

APPENDIX
U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-285/83-13

License: DPR-40

Docket: 50-285

Licensee: Omaha Public Power District
1623 Harney Street
Omaha, Nebraska 68102

Facility Name: Fort Calhoun Station

Inspection At: Fort Calhoun Station, Blair, Nebraska

Inspection Conducted: May 1-31, 1983

Inspector: LA Yandell 6/10/83
L. A. Yandell, Senior Resident Reactor Inspector Date

Approved: WD Johnson 6/14/83
W. D. Johnson, Chief, Reactor Project Section C Date

Inspection Summary

Inspection Conducted May 1-31, 1983 (50-285/83-13)

Areas Inspected: Routine, announced inspection of operational safety verification, startup testing, surveillance testing, maintenance activities, followup of written reports of nonroutine events, followup of violations, and followup of NUREG 0737 (TMI) items. The inspection involved 92 inspector-hours onsite by one NRC inspector.

Results: Within the seven areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

- *K. J. Morris, Manager, Administrative Services
- *P. M. Surber, Section Manager, Generating Station Engineering
- *R. L. Jaworski, Section Manager, Technical Services
- *M. C. Winter, Manager, Quality Assurance
- *W. G. Gates, Manager, Fort Calhoun Station
- *J. K. Gasper, Manager, Reactor & Computer Technical Services
- J. J. Fluehr, Reactor Engineer
- M. R. Core, Supervisor, I&C and Electrical Field Maintenance
- G. R. Peterson, Supervisor, Maintenance
- A. W. Richard, Supervisor, Technical
- L. T. Kusek, Supervisor, Operations
- D. W. Dale, Senior QC Inspector

*Denotes attendance at the exit interview.

The NRC inspector also talked with, and interviewed, other licensee employees during the inspection. These employees included licensed and unlicensed operators, craftsmen, engineers, and office personnel.

2. Operational Safety Verification

The NRC inspector performed activities as described below to ascertain that the facility is being maintained in conformance with regulatory requirements and that the licensee's management control system is effectively discharging its responsibilities for continued safe operation.

- a. The NRC inspector made several control room observations to verify proper shift manning, operator adherence to approved procedures, adherence to selected Technical Specifications, and operability of the reactor protective system. Selected logs, records, recorder traces, annunciators, panel indications, and switch positions were reviewed to verify compliance with regulatory requirements. The licensee's equipment control was reviewed for proper implementation by reviewing the maintenance order and tag-out logs, and by verifying selected safety-related tag-outs. Several shift turnovers were observed and shift turnover sheets were reviewed during this inspection period.
- b. The NRC inspector toured the plant at various times to assess plant and equipment conditions. The following items were observed during these tours:
 - . general plant conditions
 - . vital area barriers not degraded or appropriately manned by security personnel

- . adherence to requirements of radiation work permits (RWPs)
 - . proper use of protective clothing and respirators
 - . plant housekeeping and cleanliness practices including fire hazards and the control of combustibile material
 - . work activities being performed in accordance with approved activities
 - . physical security
 - . HP instrumentation is operable and calibrated
- c. The NRC inspector verified operability of the following safety-related systems by performing a walkdown or switch verification of the accessible portions of the system:
- . 125 Volt DC System per Checklist EE-3-CL-A
 - . 120 Volt AC System per Checklist EE-4-CL-A
 - . High Pressure Safety Injection System per Checklist SI-1-CL-A

It was noted that Checklists EE-3-CL-A and EE-4-CL-A had been revised during the 1983 outage to incorporate recent changes, correct previous typo/administrative errors, and utilize a revised format that makes the checklists easier to perform.

The NRC inspector performed an indepth review of the High Pressure Safety Injection System (HPSI) to confirm that the system lineup procedures agree with the plant drawings (E-23866-210-130, Sheet 1 of 2, Rev. 21 and E-23866-210-130, Sheet 2 or 2, Rev. 19) and the as-built configuration. The Jumper Log and Annunciator Status Log were reviewed to ensure they reflected current conditions. Equipment and piping was inspected to verify hanger and support operability and to assess house-keeping practices in these areas. Checklist SI-1-CL-A was compared with Checklists RC-2B-CL-D, "Reactor Startup Locked Valves," and ES-1-CL-A, "Engineered Safeguards Controls," for consistency and the appropriate locked valves were verified in the proper position. Minor typographical errors were identified and discussed with the licensee.

