U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-29/80-02

Docket No. 50-29

License No. DPR-3 Priority -- Category C

Licensee: Yankee Atomic Electric Company

20 Turnpike Road

Westborough, Massachusetts 01581

Facility Name: Yankee Nuclear Power Station (Yankee-Rowe

Inspection at: Rowe, Massachusetts

Inspection conducted: January 28 - February 5, 1980

Inspectors: W. Lazarus for — 3/12/80
T. Foley, Reactor Inspector — date signed

W. Lazarus for — 3/12/80
W. G. Lazarus, Reactor Inspector — date signed

_____ — _____
date signed

Approved by: E. J. Brunner — 3/12/80
for T. T. Martin, Chief, Reactor Projects Section No. 3, RO&NS Branch — date signed

Inspection Summary:

Inspection on January 28 - February 5, 1980 (Report No. 50-29/80-02)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of plant operations, including a tour of accessible areas, a review of shift logs, operating and shutdown records; observing maintenance activities; review and onsite followup of Licensee Event Reports (LER's); followup of selected IE Bulletins; and, a review of Category "A" Short Term Lessons Learned Items. The inspection involved 55 inspector-hours onsite by two regional based inspectors.

Results: Of the five areas inspected, no items of noncompliance were identified in three areas. Two items of noncompliance were identified in two areas (Violation - Failure to maintain a required Emergency Core Cooling System operable during operation, Paragraph 6; and, Deficiency - Failure to follow procedures, Paragraph 3.d).

DETAILS

1. Persons Contacted

*H. Autio, Plant Superintendent
*L. French, Engineering Assistant
F. Hicks, Training Coordinator
K. Jurentkuff, Day Shift Supervisor
P. Laird, Maintenance Supervisor
R. Randall, Engineering Assistant
J. Shippee, I&C Supervisor
*N. St. Laurent, Assistant Plant Superintendent
*J. Staub, Technical Assistant to the Plant Superintendent
J. Trejo, Plant Health Physicist

The inspector also interviewed other personnel, including operators, I&C Technicians, Health Physics Technicians, members of the technical and administrative staffs and personnel from Mecury Contractors.

*denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (29/78-19-04): Failure to retain a record of training. The inspector verified that this item had been reviewed by the licensee and that corrective action had been completed in accordance with letter WYR 79-4 of January 16, 1979.

(Closed) Followup Item (29/78-19-05): A strong written policy statement on respirator usage conforming to the guidance in Section C.1 of the Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection," has been incorporated into the revised "Radiation Protection Manual," dated October 25, 1979, and into AP-8012, "Respiratory Protection Training," Revision 3.

(Closed) Noncompliance (29/79-02-01): Failure to exercise specified valves within the required time period. The inspector verified that this item had been reviewed by the licensee and that corrective action had been completed in accordance with letter WYR 79-38 of March 28, 1979.

(Closed) Unresolved Item (29/79-02-02): Reference values for pump speed and pump differential pressure as described in Section XI, Paragraph IWP-3110, have been incorporated into AP-7008, "Pumps and Valves Program," Revision 0.

(Closed) Unresolved Item (29/79-02-03): The acceptance criteria of Table IWP-3100-2 and the required corrective actions of IWP-3230 have been incorporated into the licensee's procedure AP-7008, "Pumps and Valves Program," Revision 0.

(Closed) Unresolved Item (29/79-02-05): The licensee's procedure AP-7008, "Pumps and Valves Program," incorporates the requirement of ASME Section IX, IWP-3100, Table IWP-3100-1, for taking vibration data and pump bearing temperatures.

(Closed) Unresolved Item (29/79-02-06): The licensee has incorporated into AP-7008, "Pumps and Valves Program," the 96 hour analysis requirement of the ASME Code, Section IX, IWP-3220.

(Closed) Unresolved Item (29/79-02-07): The licensee has incorporated into AP-7008, "Pumps and Valves Program," a specific requirement to use a temperature probe whose scale does not exceed 0-360^{o}F (four times the reference value per IWP-4111).

(Closed) Unresolved Item (29/79-02-09): The licensee has completed a review of valves with fail-safe actuators and incorporated the testing requirements of ASME Code, Section XI, IWV-3410(e), into the appropriate procedures.

(Closed) Unresolved Item (29/79-02-10); AP-7008, "Pumps and Valves Program," currently maintains a "Quarterly Valve Exercise Log," summarizing all valves in the program, including DW-V-757. The licensee has reviewed and incorporated the requirements of ASME Code, Section XI, IWV-6210, into Attachment "B" of AP-7008.

