U.S. ATOMIC ENERGY COMMISSION

DIRECTORATE OF REGULATORY OPERATIONS

REGION I

RO Inspection Report No: 50-29/74-16 Docket No: 50-29

Licensee: Yankee Atomic Electric Company License No: DPR-3

20 Turnpike Road Priority:

Westborough, Massachusetts 01581 Category: C

Location: Rowe, Massachusetts 01367

Type of Licensee: PWR, 600 MWt(W)

Type of Inspection: Routine, Announced

Dates of Inspection: December 18-20, 1974

Dates of Previous Inspection: November 22, 1974

Reporting Inspector: J. Streeter, Reactor Inspector — 1/10/75 Date

Accompanying Inspectors: R. L. Spessard, Reactor Inspector — 1/10/75 Date

T. F. Westerman, Reactor Inspector — 1/10/75 Date

Date

Date

Date

Other Accompanying Personnel: NONE

Reviewed By: A. B. Davis, Senior Reactor Inspector — 1/10/75 Date

PWR Section, Reactor Operations Branch

SUMMARY OF FINDINGS

Enforcement Action

A. In violation of Technical Specification B.1., testing demonstrated the Low Pressure Safety Injection Pumps did not deliver flows comparable to those assumed in the safety analyses. (Detail 2)

B. In violation of Technical Specification E, a reactor trip setting on a main coolant low flow trip circuit was not reported as an abnormal occurrence when found to be set less conservative than the safety system setting. (Detail, 13.b.(2))

C. In violation of 10 CFR 50, Appendix B, Criterion VI, an approved procedure did not exist to control the issuance of drawings including changes thereto and plant files did not contain the latest revision of some drawings. (Detail 16.b.(7))

D. In violation of 10 CFR 50, Appendix B, Criterion V, (1) procedure changes were not approved in accordance with procedure AP-0001, and (2) certain quality assurance records were not maintained in fireproof files in accordance with procedure AP-0221. (Details 13.b.(3), 15.b.(2), 15.b.(3), and 16.b.(3))

E. In violation of 10 CFR 50, Appendix B, Criterion XII, plant procedures did not assure proper control over the calibration of measuring and test equipment. (Detail 13.b.(6))

Licensee Action on Previously Identified Enforcement Action

A. The licensee had initiated actions specified in his response letter with regard to the apparent violations reported in 50-29/74-14, Details 2.c.(1), 2.c.(2), 2.c.(3), and 6.b.(2). The licensee's action on item 6.b.(2) is complete and this item is resolved. The licensee's actions on items 2.c.(2) and 2.c.(3) are incomplete and these items remain open. RO:I disagrees with the licensee's position that item 2.c.(1) is not a violation but this item has been resolved. (Details 4.b.(1), 4.b.(8), and 8)

Design Changes

None Identified

Unusual Occurrences

None Identified

Other Significant Findings

A. Current Findings

1. Non-Deficient Areas of Inspection

a. Abnormal Occurrences (Detail 3)
b. Missing Information from Semi-annual Report (Detail 11)
c. MPC Values for Xenon Dissolved in Water (Detail 12)

2. New Unresolved Items

a. Control Rod Surveillance Program (Detail 6)
b. Reactor Protection System Low Flow Trip (Detail 13.b.(2))
c. Recalibration of Safety Classified System Components (Detail 13.b.(5))

3. New Open Items

a. Revised ECCS Analysis Based on Reduced LPSI Flow (Detail 2)
b. Special Orders (Detail 4.b.(2))
c. Hangers on Pressurizer Surge Line and Safety Injection Line (Detail 4.c.(8))
d. Revision of In-Plant Audit Procedure (Detail 5.b.(3))
e. Control Rod Banking (Detail 7)
f. Operating Memos (Detail 10)
g. Identification of Safety Related Instruments and Controls (Detail 13.b.(1))
h. Use of the Term "Not Applicable" (Detail 13.b.(4))
i. Documentation of I&C Personnel Training (Detail 13.b.(7))
j. Revision of ECCS Circuit Breaker Inspection Procedure (Detail 13.b.(8))
k. Emergency Power Undervoltage Relays (Detail 13.b.(9))
l. Approved Vendors Lists (Detail 14.b.)
m. Plant Records Program (Detail 15.b(1))
n. Procedure Revisions Necessitated by Design Changes and Modifications (Detail 16.b.(6))
o. Drawing Revisions Necessitated by Design Changes and Modifications (Detail 16.b.(7))
p. Control Rod Worth Discrepancies (Detail 3.c.)
q. NSARC Operations (Detail 5.a.(2))

B. Status of Previous Open and Unresolved Items

1. Detail 6.c.(4) of 50-29/74-14 is closed. (Detail 4.c.(4))
2. Detail 18 of 50-29/74-02 remains open. (Detail 9)
3. Detail 2.c. of 50-29/74-02 and Detail 8 of 50-29/74-02 are closed. (Detail 11)
4. Detail 6.b.(1) of 50-29/74-14 is closed. (Detail 4.b.(1))

Management Interview

At the conclusion of the inspection an exit meeting was conducted with the following licensee personnel in attendance:

Mr. H. A. Autio, Plant Superintendent
Mr. R. L. Boutwell, Engineering Assistant
Mr. W. G. Jones, Assistant Plant Superintendent
Mr. P. E. Laird, Maintenance Supervisor
Mr. L. L. Reed, Quality Control and Audit Coordinator
Mr. J. H. Shippee, Instrument and Control Supervisor
Mr. J. L. Staub, Technical Assistant
Mr. N. N. St. Laurent, Technical Assistant to the Plant Superintendent

The following summarizes items discussed:

A. Status of 50-29/74-14 Violations (Details 4.b.(1), 4.b.(8), and 8)
B. LPSI Flow Rates (Detail 2)
C. Abnormal Occurrences and Unusual Events (Detail 3)
D. Review of Plant Operations (Detail 4)
E. Licensee Audit and Review Activities (Detail 5)
F. Control Rod Surveillance Program (Detail 6)
G. Control Rod Banking (Detail 7)
H. Increase in Core and Loop ΔT's (Detail 9)
I. Operating Memos (Detail 10)
J. Missing Information from Semi-annual Report (Detail 11)
K. MPC Values for Xenon Dissolved in Water (Detail 12)
L. Calibration of Equipment (Detail 13)
M. Procurement Control (Detail 14)
N. Records (Detail 15)
O. Design Changes (Detail 16)

DETAILS

1. Persons Contacted

Yankee Atomic Electric Company

Mr. H. A. Autio, Plant Superintendent
Mr. E. D. Barry, Control Room Operator
Mr. W. [illegible]. Billings, Chemistry and Health Physics Supervisor
Mr. R. L. Boutwell, Engineering Assistant
Mr. L. X. Bozek, Quality Control and Audit Technician
Mr. T. P. Danek, Operations Supervisor
Mr. R. E. Durfey, Engineering Assistant
Mr. M. W. Ebert, Plant Reactor Engineer
Mr. J. A. Flanigan, Plant Health Physicist
Mr. L. Fritz, Auxiliary Operator
Mr. C. W. Goodwin, Control Room Operator
Mr. J. C. Gottardi, Tester-Chemistry
Mr. J. M. Grillo, Control Room Operator
Mr. F. E. Hicks, Control Room Operator
Mr. C. Johnson, Auxiliary Operator
Mr. W. G. Jones, Assistant Plant Superintendent
Mr. B. L. Kirk, Shift Supervisor
Mr. L. J. Laffond, Control Room Operator
Mr. P. E. Laird, Maintenance Supervisor
Mr. A. Lepage, Control Room Operator
Mr. G. Newsome, Auxiliary Operator
Mr. D. B. Pike, Manager of Operational Quality Control and Audit*
Mr. L. L. Reed, Quality Control and Audit Coordinator
Mr. I. Seybold, Technical Assistant
Mr. J. H. Shippee, Instrument and Control Supervisor
Mr. J. L. Staub, Technical Assistant
Mr. R. H. Streeter, Storekeeper
Mr. N. N. St. Laurent, Technical Assistant to the Plant Superintendent
Mr. E. A. Walsh, Shift Supervisor

2. LPSI Flow Rates

References: (1) RO:I Inspection Report 50-29/74-14, Detail 4.d.(3)
(2) Licensee letter to RO:I dated December 11, 1974
(3) Licensee letter to Directorate of Licensing dated December 12, 1974

*Contacted by telephone

(4) Licensee letter to Directorate of Licensing dated December 30, 1974
(5) "Yankee Nuclear Power Station Revised Loss of Coolant Analysis", Interim Acceptance Criteria analysis submitted to the Division of Reactor Licensing on January 15, 1972.
(6) "Revised ECCS Analysis", submitted to the Directorate of Licensing on July 31, 1974.

The licensee concluded in reference (2) that preoperational and surveillance tests of the Low Pressure Safety Injection Pumps have shown that the pumped Emergency Core Cooling System (ECCS) flow rate at pump runout conditions is less than the flow assumed in the ECCS analyses (references (4) and (5)). This was identified as a potential problem in reference (1).

As stated in reference (3), the licensee found "that the station safety injection pumps have not suffered a deterioration in their delivery capability; rather the pumped ECCS capacity at runout conditions assumed in the ECCS analyses is incorrect. Furthermore, until now, this discrepancy has been masked by use of an incorrect conversion factor in the ECCS flow test procedure resulting in artificially high ECCS flow rates."

The licensee verified the discrepancy between measured and assumed flow rates on December 6, 1974, and immediately reduced power to 90% as a conservative measure to assure that ECCS criteria were satisfied pending further investigation. The results of subsequent licensee investigations has resulted in the licensee administratively limiting his linear heat generation rate (LHGR) to approximately 11.37 KW/ft to assure that ECCS criteria are satisfied. (The Directorate of Licensing informed RO:I on January 2, 1975, that it had issued an order to the licensee limiting the LHGR to 11.5 KW/ft)

The licensee increased power to 98% on December 9 while maintaining the LHGR at or below 11.37 KW/ft as determined by the in-core instrumentation system. The plant has been operating since that time at the 98% level. (The licensee is not operating below 100% for LHGR considerations but is limiting the electrical load on the generator to a level that results a thermal (nuclear) power of 98%. The administrative limitation on electrical load was self-imposed as a precautionary measure by the licensee after replacement of the generator windings in 1972.

The minimum flow of two Low Pressure Safety Injection (LPSI) Pumps assumed in the ECCS analyses was 2480 gpm. The licensee has demonstrated in the above mentioned tests that the measured minimum flow of two pumps is not less than 2180 gpm nor greater than 2320 gpm. Surveillance testing on June 16, 1974, of two LPSI pumps indicated a flow of between 2220 gpm and 2278 gpm. The inspector stated that failure to demonstrate flows comparable to those assumed in the safety analyses was in violation of Technical Specification B.1. This Technical Specification incorporates by reference Section 212, "Safety Injection System", of the Final Hazards Summary Report which in Paragraph 212.6, "Safety Injection System Surveillance Requirements", states that "during each refueling interval at least 2 LPSI and 2 HPSI pumps will be flow tested. Acceptable performance shall be that the pumps attain flow values comparable to the safety analysis."