- d. The NRC inspector reviewed Permit 83009 for a containment purge and verified that Technical Specification limits were being met. It was noted that the licensee was taking the appropriate samples and recording the required meteorological data, and that the automatic trip functions were tested prior to initiating the purge.

- e. The plant commenced a power reduction on April 29, 1983, to replace a failed RTD for Instrument Channel A/TI-122H. Other items of maintenance were planned and the plant anticipated being back online by Tuesday, May 3. While at hot standby, it was determined that the Pressurizer Mini-Spray Valve RC-133 had a broken packing follower stud. To correct this problem, the plant was shutdown and cooled down to 508°F and depressurized to 1200 psi to allow repairs. Following repairs, the plant was started up and placed back online at about 9 a.m., on May 5, 1983.

No violations or deviations were identified.

3. Startup Testing

The licensee completed startup physics testing for the Cycle 8 core in accordance with Special Procedure SP-PRCPT-1, "Post Refueling Core Physics Testing and Power Ascension." The NRC inspector reviewed the completed procedure, Sections F.1 through F.13, and verified that results were within the limits established in Appendix D to SP-PRCPT-1 and Amendment No. 70 to the facility operating license that was issued on March 15, 1983, by the NRC. As part of this evaluation, the NRC inspector reviewed the following supplementary information to address specific core parameters:

- a. Core Power Distribution Limits. The NRC inspector had the opportunity to review three incore flux maps taken at various times during power range testing to verify that core power distribution limits (specifically F_{IR} -total integrated radial peaking factor, F_{XY} -total planar radial peaking factor, Y_I -axial shape index, and linear heat rate) were within specifications. The NRC inspector reviewed Control Room Log FC-71 to verify that Y_I was within the acceptable limits of Technical Specification Figure 2-7, and that the Azimuthal Power Tilt did not exceed 0.03 above 70% rated power. OPPD utilizes an incore data analysis code that is qualified and maintained by the NSSS vendor. The NRC inspector discussed the licensee's procedures for using this code with the Manager, Reactor and Computer Technical Services and verified that proper controls are in effect.
- b. Incore/Excore Calibration. This calibration is accomplished by Surveillance Test ST-RPS-13, "Incore/Excore Calibration," which was performed at various power levels during power escalation. The NRC inspector reviewed three completed tests (two of which required recalibration) and verified that the tests were performed in accordance with the procedure, that data was recorded and processed properly, and that Technical Specification limits were met.
- c. Core Thermal Power Evaluation. Special Procedure SP-CTPC-1, "Core Thermal Power Calculation," is utilized to determine core thermal power. The NRC inspector reviewed two separate calculations performed, including the data sheets and the calculational work.

- d. Determination of Reactor Shutdown Margin. This determination is made using Surveillance Test ST-SDM-1, "Shutdown Margin Verification," which is performed on a daily basis. ST-SDM-1 refers to Technical Data Book, Section V.9 for the specific work sheets to be used. The NRC inspector reviewed several of these determinations and ensured that current Cycle 8 data as approved in Amendment No. 70 to the facility operating license was being used.
- e. Isothermal Temperature Coefficient. Section F.5 of SP-PRCPT-1 describes the procedure and data to be taken to determine isothermal temperature coefficient. The NRC inspector reviewed this procedure section and the calculation performed by Technical Services at Jones Street Station to verify the site results.
- f. Control Rod Worth Measurement. Sections F.6 through F.8 of SP-PRCPT-1 were performed to determine regulating CEA group worths and sequential group worths to confirm the predicted results from the Cycle 8 calculation. The NRC inspector reviewed these results and verified that they were within the acceptable limits established in Appendix D of SP-PRCPT-1.

No violations or deviations were identified.