(Closed) Unresolved Item (29/79-02-11): OP-4517, Revision 4, "Surveillance of Motor Operated Valves," currently requires valves which are inaccessible during operation to be cycled and the valve position verified by visual observation as well as obtaining a current reading, during each refueling outage. The procedure also provides acceptance criteria for the valve position indication.

(Closed) Unresolved Item (29/79-14-01) and Followup Item (29/79-14-02 and 03): The inspector reviewed the completed installation procedure for the 2400 volt voltage regulator and verified by means of discussions, that operators were aware of the newly installed modification and knowledge of it's operation.

(Open) Unresolved Item (29/79-02-04): The licensee has submitted to the NRC an in-service inspection program which request relief from this requirement set forth in ASME Code, Section XI, IWP-3100. This submittal is currently under review.

(Open) Unresolved Item (29/79-02-08): The requirement of ASME Code Section IX, IWV-3410(c)(3) for comparison of stroke times with those of previous test (or an average of previous test) has not been incorporated into the required procedures. The licensee's representative stated that this requirement would be incorporated into AP-7008. This item remains unresolved (29/79-02-08).

3. Shift Logs and Operating Records

a. The inspector reviewed the following plant procedures to determine the licensee established administrative requirements in this area in preparation for review of various logs and records.

-- AP-0001, Plant Procedures and Instructions, Revision 8.

-- AP-2002, Operations Department Personnel Shift Relief, Revision 9.

-- AP-2009, Control Room Area Limits for Control Room Operators, Original.

-- AP-2010, Control Room Access During Accidents and Operations Transients, Original.

-- AP-0017, Switching and Tagging of Plant Equipment, Revision 5.

-- AP-0018, Bypass of Safety Function and Jumper Control Log, Revision 7.

-- AP-2007, Maintenance of Operations Department Logs, Revision 7.

-- AP-0216, Housekeeping and Cleanliness Control, Original.

-- AP-0042, Housekeeping for Maintenance and Modifications, Original.

-- Rules Governing In-Plant Tagging Procedures Local Control Rules, Revision 3.

The above procedures, Technical Specifications, ANSI N18.7-1972 "Quality Assurance Requirements for Nuclear Power Plants" and 10 CFR 50.59 were used by the inspector to determine the acceptability of the logs and records reviewed.

b. Shift logs and operating records were reviewed to verify that:

-- Control Room logs and shift surveillance sheets are properly completed and that selected Technical Specification limits were met.

-- Control Room log entries involving abnormal conditions provide sufficient detail to communicate equipment status, lockout status, correction, and restoration.

-- Log Book reviews are being conducted by the staff.

-- Operating and Special orders do not conflict with Technical Specifications requirements.

-- Jumper (Bypass) log does not contain bypassing discrepancies with Technical Specification requirements and that jumpers are properly approved and installed.

c. The following plant logs and operating records were reviewed:

-- Shift Supervisors's Control Room Log: November 1 - December 31, 1979.

-- Special Orders: 400, 402, 407, 408, and 410.

-- Maintenance Request Logs: 78-854, 79-1130, 79-1032, 79-1033, 79-1039, 79-988, and 79-975.

-- Switching and Tagging Orders: all effective orders.

-- Bypass of Safety Function and Jumper Control Log Request: all active and inactive request.

-- Key Control Log: December 1 - December 31, 1979.

-- Radio Log: December 1 - December 31, 1979.

d. During review of the Switching and Tagging Orders, the inspector noted the following:

(1) That Tagging Orders 800110, 800040, and 790129 had not been reported clear, yet the tag was removed and the orders were located in the inactive section of the log book. This is contrary to the Local Control Tagging Rules, Part B, Item M, "Reported Clear By:"

(2) That Tagging Orders 800027, 800009, and 800110 were not "checked" and were located in the inactive section of the log book. This is contrary to Local Control Tagging Rules, Part B, Item I, "Tagging Checked By:"

Review of the Bypass of Safety Function and Jumper Control Request Log, request numbers 80-31, 80-32, and 80-44 were listed in the index as active request numbers, however, were located in the inactive section of the log. Request number 80-35 was also located in the inactive section of the log and had not been "closed out" by a shift supervisor's signature as required by AP-0081, Steps 8 and 9. The above items are collectively an item of noncompliance at the deficiency level (29/80-02-01).

