emergency Condenser System," Revision 154, step 2.2.b stated, "if one loop of the emergency condenser becomes inoperable, an operability test of the outlet valve on the other loop must be successfully completed within 1 hour."

The OS who directed that MO-7062 be closed told the inspectors that he had not tested the outlet valve on emergency condenser loop No. 2 because he considered emergency condenser loop No 1 to be operable. The inspectors considered the failure to perform the operability test required by SOP-6, to be a violation (50-155/96010-01(DRP)) of TS 6.8.1.

c. Conclusion

An Operations Supervisor (OS) directed that the inlet valve to the emergency condenser loop No. 1 be closed. The closure of the condenser inlet valve rendered the condenser loop inoperable. The OS did not recognize that the condenser loop was inoperable, and as a result, did not perform a procedurally required surveillance on the other emergency condenser loop. One example of a violation of NRC requirements was identified.

O2.2 Cold Weather Preparation (71714)

a. Inspection Scope

The inspectors used inspection procedure 71714 to review the licensee's preparations for protection of safety-related systems from extreme cold weather. The inspection included a review of procedure O-VAS-1, "Cold/Warm Weather Checklists," revision 18; walkdowns of affected systems; and interviews with operations and maintenance department personnel.

b. Observations and Findings

The inspectors noted that the operators had completed all sections of O-VAS-1 for cold weather on October 25, and the operations manager had reviewed and signed the procedure on October 28, 1996. The inspectors performed walkdown verification that all the steps had been completed as directed.

The inspector also reviewed O-VAS-1 to ensure the correction of the following weaknesses which had been identified in Inspection Report 50-155/95011:

1) The checklist only required that work orders for needed work had been submitted, it did not require that the work was actually completed prior to certifying the plant as ready for cold weather.

2) The checklist did not require verification that cold weather protective measures had been re-established on all systems that had received maintenance during the past year, nor did it require that proposed modifications to correct or enhance freeze protection had been accomplished.

3) The procedure did not require that outstanding work requests on affected systems be closed before signing the checklist as being complete. The failure to compete an outstanding work order on the stack gas monitoring system was the root cause for a previous violation (IR 155/93021-01).

The inspectors found that Revision 18 of O-VAS-1 included a change to ensure that Maintenance had completed and signed for all work orders issued for performance of the checklist steps. However, the inspectors concluded that the procedure did not provide qualitative or quantitative criteria to ensure that required modifications or repairs were verified as complete, or otherwise dispositioned, prior to certification that the plant was prepared for cold weather. Continued use of a procedure which did not adequately ensure that required freeze protection measures were completed prior to the onset of cold weather was considered to be a violation (50-155/96010-02(DRP)) of 10 CFR 50, Appendix B, Criterion V.

O-VAS-1, Attachment 2, "Cold Weather Checklist," required that the waste-hold-tank (WHT) overflow-line heat tapes be placed in service by checking that the supply breaker was closed and that the local indicator light under the WHT was on. An operator closed the supply breaker, but the indicating light did not come on. The operator verified that the heat tapes were producing heat, noted the discrepancy on the check list, and submitted work request (WR) No. 113742 to repair the local indicating light on October 19, 1996. The shift supervisor (SS) ensured that WR No. 113742 was listed in section 6.0, "Reviews," of O-VAS-1 and signed the procedure off as reviewed on October 25, 1996. The operations manager signed the procedure off on October 28, 1996, before the indicating light had been repaired.

The inspector interviewed work control center personnel to determine the status of WR No. 113742. The interviews and a review of WR history revealed that WR No. 113742 had been canceled because it duplicated the intent of WR No. 111575, repair local heat-tape indicating lights, submitted on February 6, 1996. Actual work on WR [illegible] was scheduled to start on November 13, after O-VAS-1 was signed off as complete.

Although the safety-consequences of the local indicating light not operating were small (other means are available to ensure the heat trace tapes are operable), the inspectors considered this example to be illustrative of the need to review and disposition open freeze protection related work requests.

c. Conclusion

The use of a procedure which did not ensure that modifications or repairs required for cold weather protection were completed prior to the onset of cold weather was considered to be a violation of NRC requirements. This was an inspector identified area of reoccurring weakness.