4. Surveillance Testing

The NRC inspector witnessed portions of the following surveillance test activities:

- a. Diesel Start and Diesel Fuel Oil Transfer Pump (Prior to Startup) ST-ESF-6, F.1 for DG-1 and DG-2
- b. Auxiliary Feedwater (Monthly) ST-FW-1, F.3. The NRC inspector also reviewed ST-FW-1, F.1 which is a monthly, redundant valve lineup of the auxiliary feedwater system
- c. High Containment Pressure Channels (Monthly) ST-RPS-8, F.1 and ST-ESF-3, F.1

In the above surveillance tests the NRC inspector verified, where applicable, that:

- . testing was scheduled in accordance with Technical Specification requirements
- . procedures were being followed
- . calibrated test equipment was being used
- . qualified personnel were performing the tests

- . limiting conditions for operation were being met
- . test data were being accurately recorded

No violations or deviations were identified.

5. Maintenance Activities

The NRC inspector witnessed portions of the work performed on the following maintenance items:

- a. Maintenance Order (MO) 20220, "Feedwater Flow Control Valve." Feedwater Regulating Valve FCV-1101 had exhibited erratic behavior and excessive vibration at various times during startup testing. During a plant temperature change, as part of the Moderator Temperature Coefficient Test, valve operation became very erratic and the bypass valve had to be used to reestablish steady conditions. Both Feedwater Regulating Valves were newly installed during the 1983 outage and the valve manufacturer had been contacted to evaluate the problem. The licensee took advantage of the shutdown at the beginning of the month to make modifications to the valve. The NRC inspector verified that the MO was properly signed off, and that QC signoffs had been established. Detailed work instructions which contained the valve manufacturer's recommendations for remachining the valve plug, were attached to the MO and properly approved by the Plant Review Committee (PRC). The NRC inspector observed part of the machining on the valve plug and verified that Tag-Out 83-959 had been properly administered. Following plant startup, the valve was tested satisfactorily and has not experienced any vibration or erratic behavior since that time.
- b. MO 20306, "Pressurizer Mini-Spray Valve RC-133." During the same plant shutdown, it was discovered that Valve RC-133 had a broken packing follower stud. The NRC inspector reviewed the MO and noted that a PRC approved procedure had been developed and attached for performing the work. Appropriate QC hold points were established and the work was performed by a qualified craftsman. The NRC inspector verified that the work was tested satisfactorily prior to power operations.
- c. FC-79-190B/SRDCO 82-54, "Installation of Wide Range Noble Gas Monitor." This installation had been declared operational by the licensee during the 1983 outage and the NRC inspector wished to followup this TMI commitment (Item II.F.1.1) by reviewing the completed design package. At the time of this review, the package was still waiting to be submitted to the System Acceptance Committee (SAC) for the second time for final signoff. The following items were reviewed:
 - . Form E, "Modification Completion Report," signed off February 1, 1983, by the plant manager.

- . Form F, "Safety Related Design Change Order," dated November 4, 1982, identified the work to be done and contains signoffs by Quality Control, Operations Quality Assurance, and the plant manager. The approved, signed off work procedure was attached. Procedure Changes 9357, 9378, 9410, 9415, 9422, 10101, and 10104, were attached and the NRC inspector verified that they were properly signed off and entered. One procedure change called for a temporary jumper to be installed and for an entry to be made in the Jumper Log. The NRC inspector verified that the entry was made and closed out according to procedure requirements.
 - . Form H, "Pre-Installation Modification Control."
 - . Form I, "Post-Installation Modification Control."
 - . Form J, "Station System Acceptance," dated February 1, 1983. The system was not accepted with discrepancies and/or deficiencies noted on the form. Procedure Changes 9023, 9601, 9602, 9608, 9609, and 10196, were identified as required to be incorporated into the operating instructions. A list of eight other problems associated with the modification was attached to the form for consideration and resolution. The system was signed off by the PRC and declared operable by the licensee. The NRC inspector will followup the SAC meeting to verify that the items identified on this form have been resolved.
 - . "Test Procedure for Wide Range Radiation Monitors RM 063 L, M, and H." This procedure was PRC approved and signed off as completed, with appropriate procedure changes attached.
 - . Welding and Test Control Record for MO 10104.
 - . Completed Tag-Out Sheets 82-876 and 82-930.
 - . Copy of requisition from general stores for CQE material (cables) under Work Order No. 1906.
 - . Installation drawings.
- d. MO 20478, "Steam Generator Blowdown Tank." A leak was identified on the pipe between HCV-1390 and the tank. The NRC inspector reviewed the MO to ensure that it was properly filled out and approved, and he verified that a welding/grinding permit had been obtained, that a separate RWP had been issued for this job, and that the work was performed by qualified personnel. Tag-Out 83-1010 was issued for this MO and verified by the NRC inspector.