4. Plant Tour

The inspector conducted a tour of accessible areas of the plant including the Primary Auxiliary Building, Turbine Building, Safety Injection Building, Switchgear Room, Diesel Rooms, Control Room, Vaport Containment Spent Fuel Building, Radwaste Building, and HP Control Point Areas. Details and findings are noted below.

a. Monitoring Instrumentation and Annunciators

Control Board annunicators were checked for alarms, abnormal for plant conditions, on several occasions during the inspection. None were identified. The following monitoring instrumentation was checked to verify that required instrumentation was operable and that, where applicable, values indicated were in accordance with Technical Specifications.

-- Pressurizer pressure, level and temperature.

-- Charging flow path.

-- MCS Temperature.

-- SI tank level.

-- SI accumulator level and pressure.

-- PWST and DWST levels.

-- Batteries 1, 2, and 3 bus voltage.

-- Stack gas radiation monitor.

-- Containment air particulate radiation monitor.

No abnormal annunciators were energized. No items of noncompliance were identified.

b. Radiological Controls

Radiation controls established by the licensee, including posting of radiation areas, radiological surveys, condition of step-off pads, and the disposal of protective clothing were observed for conformance with the requirements of 10 CFR 20 an OP-8100, "Establishing and Posting Controlled Areas," and OP-8101, "Plant Radiological Surveys."

No items of noncompliance were identified.

c. Plant Housekeeping

Plant housekeeping conditions, including general cleanliness and storage of materials to prevent fire hazards were observed in all areas toured. Housekeeping and cleanliness were good.

No items of noncompliance were identified.

d. Fluid Leaks and Piping Vibration

Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibration.

No items of noncompliance were identified.

e. Pipe Hangers/Seismic Restraints

Pipe hangers and restraints installed on various piping systems through the plant were observed for proper installation and tension.

No items of noncompliance were identified.

f. Control Room Manning/Shift Turnover

Control Room Manning was reviewed for conformance with the requirements of 10 CFR 50.54(k) and Technical Specifications. The inspector verified, several times during the inspection that appropriate licensed operators were on shift. Manning requirements were met at all times. Several shift turnovers were observed during the course of the inspection. All were noted to be thorough and orderly.

5. In-Office Review of Licensee Event Reports (LER's)

The inspector reviewed LER's received in RI office to verify that details of the events were clearly reported including the accuracy of the description of cause and adequacy of corrective action. The inspector also determined whether further information was required from the licensee, whether generic implications were indicated, and whether the event warranted onsite followup. The following LER's were reviewed:

-- 79-22, Secondary Water High Chloride Concentration

-- 79-23, 480 Volt Busses De-Energized

-- 79-24, Loss of Flow Path from the BAMT and SIT to the Charging Pumps

-- 79-25, Main Coolant Pressure Channel Setpoint Drift

-- 79-26, Degraded Voltage to Safety Loads

-- 79-27, Failed Surveillance and Failed Type "C" Test

-- 79-28, Missed Surveillance Test

-- 79-29, HV-SOV-1 and 2 Failed Surveillance

-- 79-30, SI Accumulator Time Delay Relay Failure

-- 79-31, S/G Blowdown Monitor Removed from Service

-- 79-32, Primary Vent Stack Particulate Monitor Motor Failure

-- 79-33, Loss of Flow Path from BAMT to Charging Pump Suction

-- 80-01, No. 2 S/G Blowdown Monitor Failure

-- 80-08, Failed Nitrogen Accumulator Surveillance

6. Onsite Licensee Event Followup

For those LER's selected for the onsite followup, the inspector verified that reporting requirements for Technical Specifications and Regulatory Guide 1.16 had been met, that appropriate corrective action had been taken, that the event was reviewed by the licensee as required, and that continued operation of the facility was conducted within Technical Specification limits. The review included discussions with licensee personnel, review of PORC meeting minutes, Plant Information Reports (in-house reports), and applicable logs. The following LER's were reviewed onsite.

-- 79-27, Failed Surveillance and Failed Type "C" Test. The inspector followed up on this occurrence and witnessed Type "C" testing of HV-SOV-1 and 2 per OP-4702, Revision 7, Attachment "Y", "Vapor Containment Type B & C Penetration Test." Discussions with the licensee's representatives revealed that the cause of the occurrence was due to oil and dirt buildup as a result of cross connecting the Hydrogen Ventilation System with the Service Air System while purging the vapor containment. A proposed design change modification is presently being considered by the licensee as permanent corrective action.

-- 79-32, Primary Vent Stack Particulate Monitor Motor Failure. The cause of the motor failure was due to normal wear on the pump motor bearings. The inspector reviewed maintenance documentation associated with the replacement of the motor. The inspector also verified that air samples were taken during the time which the motor was known to be inoperative.