The inspector stated that the licensee had reported the details of this occurrence in references (2) and (3) and had described therein appropriate action taken to prevent recurrence of this event. The inspector noted that the licensee intends to submit a revised ECCS analysis to the Directorate of Licensing at a later date to replace the interim change to the Technical Specifications requested in reference (2). The inspector stated that no additional action by the licensee is necessary to respond to this violation.

The inspector stated that this matter is open and will be evaluated further after the results of the revised ECCS analysis are available. The inspector agreed with the licensee's position that until the analysis is completed, it cannot be concluded that past operating conditions have resulted in not satisfying applicable ECCS criteria on linear heat generation rates.

3. Abnormal Occurrences and Unusual Events

a. The inspector reviewed Abnormal Occurrence 50-29/74-6, "In-core Instrumentation Flux Thimble Leak", to determine (1) if the licensee had taken the corrective action specified in his letter to RO:I on December 10, 1974, and (2) if any Technical Specification requirements were violated. The inspector found no discrepancies.

The plant is now being operated with two isolated thimbles that developed leaks. The licensee has issued instructions to operating personnel to commence a reactor shutdown if a third leaking thimble occurs. This is in accordance with Change 113 to the Technical Specifications. The inspector had no further questions concerning this abnormal occurrence.

b. The inspector examined the following records to determine if the related events were reportable as abnormal occurrences or unusual events in accordance with Technical Specification E.2:

System	Records Examined	Description of Maintenance
Charging and Volume Control	MR 74-409	Repacked #3 Charging Pump
Low Pressure Safety Injection	MR 74-473	Adjustment of Packing Gland on #3 LPSI Pump

The inspector agreed that the events were not reportable as abnormal occurrences or unusual events and had no further questions concerning this matter.

c. The inspector reviewed the licensee's Unusual Event report to RO:I dated September 18, 1974, and the licensee's letter to the Directorate of Licensing dated December 5, 1974, concerning discrepancies between measured and calculated control rod worths. The licensee has determined that the discrepancies were caused by using incorrect burnups for the shuffled fuel in the original calculation. The licensee has also determined that operation at full power will not violate the assumptions used in the accident analysis as long as the full power, all-rods-out, critical boron concentration is greater than 400 ppm. The licensee has instructed operating personnel of the 400 ppm limit and will submit a later report to the Directorate of Licensing on plant operation below 400 ppm all-rods-out, critical boron. This item is open.

4. Review of Plant Operations

a. The inspector reviewed the following logs and operating records:

Shift Supervisor Log	12/1/74 - 12/17/74
Control Room Log Sheets (No.1 & 2)	12/5/74 - 12/15/74
Primary Plant Log Sheets	12/5/74 - 12/15/74
Secondary Plant Log Sheets	12/5/74 - 12/15/74
Key Log	10/25/74- 12/19/74
Maintenance Request Log	10/25/74- 12/18/74
Electrical Switching Log Book	10/23/74- 12/18/74
Bypass of Safety Functions and Jumper Control Requests	Nos. 74-40 through 74-49
Plant Information Reports	No. 24
Primary Plant Auxiliary Log	12/4/74 - 12/15/74
Secondary Plant Auxiliary Log	12/4/74 - 12/15/74
Special Order Book	9/18/74 - 12/19/74

The above records were reviewed to determine if:

(1) Control Room Log Sheets were filled out and signed.

(2) Auxiliary (primary and secondary plant) log sheets were filled out and signed.

(3) Shift Supervisor Log contained sufficient details to communicate equipment status.

(4) Log book reviews were being conducted by the plant staff.

(5) Special Orders do not conflict with Technical Specification requirements.

(6) Jumpers or bypasses did not contain bypassing discrepancies with Technical Specification requirements.

(7) Plant Information Reports confirm that reported problems do not involve violations of Technical Specifications.

b. The inspector had the following comments on the above listed logs and records:

(1) The licensee issued instructions on November 6, 1974, to operating personnel concerning the necessity to keep neat logs. The inspector's review of the Key Log and Maintenance Request Log indicated that these logs were being neatly maintained in accordance with the licensee's procedures. The concern documented in RO:I Inspection Report 50-29/74-14, Details 6.b.(1), is resolved.

(2) The inspector stated that his review of the Special Order Book revealed it was difficult for an individual to determine what orders are in force at any given time. The inspector also stated that the length of time some of the orders have been in effect appears to indicate more than short-term applicability. The licensee stated that the keeping of the Special Order Book would be reviewed. This item is open.

(3) The inspector verified through review of Bypass of Safety Function and Jumper Control Requests that active requests are being reviewed in accordance with procedure AP-0018, "Bypass of Safety Function and Jumper Control." The

inspector confirmed that the licensee's actions were as stated in the licensee's letter of December 9, 1974, in response to the RO:I letter of November 14, 1974. The concern documented in RO:I Inspection Report 50-29/74-14, Detail 6.b.(2), is resolved.

(4) Plant Information Report No. 24, "Charging Line Flow Transmitter Top Leak," was issued on September 10, 1974, and described a pin hole leak that was discovered in a weld connection between a charging line flow transmitter isolation valve and the charging line. The inspector stated that he considers leaks of this type to reportable as abnormal occurrences under Technical Specification E.4.e in that they are abnormal degradations of a boundary designed to contain radioactive materials resulting from the fission process. The licensee stated that previous failures of this type had been documented in his semi-annual reports but had not been reported as abnormal occurrences. The licensee further stated that any future failures of this type would be reported as abnormal occurrences. The inspector had no further questions concerning this matter at this time.

c. The inspector conducted tours of the general plant accessible areas on December 18 and 20 and toured the Vapor Containment on December 20. The inspector noted the following:

(1) Monitoring instrumentation confirmed that power level, main coolant flow, steam generator water level, and Low Pressure Safety Injection Accumulator nitrogen pressure were within Technical Specification limits.