O2.3 Housekeeping - Plant Tours

During plant tours, the inspectors noted that housekeeping was good. Cleanliness was maintained and passageways were kept clear. The inspectors reported small discrepancies, such as an unattended ladder, to the shift-supervisor (SS), who had them promptly corrected. However, one exception was noted. Three full 55-gallon barrels were left next to the post-incident test tank inside containment for more than a week after the inspectors had informed the SS about the seismic concerns involving the barrels. The barrels could have damaged recirculation pump isolation valve instrumentation during a seismic event. After a week, the inspectors talked to another SS and the assistant plant manager who had the barrels moved.

The inspectors noted that several lights were out in containment and verified that work requests had been submitted for each light. The inspector concluded that the operators were effectively maintaining housekeeping.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62703) (61726)

The inspectors observed all or portions of the following work activities:

Maintenance Activities

- work order (WO) RWS 12612094: install resin transfer pathway
- WO RWS 12612151: install resin transfer piping
- WO SPS 12511883: inspect, repair circuit breaker 052-1E15
- WO EPS 12612145: repair emergency light unit No. 31
- WO EPS 12612143: repair emergency light unit No. 32
- WO MBE 12611793: repair overhead lighting

- WO MBE 12612892: repair third floor lighting
- WO SPS 12611938: periodic test electrical breaker 052-1A55
- WO SPS 12611939: periodic test electrical breaker 052-2A23
- WO MSS 12612329: adjust turbine bypass isolation valve (MO-7067) packing leak
- WO RDS 12612328: adjust reactor depressurization isolation valve "D" (CV-4183)packing
- WO ECS 12612287: adjust emergency condenser loop #1 inlet valve (MO-7062) packing

Surveillance Activities

- T30-01: monthly reactor protection system test at power
- OTGS-1: master checklist (for startup, shutdown, etc.)
- ORDS-7: reactor depressurization channel test, plant shutdown
- TSD-01: fire pump operating characteristics
- OVAS-1: cold/warm weather checklist
- TR-43: shutdown margin check
- T30-34: fire protection surveillance
- T30-14: core spray heat exchanger leak test
- T7-18: turbine bypass valve test

b. Observations and Findings

Maintenance activities were normally thorough and satisfactorily performed. All observed work was performed with the work package present and in active use. Supervisors and system engineers monitored job progress, and appropriate radiation control measures were in place. When questions arose or problems were encountered, the workers stopped the activity and discussed the problems with management. Management then devised action plans to resolve the problems. Examples were the packing adjustment on the emergency condenser inlet valve (MO-7062), and the galled test tee on the vent line for differential pressure indication and switch (DPIS-7814). In addition, see M2 and M3 below for specific discussions of maintenance activities observed.

c. Conclusion

All inspector observed maintenance and surveillance activities were correctly performed and accurately documented.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Second Attempt to Tighten Packing on Loop No. 1 Emergency Condenser Inlet (MO-7062)

a. Inspection Scope

The inspectors observed the interactions between licensee management and maintenance, engineering and operations personnel in resolving the

problem leaking valve stem packing on loop No. 1 emergency condenser inlet valve (MO-7062).

b. Observations and Findings

On November 27, 1996, for a second time, the licensee attempted to tighten the packing on loop No. 1 emergency condenser inlet valve (MO-7062). The first attempt was on November 07, 1996, (reference section O2.1 of this report). The original torque value specified for the packing gland nuts was 37 foot-pounds. During this second effort, the packing gland was torqued to 60 foot pounds on one nut and 37 foot pounds on the other nut. One side of the packing gland, even though it was level, did not tighten up.

The licensee held discussions with the packing manufacturer who recommended leaving the valve on its backseat. The valve was torqued into the backseat with 70 foot pounds of force, an acceptable value as calculated by the system engineers. The licensee then tightened the packing, and the valve was stroke tested electrically. The valve closed and opened within the required stroke times. The licensee then retorqued the valve into its backseat at 70 foot pounds, and the steam leak stopped. The valve was declared inoperable, but because it was open, the tube bundle remained operable.

c. Conclusion

The licensee maintained a safety focus when working through the problem of the packing stem leak on loop No. 1 emergency condenser inlet valve (MO-7062). The licensee stopped the steam leak by backseating the valve. This left the No. 1 emergency condenser in service so that it could perform its safety function.