No violations or deviations were identified.

6. Followup of Written Reports of Nonroutine Events

- a. LER 82-16, "Axial Shape Index Negative Setpoint on RPS Channel B Drifted Out-of-Tolerance." Working under MO 15522, the licensee determined that a dirty contact on the "Flow Dependent Setpoint Selector Switch" had caused the negative setpoint to drift. The switch contact was cleaned and the setpoint was returned to allowable readings as verified by Surveillance Test ST-RPS-12, F.2, "Axial Power Distribution Channels Test." The NRC inspector reviewed this test and the subsequent test performed at the end of the outage to verify acceptable results. This item is closed.
- b. LER 82-17, "Failed Solenoids on Hydrogen Monitor VA-81A Containment Isolation Valves." This failure occurred as the system was going through final testing. The initial cause was thought to be failed solenoids that were designed for 125 Volts DC \pm 10%, but had experienced as much as 140 Volts DC during station battery equalizing changes. Investigation during the 1983 outage revealed that instead the Conax environmental seals had failed. The licensee has postulated that the elevated DC voltage caused the solenoids to heat up and fail the Conax seal. During the outage the Conax seals for the two valves were replaced and the solenoid valve circuitry modified to operate at a lower voltage to avoid the high temperature problems. The NRC inspector verified that the modifications had been installed and observed portions of the operability test on the valves. This item is closed.
- c. LER 82-18, "E/P Positioners on SI Valves Found to be Not Environmentally Qualified." During a design review the licensee had determined that the E/P positioners on SI Leakage Cooler Control Valves PCV-2909, 2929, 2949, and 2969, were not environmentally qualified and were subject to failure. This would have resulted in the valves going open due to instrument air leakage and providing a path for diverting part of the safety injection flow from the reactor during an accident. This was corrected during the recent outage under FC-82-140 by relocating the air supply on the E/P operator to ensure that the valve goes to the required accident position regardless of the E/P operator. The NRC inspector reviewed the design change package and observed the modification test procedure. This item is closed.
- d. LER 82-19, "Main Steam Isolation Valves." Main Steam Isolation Valves HCV-1041A and 1042A were called upon to shut but stopped three-to-four degrees off their seats. The problem appeared to be binding between the valve packing and shaft. The valve packings were sprayed with a penetrant oil and cycled satisfactorily. Operability was verified using Surveillance Test ST-ISI-MS-1, F.2, "Main Steam Valve Inservice Testing." This test was repeated at the end of the recent outage, and the NRC inspector verified that the test was properly conducted, the

results were satisfactory, and that proper QC review was performed. This item is closed.

- e. LER 82-20, "Main Steam Safeties With Lift Setpoints Out-Of-Tolerance." During outage testing, four-out-of-ten main steam safety valves had lift setpoints that were out-of-tolerance. The licensee committed to having one of the valves (MS 282) completely overhauled and the other three adjusted. The NRC inspector reviewed the completed Test Procedure ST-MSSV-1, F.1, "Main Steam Safety Valve Test," to verify that the three other valves had been adjusted and tested properly. The certified test report for MS 282 was reviewed and the certification on the OPPD test equipment (1566 Hydroset, Serial No. Y-645-2) was verified to be current. This item is closed.

7. Followup of Violations

Violation 8301-01. The licensee had failed to enter temporary jumpers into the jumper log as required by Surveillance Procedure ST-CONT-7, "Type A Test (Containment)." Standing Order O-25, "Electrical Jumpers Control," has been extensively revised to handle temporary jumpers and blocks. A separate, auditable sheet is used for each entry, with appropriate signatures required for better management control. The NRC inspector has reviewed the new log and verified that all required entries were transferred over from the old system. In addition, the NRC inspector has reviewed the entries and verified that the log is being used properly. This item is closed.