(2) There were no Control Room annunciators activated.

(3) The number of duty shift personnel was consistent with Technical Specification requirements.

(4) Radiation controls were observed to be established on the December 18 tour but the inspector stated that the controls should be more clearly marked in certain areas. On the December 20 tour, the inspector observed that the licensee had improved the marking of controlled areas.

The inspector noted that the licensee had improved the posting and barrier around the general control area established by the licensee as a supplemental radiation and contamination control measure. The signs were temporary but the licensee has ordered permanent metal signs. The concern documented in RO:I Inspection Report 50-29/74-14, Detail 6.c.(4), is closed.

(5) Plant housekeeping conditions were acceptable.

(6) No fluid leaks were observed other than some boron buildup around Low Pressure Safety Injection Pump #3 pedestal. The licensee stated that this was being caused by a seal leak-off drain leaking to the floor and that the leak was being evaluated.

(7) No unusual piping vibrations were observed.

(8) The shock suppressors on the pressurizer relief valve piping showed no evidence of leakage and the oil reservoirs had normal levels.

The dual spring hangers on the pressurizer surge line seemed to be slightly off center. The licensee stated that he would look at these hangers. This item is open.

The inspector examined the safety injection line hanger adjustments that had been made subsequent to a false initiation of the safety injection system. These hanger adjustments were the subject of an apparent violation identified in RO:I Inspection Report 50-29/74-14, Detail 2.c.(1). In the licensee's response, dated December 9, 1974, to this apparent violation, the licensee stated that he did not agree that this was a violation since the corporate engineering directive used to make the adjustments was adequate.

The inspector examined the physical arrangement of the hangers, interviewed personnel involved in the adjustments, and reviewed the licensee's letter of December 9, 1974. The inspector stated that he concurred with the licensee's position that the adjustments did not require a detailed step-by-step delineation in a procedure since the skills needed to adjust the hangers would normally be possessed by the maintenance personnel involved. However, the inspector explained that the violation in question was not issued because the licensee did not have a detailed procedure but instead was issued because the Plant Operations Review Committee failed to approve in accordance with the requirements of procedure AP-0214 whatever procedure or instruction that was used for the maintenance effort. The inspector stated that the violation remains as issued. We understand that the Plant Operations Review Committee will review and approve any future corporate directives that are used by the plant as procedures required by 10 CFR, Appendix B, Criterion V.

The inspector noted during the hanger inspection that at least one of the rigid type hangers on the safety injection ring

header appeared to be offset and not plumb with the ring header. The licensee stated that the hanger would be examined. This item is open.

(9) Valves SI-V-5, SI-V-6, SI-V-7, SI-V-8, SI-V-9, and SI-V-10 on the suction and discharge of the Low Pressure Safety Injection Pumps were verified to be open.

(10) Dates and authorizations were examined for equipment tags on the waste gas surge drum sample valve, a drain valve (VDV-917) between the Low Pressure Surge Tank relief valve header and the Primary Drain Collecting Tank, and the breaker on one of the safety injection pumps (P-18-2) that was replaced in 1972. The tagging was consistent with the plant tagging system.

(11) Control Room Operator demonstrated a knowledge of the facility training program and the training schedule.

5. Licensee Audit and Review Activities

a. PORC and NSARC Activities

(1) The inspector reviewed the following meeting minutes of the Plant Operations Review Committee (PORC) and the Nuclear Safety Audit and Review Committee (NSARC):

PORC	NSARC
74-1 (1/9/74) through 74-69 (12/5/74)	74-4-S (5/8/74) through 74-9-S (12/12/74)

The inspector determined from this review and the review outlined in RO:I Inspection Report 50-29/74-14, Detail 7, that PORC and NSARC are functioning as required by the Technical Specifications and the Operational Quality Assurance Manual. The minutes also indicated that the committees were functioning in accordance with Section 16.6.2 of the proposed Technical Specifications submitted to the Directorate of Licensing on January 3, 1974.

(2) The inspector noted in his review that the proposed Technical Specifications and the charter dated June 24, 1974, for the Nuclear Safety Audit and Review Committee are potentially in conflict with Technical Specification D.1 in that they

(1) do not require that the Committee membership include three Yankee Engineering Department Section Heads and one person from the supervisory staff of each Yankee Nuclear Power Plant or Project as is required by approved Technical Specification D.1, and (2) state that a quorum can consist of a minimum of five members whereas Technical Specification D.1 requires that a majority of members shall constitute a quorum. As indicated above in 5.a.(1), the inspector verified that the Technical Specification was being met. The chairman of the NSARC stated that he was aware that Technical Specification D.1 is the overriding requirement. He also stated that steps would be taken that might include amending the NSARC charter to assure that the NSARC continues to operate in accordance with Technical Specification D.1 until such time as the Directorate of Licensing approves different NSARC requirements. This item is open pending the inspector's review of licensee action.

(3) The inspector verified that the PORC and NSARC are reviewing proposed changes to the Technical Specifications.

b. In-Plant Audit Program

(1) The inspector reviewed the In-Plant Audit Program to determine if the audits and audit follow-up were being conducted as follows.

(a) In accordance with procedures and checklists.

(b) By trained personnel not having direct responsibility in the area being audited.

(c) Results of audits were documented and reviewed by management having responsibility in the area of audit and by corporate management.

(d) Followup action, including reaudit was either taken, being initiated, or in progress.

(e) Frequency of audits was as specified in procedures.

(2) The inspector reviewed the following records related to the In-Plant Audit Program:

Procedure AP-0208, "In-Plant Audits"
Procedure WO-107, "In-Plant Audits"
"Reaudit of Plant Audit Discrepancy Reports," dated 12/3/74
Audit Reports 74-2-A, 74-5, and 74-10-A
Plant Position Reports 74-2-A, 74-5, and 74-10-A

(3) The inspector had the following comments on AP-028 and the In-Plant Audit Program:

(a) AP-028 does not require the auditor to review and followup on open audit findings identified in previous audits of the same area.