M3 Maintenance Procedures and Documentation

M3.1 Review of Licensee Scheduled and Completed Surveillance Tracking System

a. Inspection Scope

The inspectors reviewed the licensee's surveillance scheduling and tracking system to determine if surveillances had been completed within the required time frames. The inspectors reviewed: the operation's periodic test board from 1994, 1995, and 1996; selected microfiche records of completed and non-completed surveillances; administrative procedures; plant check sheets; a temporary change to O-TGS-1 "Master Checklist," part B, section 3; condition report (CR) C-BRP-96-865 "Violation of Technical Specification Surveillance;" and licensee event report (LER) 96-011, "Technical Specification Surveillance Requirement Inadvertently Surpassed." The inspectors also held discussions with plant personnel.

b. Observations and Findings

A ground problem on Reactor Depressurization System (RDS) "B" (reference inspection report 50-155/96008(DRP)) led the inspectors to perform an evaluation of the licensee's program for monitoring the completion of surveillance tests. Observations and findings are discussed below.

Periodic Test Board

The licensee used a periodic test board to track the status of surveillance tests. This board listed each required surveillance in a row type format, and had columns for each scheduled performance of the surveillance. The shift supervisor (SS) entered the date that the surveillance was completed on the periodic test board, or a notation why it wasn't completed. There was no formal process to ensure that surveillances which were not completed as scheduled were subsequently completed within the required frequency.

Skipped Surveillances Not Adequately Tracked

On September 19, 1996, the inspectors determined that the TS required surveillance on RDS channel "A" had not been completed within the required 30-days, and would be outside its 25% grace period margin (allowed by TS 1.1.4) the following day. The inspectors notified the licensee, and the surveillance for RDS channel "A" (procedure T30-59) was completed that day, within the grace period.

T30-59 "Reactor Depressurization System Test at Power," was a monthly test that the licensee performed on one of four channels each week. When the plant was shutdown, the periodic test board was marked "SD" (shutdown) for the channel to be tested that week. When the plant was re-started, the channel surveillance scheduled for the week of startup was performed. Performing post-scheduled T30-59 surveillances for channels marked "SD" on the periodic test board was not always considered. This was the case with RDS channel "A" discussed above.

The licensee performed a review of the periodic test boards for 1994, 1995, and 1996 (through September), and a review of selective microfiche records. The inspectors performed a parallel review of this material. The licensee determined that in March 1994 the monthly surveillance T30-59 surveillance for RDS channel "C" was not completed until the 61st day. This occurred with the unit at power. The RDS channel "C" had passed its next surveillance test. The licensee initiated C-BRP-96-865 "Violation of Technical Specification Surveillance Requirements," and wrote a LER. The failure to perform the RDS channel "C" surveillance was a violation (VIO 50-155/96010-03) of Technical Specification 11.4.1.5.

Procedural Weaknesses

The inspector identified a weakness in the startup check list O-TGS-1 "Master Check List," revision 92, part B, section 3 - "Preliminaries-Putting Unit In-Service," in that step 1 stated "Check Periodic Test Board Completed as Required." There was no criteria provided as to which surveillances had to be shown as complete on the test board. In the inspector identified case involving RDS train "A" discussed above, the need to perform a surveillance marked "SD" was not identified by the operator who completed startup check list O-TGS-1.

O-TGS-1 contained a step to verify RDS surveillances prior to start-up. This step referenced O-RDS-07, the test procedure for shut-down conditions. O-TGS-1 stated that if O-RDS-07 had been completed within the last 90 days, it need not be done, and the step requiring its performance was to be marked N/A. O-TDS-1 did not reference T30-59, so if the plant was being returned to power following a short outage, the monthly surveillance requirement for the RDS, when operating, was not clearly identified.

Licensee staff used green dots on the periodic test board to indicate which surveillances were not required to be performed when shutdown. These surveillances were the ones which were found to be marked SD. However, procedure 2.12, "Operation's Documents," step 5.7, Periodic Test Board, did not address this process.

Use of Grace Periods

Some of the scheduled dates for completion of surveillances, as identified on the periodic test board, exceeded the TS specified frequency. The inspectors were informed that the licensee preferred to perform monthly surveillances on the same day of the same week each month (e.g. third thursday of each month). Because of the uneven number of weeks in a month, this scheduling method resulted in the potential scheduling of a monthly surveillance 35 days after the previous performance of that surveillance. The inspectors were concerned about the appropriateness of this use of grace period. The inspectors also noted that scheduled surveillances which used grace period (e.g. 30 day surveillance scheduled for completion on the 34th day) were not highlighted on the board. This made it difficult to determine whether a surveillance performed several days after it's scheduled date was within or outside the TS grace period.