8. Followup on NUREG 0737 (TMI) Items

Item II.E.4.1, "Dedicated Hydrogen Penetrations." The licensee has provided the Dedicated Hydrogen Penetrations M30 and M69 in Room 59 in accordance with the requirements of NUREG 0737. This item was discussed and considered complete by R. A. Clark memo of August 14, 1981. OPPD Memo LIC-82-352 dated October 27, 1982, to the NRC identified how surveillance testing was to be performed on these penetrations. The NRC inspector has observed the hydrogen penetration installation and verified that Surveillance Test ST-CONT-3, "Containment Isolation Valves Leakage Rate Test-Type C," contains the procedure for testing these penetration isolation valves in accordance with Technical Specification requirements. This item is closed.

Item II.F.1.6, "Containment Hydrogen Monitor System." The Containment Hydrogen Monitor System was declared operational by the licensee on September 30, 1982. Just prior to the outage, two containment isolation valves became inoperable and the lines were capped to maintain containment integrity as discussed in NRC Inspection Report 82-32. The isolation valves were repaired during the recent outage and the NRC inspector observed portions of the final valve checkout. This item is closed.

9. Exit Interview

The NRC inspector met with licensee representatives on June 3, 1983, to summarize the scope and findings of the inspection.

INSPECTOR'S REPORT
Office of Inspection and Enforcement

(pg 2)

YANDELL, LAWRENCE A.
REVIEWER
JOHNSON, WILLIAM D.

INSPECTORS

LICENSEE/VENDOR	TRANSACTION TYPE	DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (12 digits)	REPORT		NEXT INSP. DATE	
			NO.	SEQ.	MO.	YR.
OMAHA PUBLIC POWER DISTRICT	X I - INSERT	05007285	8313	A		
	M - MODIFY			B		
	D - DELETE			C		
	R - REPLACE			D		

PERIOD OF INVESTIGATION, INSPECTION						INSPECTION PERFORMED BY		ORGANIZATION CODE OF REGION, HQ CONDUCTING ACTIVITY (See EMC 0530 "Manpower Reporting—Weekly Manpower Reporting" for code)		
FROM			TO			1 - REGIONAL OFFICE STAFF		OTHER		
MO.	DAY	YR.	MO.	DAY	YR.	2 - RESIDENT INSPECTOR		REGION DIVISION BRANCH		
						3 - PERFORMANCE APPRAISAL TEAM				

REGIONAL ACTION (Check one box only)	TYPE OF ACTIVITY CONDUCTED (Check one box only)			
1 - NRC FORM 591	02 - SAFETY	06 - MGMT. VISIT	10 - PLANT SEC.	14 - INQUIRY
2 - REGIONAL OFFICE LETTER	03 - INCIDENT	07 - SPECIAL	11 - INVENT. VER.	15 - INVESTIGATION
	04 - ENFORCEMENT	08 - VENDOR	12 - SHIPMENT EXPORT	
	05 - MGMT. AUDIT	09 - MAT ACCT.	13 - IMPORT	

INSPECTOR'S INVESTIGATION NUMBER (Check one box only)				TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS				ENFORCEMENT CONFERENCE HELD				REPORT CONTAINS 2790 INFORMATION				LETTER OF REPORT TRANSMITTAL DATE					
A	B	C	D	A B C D				A B C D				A B C D				NRC FORM 591 OR REG LETTER ISSUED		REPORT SENT TO HQ FOR ACTION			
																JUN 14 1983					

MODULE INFORMATION														MODULE INFORMATION													
REC. OR. NO.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSPECTION EFFORT IN STATE HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP				REC. OR. NO.	MODULE NUMBER INSP.				PRIORITY	DIRECT INSPECTION EFFORT IN STATE HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP					
TYPE	NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER					LEVEL	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	TYPE	NUMBER	PHASE	MANUAL CHAPTER					PROCEDURE NUMBER	LEVEL	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	0952	5543	B	A	001					B	1356	1706	B	A	001	100	C										
B	1057	2700	B	A	003	950		C		B	1456	1707	B	A	002	100	C										
B	1156	1702	B	A	003	100		C		B	1556	1708	B	A	001	100	C										
B	1256	1705	B	A	001	100		C		B	1656	1710	B	A	001	100	C										

* ONLY APPLICABLE TO VIOLATION OR DEVIATION