-- 80-08, Failed Nitrogen Accumulator Surveillance. The inspectors reviewed the following documented pertaining to this event:

Engineering Design Change Request 76-6 (EDCR 76-6), Revision 5

Engineering Design Change Request 76-6, Revision 6

Maintenance Request No. 80-114, dated January 29, 1980

Maintenance Request No. 80-40, dated January 19, 1980

OP-4630, "Accumulator Time Delay Actuation Verification," Revision 3

OP-4663, Operability Testing of the Accumulator Trip Valves SI-TV-604, SI-TV-605, and SI-TV-606," Revision 1 and data sheets dated January 28, 1980 and January 3, 1980

OP-6007, "I&C Department Routine Corrective Maintenance," Revision 2

Technical Specification LCO 3.5.1

Operational Quality Assurance Manual YOQAP-1-A, August 15, 1977

American National Standard N18.7-1976/ANS-3.2

On January 19, 1980, with the plant in Cold Shutdown, four time delay relays (Agastat 125VDC Model DSAXX 0125SPAXAA) which control the low pressure Safety Injection Accumalator nitrogen valves, were replaced with an improved model of the same designation. Following replacement, the timers were tested and found acceptable using an installed test circuit. Later in the week, during surveillance testing of the complete circuit, the timers failed to operate.

Investigation revealed that the relays were polarity sensitive. With the polarity of the signal leads reversed, the accumulator system could not function, although the monthly timer surveillance test would show proper timer operation. The design of the timer test circuit failed to account for the possibility that the timer might be polarity sensitive. The signal leads were reversed and the Safety Injection Accumulator system functioned normally.

The relays which had been removed on January 19, 1980, were immediately checked and also found to be polarity sensitive. These relays had been installed on October 13, 1979, and placed in service on November 5, 1979. There was no indication in the manufacturer's installation instructions or on the relays themselves to warn of their polarity sensitive nature. Further, the relays in service prior to November, 1979, were found not to be polarity sensitive.

The inspector determined through discussions with I&C technicians and re-enactment of the installation process that at least three of the four time delay relays in operation for the period November 4, 1979, through January 19, 1980, were installed in such a manner that the polarity of the signal leads were reversed. The plant status during this time was greater than 1,000 lbs and in modes 1, 2, or 3. TS 3.5.1 requires the low pressure Safety Injection Accumulator be operable under these conditions.

The Yankee Atomic Electric Company Quality Assurance Manual I.5.b assures that the Operational Quality Assurance Program satisfies the requirements of ANSI N18.7-1976 which requires appropriate inspection and performance testing of systems or components on which modifications have been performed. The inspectors reviewed the extent and results of the testing performed during the modification (EDCR 76-6), and determined that appropriate testing of the Low Pressure Safety Injection Accumulator System was not performed as required by ANSI N18.7, Paragrap. 5.2.7.

The above items are collectively an item of noncompliance at the violation level (29/80-02-02). The licensee's representative, however, has agreed to perform a full train test of safety related systems after replacement or modification of significant components in that system in the future.

7. IE Bulletins

Licensee action concerning the following IE Bulletins was reviewed by the inspector to verify that:

-- The Bulletin was forwarded to appropriate onsite management;

-- A review for applicability was performed;

-- Information submitted in the licensee's response was accurate; and,

-- Correction action (if required) was adequate.

IEB 79-23, Potential Failure of Emergency Diesel Generator Field Exciter Transformer. This Bulletin was reviewed and determined not to be a concern at Yankee-Rowe. The circuitry of the diesel generators at Yankee-Rowe does not have a connection between the exciter power transformer and the neutral of the generator. Voltage and frequency and cooling requirements have been maintained during a full load rating test of 24 hours in duration.

IEB 79-24, Frozen Lines. The inspector reviewed the licensee's evaluation of this Bulletin which was in the form of memorandums and attached commitments from three department heads. The memorandums concluded that Yankee-Rowe has not had any significant freezing of instrument lines within the past three years. The licensee performs OP-5751, "Heat Tracing Inspections," on a regular interval during freezing weather.

IEB 79-25, Westinghouse BFD Relays. The inspector reviewed the licensee's evaluation of this Bulletin. The licensee had determined that no BFD relays are used on safety related systems at Yankee-Rowe.