(b) AP-028 does not clearly specify the time frame between the time an audit deficiency is identified and when it must be resolved. Open items from Audit 74-5 show the need for a time requirement.

(c) Documentation of approval by the Manager of Operational Quality Control of audit checklists is not indicated on the checklists.

The licensee stated that procedure AP-028 would be revised to reflect these comments. This item is open.

6. Control Rod Surveillance Program

Reference: (1) Licensee letter to Directorate of Licensing dated September 4, 1974.
(2) Licensee letter to Division of Reactor Licensing dated August 27, 1964.

The licensee stated that he intended to discontinue control rod drop surveillance tests every 12 weeks as outlined in his Proposed Change 106 to the Technical Specifications. (This change was approved by DL on March 30, 1973.) As stated in reference (1), the licensee now intends to perform rod drop tests in accordance with the provisions of reference (2) unless they hear otherwise from DL. The last 12 week surveillance test was performed on November 30, 1974. The inspector stated that this item is unresolved.

7. Control Rod Banking

The inspector noted in his review of plant records that routine surveillance checks of control rod positions since Core XI startup have indicated some difficulties in properly banking rods. The checks

have shown certain rods (9, 10, 16, 22, and 24) tend to slip in about 2 inches if an operator attempts to move these rods greater than 87 3/8" out of the core (full out is 90"). The licensee indicated that this problem has been experienced in past cores.

The licensee has determined that no difficulties are encountered in inserting the rods and that no imbalance in the power distribution or increased flux peaking will result from the rods being out-of-step. The safety aspects of the out-of-step rods have been evaluated by the PORC and the Plant Reactor Engineering Department and they have concluded that this banking problem does not affect plant safety.

The PORC recommended that more frequent (bi-weekly vs. every 6 weeks) checks be made on control rod position and that control rod drop tests be performed. The more frequent surveillance tests are continuing and the drop tests were satisfactorily performed on November 30, 1974, when the plant was shutdown to replace two faulty nuclear detectors (Nuclear Channels 5 and 6). The inspector stated that this is an open item pending his review of licensee's final evaluation.

8. Main Coolant Pump and Check Valve Repairs

References: (1) RO:I Inspection Report 50-29/74-14, Details 2.c.(2) and 2.c.(3)
(2) Licensee letter to RO:I dated December 9, 1974.

The inspector verified that the licensee is taking action to revise procedures OP-5200, "Main Coolant Check Valve Repair," and OP-5204 "Main Coolant Pump Inspection and Repairs"; however, since this action is incomplete these items remain open.

9. Increase in Core and Loop ΔT's

References: (1) RO:I Inspection Report 50-29/74-02, Detail 18
(2) Licensee's Semi-annual Operating Report for the period July 1, 1973, to December 31, 1973

The inspector reviewed documents related to the licensee's investigation of the apparent increase in core and loop ΔT's over the past three cores (VIII, IX, and X). The licensee has concluded that the core and loop ΔT's had not actually increased but that the indicated increase was due to scatter of temperature data. The inspector stated that this item would remain open pending his review of documentation of Plant Operations Review Committee and Nuclear Safety and Audit Review Committee reviews of this matter.

10. Operating Memos

The inspector examined a book located in the Control Room which contained Operating Memos. The following Operating Memos in this book were reviewed to determine if they specified operations or operating values that were in conflict with Technicial Specification requirements:

2C-7 "Reactor Scram and Immediate Reloading"
(Issued 6/19/72; Revised 9/26/74)

2C-8 "400 PPM Limit for Full Power Operation"
(Issued 9/11/74)

2C-9 "5% Cold Shutdown"
(Issued 9/12/74)

2E-5 "Emergency Plant Load Reduction, Shutdown and Cooldown Procedure"
(Issued 1/3/66; Revised 1/26/73)

2E-9 "Plant Power Limits Under Various Line Conditions"
(Issued 7/27/73; Revised 9/27/74)

2E-9A "Z-126 Transmission Line Thermal Capabilities"
(Issued 12/17/74)

2E-9B "Y-177 Transmission Line Thermal Capabilities"
(Issued 12/17/74)

2E-32 "Notification Requirements of Federal Power Commission and the Environmental Protection Agency"
(Issued 10/2/74)

2R-21 "Main Generator Armature Amperage Limitation"
(Issued 9/19/74)

The inspector did not identify any conflict between operations or operating parameters in the Op-Memos reviewed and Technical Specification requirements. (The inspector did not address the subject of the appropriateness of issuing OP Memos on the above topics rather than covering them in procedures. This subject will be reviewed during the next inspection).

Guidelines for the preparation and approval of Operating Memos are set forth in procedure AP-0021 "Operating Memos," dated December 20, 1974. This procedure states in part, that "Op-Memos provide a mechanism for plant management to issue general or specific instructions dealing with Non-Nuclear Safety items, for short term or continuing applicability to the plant staff." The licensee intends to review all existing Op-Memos and reissue as Op-Memos the ones dealing with non-nuclear safety items. Op-Memos now dealing with safety-related matters will be incorporated into other plant procedures. This item is open and the licensees Op-Memos program will be reviewed by RO:I during the next inspection.

11. Missing Information from Semi-annual Report

References: (1) RO:I Inspection Report 50-29/74-02, Detail 2.c.
(2) RO:I Inspection Report 50-29/74-06, Detail 8.
(3) Licensee's Semi-annual Operating Report for the period July 1, 1973 to December 31, 1973

The inspector agreed that information concerning reactor coolant system leak rate that was identified in references (1) and (2) as missing from reference (3) is not required to be submitted by the licensee. This item is closed.