Additional Observations

Surveillances which were not completed when scheduled on the test board were not highlighted or tracked on the board in any manner. There appeared to be no follow-through for surveillances that were not completed. There was no overview system for completed surveillances, and only a yearly management audit of the system was performed.

The inspectors concluded, and the licensee subsequently acknowledged, that skill of the craft was being relied upon as a final barrier to ensure that the RDS surveillance requirements were up to date.

The inspectors found that the process for retrieval of completed surveillances was very time consuming. Surveillance procedures were maintained on microfiche and there was no hardcopy index for the records. A computer system was used to determine the film cartridge number that the record was stored on. The inspectors were concerned that this process impeded plant staff in their efforts to track and trend surveillance results.

The inspectors concluded that the periodic test board was a poor record of the completion of required surveillances because it was not well defined in procedures, not well controlled in terms of data entry, not independently verified, and not maintained as a quality record after use. Despite these problems, plant staff made extensive use of the board because of the difficulty in tracking the individual procedures which were the quality record of completed activities.

Licensee Response to Inspectors' Observations

The inspectors informed the licensee of their findings regarding skipped surveillances not being adequately tracked. In response, the licensee made a temporary change to O-TGS-1 "Master Checklist" part B, section 3, step 42.b. This change stated, "Perform O-RDS-7, reactor depressurization system channel test with the plant in shutdown, on any RDS channel that was not tested in accordance with T30-59, RDS channel test at power, while the plant was shutdown. This step is not applicable if the RDS channels are being tested in accordance with T30-59 and the surveillance tests are current."

The licensee reviewed condition reports related to surveillance intervals not being met, and identified the following five examples of CRs written within the last three years:

- UPS batteries exceeded TS specified surveillance period, a LER had been submitted.

- T30-59 for "A" RDS train performed in 37 versus 30 days (completed within 25 percent margin).

- T30-59 for "C" train exceeded TS specified surveillance period, a condition report and a LER were written.

- UPS batteries performed in 36 days versus 30 days (completed within 25 percent margin).

- Chemistry 90 day sampling requirement performed in 92 days versus 90 days (completed within 25 percent margin).

c. Conclusion

The inspectors identified that the licensee used an informal process to ensure that required surveillances were performed within the specified frequency. Several procedural weaknesses were also noted. The inspectors identified to the licensee that a monthly surveillance test on the reactor depressurization system had not been completed on schedule, and that the TS grace period would be exceeded the next day. As a result of the inspectors' questions, the licensee performed a review of past surveillances, and identified one example of a TS required monthly surveillance which had not been completed within its grace period.

II. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Engineering Evaluation to Increase Torque Value for Packing Nuts on RDS Isolation Valves

a. Scope

The inspector reviewed the engineering analysis (EA) work sheet for the evaluation of the maximum torque value for reactor depressurization isolation valve packing gland nuts.

b. Observations and Findings

The EA documented an evaluation of the maximum torque limit for the packing gland follower nuts on the RDS (Anchor Darling) isolation valves. The original torque specification for the packing gland follower nuts was 41 foot-pounds. The licensee wanted to tighten the packing gland nuts in order to stop packing gland leakage of primary coolant, and to prevent potential valve stem damage. Calculations were performed by the system engineers to keep the theoretical stem load below the force applied by the heavy springs which opened the valves on a RDS actuation. The evaluation determined that increasing the packing loading, without compromising valve stroke timing, was possible. The EA changed the gland follower nut torque valve from 41 foot-pounds to 180 foot-pounds. The analysis concluded that an increase of torque up to 180 foot-pounds would still permit valve RDS "D" CV-4183 to stroke freely.

On November 19, 1996, the packing gland follower nuts were torqued to 120 foot-pounds, which stopped the steam leak. Valve stroke time testing was accomplished per T90-07, "RDS Isolation Valve Test Operate at Power." The stroke time criteria of less than 4 seconds to open and less than 8 seconds to close were met.

c. Conclusion

The inspectors concluded that the engineering analysis (EA) work sheet which determined the maximum torque value for reactor depressurization isolation valve "D" packing gland nuts was adequate, based upon post maintenance test results.