8. Review of Short Term Lessons Learned Implementations

The inspector reviewed the licensees response and implementation of several required actions as contained in NUREG-0578. The inspector reviewed minutes of the PORC meetings for each design change and attended an operator Pre-startup training session addressing the plant modifications resulting from the actions required by NUREG-0578. The following actions were reviewed:

Emergency Power Supply (2.1.1)

The inspector reviewed Engineering Design Change Request 79-32, "Power Supply Change for PR-MOV-512," and OP-5000.110, "Special Test," and minutes of PORC 79-51. The above documentation indicates that the power supply to motor operated block PRV-MOV-512 on the pressurizer relief line has been removed from the 480V MCCI bus and connected to the 480V Emergency MCCI bus. The inspector discussed this change with the reactor operator on shift and ascertained that he was knowledgable of this change. No inadequacies were identified.

Direct Indication of Valve Position (2.1.3.a)

During the plant tour the inspector witnessed portions of the installation of accustic accelerometer system and reviewed OP-6000.109, "Installation of the Pressurizer PORV, SV's Position Indication System." Later in the course of the inspection the inspector witnessed testing of the completed installation. No inadequacies were identified.

Instrumentation for Inadequate Core Cooling (2.1.3.b)

The inspector reviewed EDCR-79-30 which installed a primary coolant saturation meter which provides continuous indication of the margin from saturated conditions. Shift reactor operators demonstrated the operation of the device and their familiarity with its capabilities and purposes. No inadequacies were identified.

Diverse Containment Isolation (2.1.4)

The inspector reviewed EDCR-79-44, EDCR-79-55, and OP-6000.106, "Special Test." The inspector also witnessed portions of the Containment Isolation Reset Features, which ensures that these valves must be individually reset from the control room following its closure. No inadequacies were identified.

Auxiliary Feed Flow Indication (2.1.7.b)

The inspector reviewed EDCR-79-47, OP-6000.108, "Special Test," and minutes of the PORC meeting 80-02. The inspector also witnessed partial installation of the ultrasonic flow transmitters on one emergency feedwater line and later during the inspection discussed the operation of the main control board "flow display" with reactor operators. No inadequacies were noted.

Shift Supervisor Responsibilities (2.2.1.a)

The inspector reviewed procedure AP-2001, "Responsibilities and Authorities of Operations Department Personnel," Revision 9. No inadequacies were identified.

Shift Technical Advisor (2.2.1.b)

The inspector discussed the licensee's plan for fulfilling the requirements of stationing a Shift Technical Advisor (STA) for the short term. The licensee's implementation utilizes experienced plant engineers who will be working on rotating shifts.

The inspector reviewed an informal document titled "Shift Technical Advisor," which discussed the responsibilities and authorities of the STA. The items addressed in this document had not been incorporated into any formal plant approved procedures. This item is unresolved pending licensee issuance of an approved administrative procedure delineating the responsibilities and authorities of the STA (29/80-02-03).

Shift and Relief Turnover Procedures (2.2.1.c)

The inspector reviewed the following procedures to verify that adequate procedures were in effect to perform orderly, thorough shift relief.

-- AP-5007, Maintenance Department Shift Log, Original.

-- AP-2002, Operations Department Personnel Shift Relief, Revision 9.

-- AP-2005, Operations Department Surveillance Schedule, Revision 14.

-- AP-2007, Maintenance of Operations Departmental Logs, Revision 7.

No inadequacies were identified.

Control Room Access (2.2.2.a)

The inspector reviewed procedure AP-2010, "Control Room Access During Accident and Operational Transients," Original, to verify that adequate administrative controls existed to control access to the control room. No inadequacies were identified.

9. Fuel Pool Modification

The inspector reviewed proposed Change 158, Supplement 3, dated January 15, 1979, and Amendment No. 57 to the Operating License No. DPR-3, authorizing the implementation of modifications of the Spent Fuel Pit as describedin the proposed Change No. 158.

The inspector toured the spend fuel pool area, witnessed the work in progress and questioned the licensee's representative in regard to the adequacy of the structural integrity of the fuel pit as cracks were noted in the exterior of the fuel pit walls. Through discussions with the licensee's representative the inspector later learned that these cracks sometimes leak and sand bags are used to direct the flow to contain the leakage. The present modification as describedin proposed Change No. 158 provides for the installation of a steel liner within the fuel pool. This modification should prevent future leakage, however the structural integrity of the pool foundation with these apparent cracks does not appear to have been addressed. This item is unresolved (29/80-02-04).

10. Unresolved Items

Unresolved items are those items for which further information is required to determine whether they are acceptable or items of noncompliance. Unresolved items are contained in Paragraphs 8 and 9 of this report.

11. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on February 5, 1980, and summarized the scope and findings of the inspection as they are detailed in this report. During this meeting, the unresolved items and items of noncompliance were identified.