12. MPC Values for Xenon Dissolved in Water

The inspector reviewed a draft of procedure OP-9246, "Radioactive Liquid Releases", to determine what maximum permissible concentration (MPC) value the licensee was using for Xenon (Xe 133 and Xe 135) dissolved in liquid effluents. The licensees value of 3 X 10-6 uc/ml is consistent with the provisions of 10 CFR Part 20, Appendix B, Table II. The inspector had no further questions concerning this matter.

13. Calibration of Equipment

a. The inspector verified calibration frequency, conformance with the applicable conditions of operation, procedure compliance with Technical Specifications review and approval requirements, acceptance values for trips, detail of instructions, qualification of individuals performing calibrations, and control of test equipment including calibration frequency, accuracy, and storage.

The licensee's completion of the following calibration procedures were reviewed by the inspector in verifying the above items:

OP-4607 "Reactor Coolant Flow Trip System Calibration," Rev.1
OP-6101 "Nuclear Instrumentation and Reactor Protection System Precritical Check," Rev.0
OP-4703 "Control Rod Drop Time Measurement", Rev.1
OP-4201 "Power Range Channel Calibration," Rev.1
CP-4603 "Accident Emergency High Radiation Monitor Calibration Check", Rev.1
OP-4621 "HPSI Pump Ammeter Calibration," Rev.1
OP-4506 "Inspection of ECCS Circuit Breakers", Rev.1
OP-4615 "SI Tank Pneumatic Level Instrumentation LIT-401 Calibration," Rev.1
OP-4616 "SI Tank Electronic Level Indication Channel Calibration," Rev.1
OP-4609 "SI Actuation Channels Calibration and Functional Check," Rev.1

b. The inspector had the following comments in the area of calibration:

(1) Identification of Safety Related Instruments & Controls

The inspector was informed by the licensee that the development of a system to identify safety related instruments and controls is planned. This item is open.

(2) OP-4607 "Reactor Coolant Flow Trip System Calibration"

From the review of a calibration completed on July 15, 1974, of the reactor coolant flow trip system, the inspector noted that the current transformer safety system trip settings for the B trip system were found less conservative than the established trip setpoints. The safety system setpoints as established by the licensee are 7.6 (+0.0, -0.6) amperes current transformer (≡ 912 amps main coolant pump) for the overcurrent trip and 2.0 (+0.6, -0.0) amperes current transformer (≡ 240 amps main coolant pump). The as-found conditions were as follows:

Over Current	Under Current
(1B-OC) 6.8 amps	(1B-UC) 1.8 amps
(2B-OC) 6.9 amps	(2B-UC) 1.8 amps
(3B-OC) 6.8 amps	(3B-UC) 1.8 amps
(4B-OC) 6.7 amps	(4B-UC) 1.9 amps

The licensee adjusted the trip settings to meet the acceptance criteria.

The inspector stated that Section E of the Technical Specifications (T.S.) requires reporting as abnormal occurrences safety system settings when they are found less conservative than limiting safety system settings. The inspector informed the licensee that failure to report the B trip system as-found conditions was a violation of Section E of the T.S.

Table 1 of the T.S. establishes the main coolant pump low flow trip setpoint at 80% of loop flow. The licensee could not provide data to enable the inspector to correlate the flow setpoint in the T.S. (% flow) to the current transformer setpoints (amperes). The licensee had initiated and was expediting a proposed T.S. change and plans to submit it to the Directorate of Licensing by January 10, 1975. The submission is to change the low flow trip setpoint in the T.S. from % flow to amperes. This item is unresolved pending RO:I evaluation of licensee's action.

(3) OP-6101 "Nuclear Instrumentation and Reactor Protection System Precritical Check"

The inspector noted during review of a completed test approved on 8/22/74, that Step 3, which indicated clearing all outstanding bypasses of safety function and jumper control requests, was not signed off. In addition Step 5 of Attachment E, and Steps b and q of Attachment F were changed without proper approval by two senior licensed operators as required by AP-0001, Rev. 2. The inspector informed the licensee that failure to obtain the required approvals was a violation of 10 CFR 50, Appendix B, Criterion V.

Corrective actions were taken by the licensee to obtain proper approval and sign off prior to completion of the inspection.

(4) Use of the term "N/A"

The inspector noted that the term Not Applicable (N/A) is used when a particular step within a surveillance procedure is not completed. The licensee stated that use of the term N/A would be reviewed to determine if such actions should be considered as a change to an approved procedure. This is an open item.

(5) AP-6002 "Control of Instruments and Controls Department Measuring and Test Equipment".

Step 5 of this procedure states that "any calibrations performed on a safety classified system using a piece of measuring and test equipment found to be damaged or out of tolerance at the time of recalibration will, where practicable, receive a complete recalibration." The inspector stated that any determination not to recalibrate should be reviewed by the Plant Operation Review Committee and approved by the Plant Superintendent. The licensee stated that this item would be reviewed. This item is unresolved.

(6) Test Equipment Requiring Outside Calibration

The inspector found that calibration records of equipment sent off site did not include as-found conditions. This does not allow the plant to determine if test instruments have been found out of calibration.

The inspector could not find a requirement in plant procedures for as-found and as-left data for outside calibrations. The inspector stated that this failure to establish proper controls over the calibration of measuring and test equipment was a violation of 10 CFR 50, Appendix B, Criterion XII.

The inspector was informed that current requests for calibration from an outside source are requesting as-found conditions. The inspector verified that a current Yankee Rowe Material and Service Purchase Request originated by the I&C group issued on 12/16/74 for the RFL Standard (being used as an AC amp calibration source) did request as-found and as-left conditions. The inspector stated that any requirement for such information should be documented.