E3 Engineering Procedures and Documentation

E3.1 Licensee Operability Evaluations

a. Scope

The inspectors reviewed the related FHSR sections, held discussion with plant staff, and reviewed station logs to determine the appropriateness of two licensee operability evaluations.

b. Observations and Findings

Because of incomplete reviews of the FHSR, the licensee made poor operability calls on the following two occasions:

1) On August 27, 1996, (reference IR No. 50-155/96006, section M3.1) the shift supervisor (SS), after discussion with management, declared VPI-303 (core spray to fire water system isolation check valve) operable, despite a failed surveillance test. The surveillance test specified no allowable leakage, but a small amount of leakage past the valve had been found.

FHSR Section 5.2.5.3.9, "Inter-system Leakage Detection" stated "Three systems interfacing with the reactor coolant pressure boundary (RCPB) at Big Rock Point are of concern and are monitored for signs of leakage: 1) Liquid Poison System, 2) Core Spray/Fire System, and 3) Shutdown Cooling System."

The FHSR stated "Leakage to the core spray system is monitored by "tell-tale" lines installed between the motor operated valves in both core spray lines. Leakage from these "tell-tales" is monitored by auxiliary operators during bi-hourly rounds. Additionally, during monthly core-spray valve operability tests, leakage from these "tell-tales" is checked to ensure proper valve closure."

Later on August 27, the Plant Review Committee (PRC) determined that VPI-303 had to function as an inter-system LOCA valve as well as a backup core spray system check valve, based upon the FHSR sections referenced above. The PRC then declared the valve inoperable because of the observed leakage.

2) On November 7, 1996, the licensee closed and left closed emergency condenser loop No. 1 inlet valve (MO-7062) in hopes of reducing a valve stem packing leak (see section O2.1). The FHSR clearly stated that the motor operator for the inlet valve was supplied with non-vital power,

and that an isolated emergency condenser loop would not perform its safety function if the inlet valve was closed. The OS who directed that MO-7062 be closed did not review the FHSR, and was not familiar with the referenced portion of the FHSR. As a result of this failure to review the FHSR, the OS incorrectly classified the isolated emergency condenser loop as being operable. This error was identified the following day, and the inlet valve was opened, returning the emergency condenser loop to an operable status

c. Conclusion

The licensee made operability determinations for a core spray isolation check valve and an emergency condenser loop which were subsequently reversed after review of the applicable portions of the FHSR. The inspectors considered these events to be indicative of a weakness in the licensee's use of the FHSR.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 General Comments

Using Inspection Procedures 71707 and 71750, the inspectors made frequent tours of the radiologically protected area (RPA) and discussed specific radiological controls with the ALARA coordinator and various radiation protection (RP) technicians. The inspectors observed plant conditions and licensee performance including radiation protection practices, and the compensatory measures taken by the licensee when radiation monitors were out of service.

The inspectors concluded that the licensee was following good ALARA and radiation protection practices and performed the required compensatory measures when radiation monitors were out of service.

R4 Staff Knowledge and Performance in Radiological Protection and Chemistry Controls

R4.1 Personnel Contamination of Contractor Employees

a. Inspection Scope (71750)

The inspectors investigated the contractor and radiological controls that were in effect during a self-disclosing personnel contamination event involving contracted workers. The following documents were reviewed:

- Administrative Procedure (AP) 3.2.3, "Control of Offsite Groups Performing Maintenance Activities," Rev 4
- AP 4.2.7, "Contracted Services," Rev 7

- AP 4.4.7, "Fire Prevention Activities," Rev 7
- AP 5.5, "Radiation Work Permit," Rev 7
- LER 50-155/96005, "Fire Barrier Breach"
- LER 50-155/96006, "Fire Barrier Door Blocked by Ladder"
- LER 50-155/96009, "Fire Barrier Breached by Air Hose"

Additionally, the inspectors interviewed the health physics manager, the ALARA coordinator, and the contractor foreman.

b. Observations and Findings

During a plant tour on August 5, 1996, the inspectors observed two contractor personnel working on a contaminated pump in the plant decontamination facility (DCF). The inspectors also observed a radiation protection (RP) technician providing periodic coverage and assistance for the work. The inspectors again observed the workers in the DCF on the morning of August 7 but did not observe an RP technician or contract coordinator with the workers during the tour. Later that day, the RP manager informed the inspectors that the two workers had been unable to pass through the personnel monitors (PCM-1Bs) when attempting to exit the radiologically controlled area (RCA).

The two workers had attempted to self-frisk and decontaminate areas on their clothing several times; however, the PCM-1Bs still alarmed for contamination on multiple areas of their bodies and clothing. Their escort (a licensee security guard) then called for an RP technician to come to access control to assist the contract workers. The RP technician assessed the situation and notified his management, who took charge and directed further survey and decontamination efforts. Whole body counts of the two workers revealed that one of the workers had a contamination uptake (less than the action level of 100 nano-curies). The RP manager restricted the two workers from access to the RCA.

The inspectors independently interviewed the contractor supervisor, the ALARA coordinator, and RP technicians to determine the facts surrounding this occurrence. The inspectors determined that the contractor supervisor had assigned the two workers to continue to repair the pump that they had been working on in the DCF the previous day. The ALARA coordinator, thinking they were going to be preparing for cleaning the resin dump tank room, had authorized the workers to use a general radiation work permit (RWP). The workers then signed in on the general RWP and proceeded to enter the DCF. The ALARA coordinator, who was also filling in for the contractor coordinator, later found the two contract workers attempting to test run the pump with air supplied from a hose run through a fire door and across a contamination boundary. The ALARA coordinator stopped the work and told the two workers to clean up the area and exit from the RCA at that time. Neither the contract workers

nor their escort had recognized that the hose was blocking the fire door. Additionally, there had been no RP coverage of the job during the time that the workers were working on the pump. Their actions had resulted in contaminating the area outside the contamination boundary to about 3000 disintegrations per minute (dpm)).

The inspectors determined that the two contractor workers had unnecessarily contaminated themselves and previously clean plant areas as a result of the use of poor contamination control practices and inadequate RP oversight. The failure to conform to proceduralized radiological protection program requirements was considered to be a violation (VIO 50-155/96010-04) of Technical Specification 6.11.

The licensee determined that the fire barrier blocked by the airline was non-functional for approximately three hours. Rendering a fire barrier non-functional without implementing compensatory measures was considered to be a violation (VIO 50-155/96010-05) of Technical Specification 12.3.7.12.

The NRC had previously identified concerns with the plant's contractor control program in IR 50-155/95012. That report documented cases where a contractor worker cut a power cable with a backhoe, a contractor spilled contaminated resin in a secondary enclosure, and a contractor improperly assembled a dual-basket strainer in the supply to core spray. In response to the NRC concerns, the licensee had committed to providing enhanced training to contractors (above that normally given in general employee training).

c. Conclusion

Two contractor workers in the decontamination facility unnecessarily contaminated themselves and previously uncontaminated portions of the plant. The workers also fouled a fire barrier, and compensatory measures were not established within the required time. Two violations were identified. Licensee control of contractor activity had been identified in previous NRC inspection reports as an area of concern.

S1 Conduct of Security and Safeguards Activities

S1.1 Security (71750) (71707)

The inspectors monitored the licensee's security program, during routine activities and tours, to ensure that the approved security plan was being implemented. The inspectors noted that persons within the protected area displayed proper photo-identification badges, and those individuals requiring escorts were properly escorted. The inspectors also observed that personnel and packages entering the protected area were searched by appropriate equipment or by hand.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the results of this inspection to members of licensee management on December 06, 1996. The licensee acknowledged the findings presented.

The licensee did not identify any of the documents or processes reviewed by the inspectors as being proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Donnelly, Plant Manager
R. Addy, Assistant Plant Manager
S. Beachum, Systems and Project Engineering Manager
K. Pallagi, Chemistry/Health Physics Manager
L. Darrah, Operations Supervisor
D. Hice, Maintenance Manager
G. Withrow, Plant Safety and Licensing Director

INSPECTION PROCEDURES USED

IP 37551:	Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 61726:	Surveillance Observations
IP 62703:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities

ITEMS OPENED and CLOSED

Opened

155/96010-01	VIO	MO-7062 closed without SOP-6 actions performed
155/96010-02	VIO	cold/warm weather checklist sign off
155/96010-03	VIO	failure to perform surveillance
155/96010-04	VIO	poor contamination practices
155/96010-05	VIO	fire barrier non-functional

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
AO	Auxiliary Operator
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
FHSR	Final Hazards Summary Report
IFI	Inspection Followup Item
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
NCV	Non-Cited Violation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
RDS	Reactor Depressurization System
RP	Radiation Protection
RPA	Radiologically Protected Area
SS	Shift Supervisor
TS	Technical Specification
URI	Unresolved Item
VIO	Violation
WO	Work Order