(7) AP-6006 "Initial and Review Qualifications Training of I&C Personnel"

The inspector found that form APF 6006.2 had not been completed. Form APF 6006.2 documents I&C Department personnel qualifications. The licensee did demonstrate that the required data was being accumulated, but had not been recorded on the required record form. This is an open item.

(8) OP-4506 "Inspection of ECCS Circuit Breakers"

(a) Acceptance Criteria

The acceptance criteria specified only that a breaker be in operational condition. Verification of relay continuity, resistance readings and over current protection setpoints are tested and the licensee did demonstrate that test results could be correlated to appropriate technical manual acceptance criteria. The licensee stated that specific acceptance would be incorporated into the procedure.

(b) Record of Test Equipment

The procedure does not require that a record of test equipment be maintained. The licensee stated that requirements to document test equipment would be incorporated into the procedure.

(c) Clamp-O

Although a clamp-on ammeter is used to verify proper current from the Multi Amp Electrical Test Equipment, verification is not a required procedure step nor is a record maintained. The licensee stated that the procedure would be revised to incorporate verification by the clamp-on ammeter.

The revision of OP-4506 is an open item.

(9) Emergency Power Under Voltage Relays

The inspector found that functional testing and the under voltage relays associated with the emergency power system is performed; however, verification of relay setpoint has not been performed since installation in 1970. The licensee stated that performance of a suitable verification of relay setpoint would be reviewed for incorporation into the plant preventive maintenance program. This is an open item.

14. Procurement Control

a. The inspector reviewed procurement documents for proper approval, establishment of quality control inspection requirements, and requirements for quality control records. The inspector also verified that documentary evidence of conformance to procurement requirements exists receipt inspections were performed, and materials were supplied by an approved vendor. Proper handling for control and separation of conforming and non-conforming materials, parts, and components was verified by inspection of receipt, storage, and handling facilities.

The following procedures govern site procurement control:

AP-0211 "Material & Service Purchase"
AP-0212 "Material Receipt"
AP-0213 "Material Identification Control"
AP-0206 "Nonconformance - Materials, Parts, Components, or Installation"
AP-0224 "Material Handling, Packing, Shipping, Cleaning, Storage and Preservation"
Guideline No. 1, Revision 3, "Policy for Material Purchases, Design Changes, Repairs and Modification"

The following procurements were reviewed by the inspector:

74-1-Q/A-1 Hydraulic Shock & Suppressors (Pressurizer Pipe Restraints)
74-1-Q/A-10 Instrumentation Port Canopy Seal Rings for Reactor Vessel Penetrations (Machining)
74-1-Q/A-9 Instrumentation Port Canopy Seal Rings for Reactor Vessel Penetrations (Materials)
74-5-Q/A-13 Pressure Switch (Permissive Circuits)
74-3-Q/A-5 E-7018 Electrodes

b. The inspector had the following comment in the area of procurement:

The inspector found that AP-0211, "Material & Service Purchase," Revision 1, states materials, components and parts are to be purchased from vendors identified on the approved vendor list approved by NSD Engineering or by QCAD. The inspector found that the plant had in all cases obtained the prescribed approval for all procurements. The inspector did point out, however, that the approved plant procedures appear in conflict with Guideline No. 1; Revision 3, "Policy for Material Purchases, Design Changes, Repairs and Modifications." Guideline No. 1 states that procurements "shall be purchased from Manufacturers listed on the most current Approved Vendors Lists."

The licensee stated that Guideline No. 1 is under revision. This is an open item.

15. Records

a. The inspector verified that the licensee has established a program for the control, storage, retention and retrieval of records and documents associated with safety related systems. These plant files were found to be located in cognizant departments.

Records which the licensee maintains include the following:

Equipment History Cards
Calibration Data Cards
Completed Calibration Procedures
Completed Installation Procedures
Completed Preoperational Test Procedures
Completed Surveillance Procedures
Completed Operational Procedures
Material Purchase Requests
Supply Requisition Worksheets
Purchase Orders
Receiving Reports
Test Reports and Certificates of Compliance
Completed Plant Design Change Requests
Completed Nonconformance Reports
Approved Engineering Design Change Requests
Originals of Plant Procedures
Surveillance Record Sheets
Audit and Review Records
In-service Inspection Records

Records are presently maintained in accordance with AP-0221, Rev. 0, "In-Plant Files".

b. The inspector had the following comments in the area of records:

(1) Record Program

The inspector stated that considerable revision of the records system will be necessary to conform to current standards, i.e., ANSI 45.2.9. The Licensee stated that the records system requirements are being revised and that the require-

ments of the revised program are to be submitted to the Directorate of Licensing in the early part of 1975. This is an open item.

(2) Fire Proof Files

AP-0221 specifies that plant quality assurance records are to be maintained in fireproof files. The inspector found that the following records were not located in fire proof files:

Equipment History Cards - I&C Department
Equipment History Cards - Maintenance Department
Completed Preoperational Procedures - Maintenance Department
Completed Surveillance Procedures - Maintenance Department

The inspector stated failure to maintain quality assurance records in fireproof files in accordance with procedure AP-0221 is in violation of 10 CFR 50, Appendix B, Criterion V.

The licensee stated that the problem has been recognized and that fireproof files have been ordered. The inspector stated that the licensee need not respond to this violation in light of the action initiated by the licensee.

(3) RP-1601 "Main Coolant Level Channels Calibration and Operation", Revision 0

The inspector noted during a spot check of calibration records that Step 12 of the test performed on 7/14/74 had been changed without prior approval by two senior licensed operators as required by AP-0001, Rev. 2. The inspector informed the licensee that failure to obtain the required approvals was a violation of 10 CFR 50, Appendix B, Criterion V.

Corrective actions were taken by the licensee to obtain proper approval prior to the completion of the inspection.

16. Design Changes

a. Facility records relative to selected design changes completed during calendar year 1974 were reviewed, and discussions relative to these changes were held with the licensee. The following areas were examined during this review:

(1) Written safety evaluation pursuant to 10 CFR 50.59.
(2) Review and approval of the change pursuant to the Technical Specifications and established QA procedures.
(3) Implementation of the change pursuant to formal procedures.
(4) Acceptance test records verify satisfactory performance.
(5) Review and approval of the performance of the modified equipment.
(6) Operating procedure changes, where applicable, were made and approved pursuant to the Technical Specifications.
(7) As-built drawings were changed to reflect the modified equipment.

The design changes reviewed were as follows:

(1) PDCR 73-21, Replacement of the Optical Tavg Metering and Alarm System
(2) PDCR 74-3, Improvement of the Reactor Permissive Circuitry
(3) PDCR 73-17, Installation of Charging Line Restraint
(4) PDCR 73-26, Safety Injection Panel Annunciator Loss of Power Alarm
(5) PDCR 74-5, Safety Injection Accumulator Level Switch LS-1, 2, 3, and 4 Relocation.
(6) EDCR 72-3, Diverse Initiation of Safety Injection System WL Relays

b. The following summarizes the inspector's findings:

(1) A written safety evaluation existed for each change.

(2) Each change was reviewed and approved in accordance with requirements.

(3) Each change was implemented in accordance with formal procedures; however, the following apparent violation of procedure requirements was identified:

For PDCR 73-21, the requirements of Testing Step 1.g. of OP 6000.16 were not accomplished in that this step was marked

"N/A." The procedure OP 6000.16 was completed and approved on June 10, 1974, and the above procedure change was not approved in accordance with AP-0001, Rev. 2 which requires approval by two senior licensed operators and subsequent review by the PORC and approval by the Plant/Assistant Plant Superintendent. The licensee indicated that this step should have been completed, and that marking this step with "N/A" was not appropriate. The inspector noted that this testing had been subsequently performed prior to reactor startup using OP 6101, "Nuclear Instrumentation and Reactor Protection System Precritical Check." The inspector stated that failure to obtain the required approvals was a violation of 10 CFR 50, Appendix B, Criterion V.

(4) Acceptance test records indicated that acceptance criteria contained in the installation and test procedures were not met for each change.

(5) Performance of the modified equipment was reviewed and approved for each change.

(6) Operating procedures were revised, where appropriate, in accordance with AP-0001, Rev. 2, to reflect the changes made in plant equipment.

Within the licensee's current system, the operating procedures affected by a design change are to be identified on three separate forms (WO-1, APF-0200.1, and APF-0222.1), and these entries are made by personnel from different departments. The inspector observed that inconsistencies relative to the procedures affected existed between these forms; for example, procedures affected by PDCR's 73-26 and 74-3. For these cases, the required procedure changes were made; however, these conditions are considered to be indicative of an apparent weakness in the licensee's program. The licensee indicated that procedures relative to design changes and modifications are being reviewed and are to be changed, and that this will probably be completed within 6 months. The licensee indicated that this matter would be considered in their review. This is an open item.

(7) As-built drawings affected by PDCR's 74-3 and 73-26 and EDCR 72-3 were examined. This included a review of 25 drawings maintained in the I&C Department files. According to facility records, the affected drawings had been updated, and copies of these drawings had been sent to the Manager of Operations

for updating. The inspector observed that drawings had been marked up to reflect the above changes, with 3 exceptions; namely, drawings 517 F 069, 9699-FK-1A and 9699-FM-3A did not reflect the changes required by PDCR 74-3 which was completed on July 30, 1974. These drawings were updated by the licensee prior to the completion of the inspection. Additionally, the inspector determined based on review of plant operations and discussions with the licensee, that, as of the date of this inspection, the licensee did not have an approved plant procedure to control the issuance of drawings including changes thereto. QA procedure WO-105, "Procedures, Drawings and Specifications," dated January 2, 1974, requires that plants are to be responsible for the accuracy of their drawings. The above findings represent an apparent violation of 10 CFR 50, Appendix B, Criterion VI.

The licensee stated that a procedure to control drawings was in draft stage. The licensee's plans relative to controlling the issuance of plant drawings including changes thereto were reviewed. In previous years the responsibility for updating drawings rested with individual departments; however, this activity is to be controlled by TAPS (Technical Assistant to the Plant Superintendent). A Master Drawing Index with 6 copies of each drawing is to be utilized, and the use of prints is to be controlled by individual Job Orders. The licensee is in the process of obtaining the necessary drawings which are to be issued to insure each department has up-to-date drawings.

Within the licensee's current system, the drawings affected by a design change are to be identified on three separate forms (WO-1, APF-0200.1, and APF-0222.1), and these entries are made by personnel from different departments. The inspector observed that inconsistencies relative to the drawings affected existed between these forms; for example, drawings affected by PDCR's 73-21 and 73-17 and EDCR 72-3. For these cases, records indicated the required changes had been made; however, these conditions are considered to be indicative of an apparent weakness in the licensee's program. The licensee indicated that this matter would be considered in their current review program as previously discussed. This is an open item.

(8) The licensee has completed modifications to improve the reliability of the scram circuit and has completed installation of the system for diverse initiation of the Safety Injection System. The items identified as open in RO:I Inspection Report 50-29/74-06, Details 14 and 15, are closed.

c. The licensee stated that, although their program for design changes would probably be changed in about 6 months, priority attention would be given to the apparent program weaknesses identified above. The licensee stated that appropriate changes to plant procedures would be made within 1 month to close these loopholes.