

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Docket/Report: 50-309/85-30 License: DPR-36  
Licensee: Maine Yankee Atomic Power  
Inspection At: Wiscasset, Maine  
Dates: October 5 to October 31, 1985  
Submitted:

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11/14/85  
date

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11/14/85  
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Summary: Inspection on October 5 - October 31, 1985 (Report No. 50-309/85-30)

Areas Inspected: Routine resident inspection (187 hours) of the control room, accessible parts of plant structures, plant operations, radiation protection, physical security, fire protection, plant operating records, maintenance, surveillance, open items, and environmental qualification.

No violations were identified.

## DETAILS

### 1. Persons Contacted

Within this report period, interviews and discussions were conducted with various licensee personnel, including reactor operators, maintenance and surveillance technicians and the licensee's management staff.

### 2. Summary of Facility Activities

At the beginning of the report period the plant was in Cycle 8/9 refueling outage. On October 22, 1985 a plant startup was performed and low power physics testing was begun. The inspectors observed the initial startup and verified that it was performed in accordance with approved procedures and that Technical Specification requirements were met.

At 8:40 p.m. on October 23, the reactor tripped from 4% power due to low level in steam generator #3. Level in #3 steam generator was being manually controlled at the time of the trip because of leakage past the feedwater regulating bypass valve. The reactor was taken critical at 2:09 a.m. on October 24.

The reactor was manually shutdown at 11:02 a.m. on October 24 to remove the anti-rotation device from #2 reactor coolant pump. Upon completion of this work the reactor was made critical at 9:54 a.m. on October 25.

At 5:24 p.m. on October 25 a reactor trip occurred from 25% power due to a variable overpower trip. This trip was caused by inadvertant closing of steam generator #1 excess flow check valve (EFCV). The EFCV closure was believed to have been caused by a failure of the air cylinder rupture disc. After replacing rupture discs in all three excess flow check valves, the reactor was made critical at 10:15 p.m. on October 25.

At 11:02 p.m. on October 26 the reactor was manually tripped from 30% power because of the inadvertant closure of #3 steam generator EFCV. The cause was again determined to be the failure of the rupture disc. The premature failures of the rupture discs was determined to be due to inadequate torquing of the rupture disc flange bolts. A PORC meeting was convened by conference call and the plant was made critical at 5:21 a.m. on October 27.

The plant reached approximately 90% power on October 31 when problems with the turbine governor valve EHC system caused a loss of load. The plant was stabilized at 83% power then further reduced to 77% and remained there while repairs were initiated.

### 3. Follow-up on Previous Inspection Findings

- a. (Closed) Follow up item (82-19-11) Refueling Water Storage Tank (RWST) level switch drift. Due to problems with the RWST level switches drifting, the licensee replaced the switches with level transmitters. An engineering Design Change Request (EDCR) was initiated to accomplish this change. The inspector reviewed the EDCR. This item is closed.
- b. (Closed) Bulletin (83-BU-04) and (Closed) Unresolved Item (83-20-03). Bulletin followup and resolution of reactor trip breaker undervoltage device corrective action. The licensee implemented a comprehensive program of reactor trip breaker maintenance and testing. The inspector witnessed portions of both programs. Currently, the licensee employs eight Reactor Trip Breakers (RTBs). All eight have been refurbished (two need additional maintenance to change the grease in the three bearings associated with the trip shaft and trip latch). The time testing of the RTBs has shown consistent, reliable performance. The inspector had no further comments.
- c. (Closed) Violation (83-06-02) Improper modification and review of procedure 1-12-5 in that the intent of the procedure was changed. The inspector reviewed licensee corrective action which included upgrading system drawings, review of containment integrity valve list, renewed emphasis during training of containment integrity requirements and changes to Technical Specifications. The inspector had no further questions.
- d. (Closed) Violation (84-02-02) Inadequate program to verify correct performance of operating activities in accordance with NUREG-0737. The inspector reviewed the licensee's corrective action including independent verification of yellow tags and tagging orders. Additionally, Maine Yankee tagging rules now require tagging of local control switches as well as equipment breakers for safety related equipment. The inspector also observed that these programs have been implemented.
- e. (Closed) Violation (84-02-03) Failure to control Class A documents. The inspector reviewed the licensee's corrective action. The Electrical Distribution Book is now a controlled document which is reviewed by the Plant Operations Review Committee (PORC). Additionally, the Technical Data Book has been reviewed and is now a PORC controlled document. The plant's control over procedures has been observed and no further problems were noted.
- f. (Closed) Violation (84-02-04) Certain memos superseded procedures without the same level of review. The licensee reviewed the Operating Memos and determined that some of the memos could be incorporated into procedures. Changes to the affected procedures

were reviewed under existing controls. The Operating Memos were then cancelled. The Electrical Distribution book was changed to a controlled document. The inspector had no further questions.

- g. (Closed) Follow up Item (84-06-01) Two Safety Injection Actuation Signals (SIAS) were unexplained during Cycle 8 refueling. The inspector reviewed the licensee's troubleshooting of this problem including attempts to duplicate the conditions that existed when the two SIAS were initiated. The cause of these two SIAS was not determined. SIAS function was determined to be operable. The inspector had no further comments.
- h. (Closed) Follow up Item (84-09-01) Resolution of noise problems with source range instrumentation. The licensee conducted extensive troubleshooting of the Wide Range Nuclear Instrumentation. The licensee discovered cable connector and detector problems that contributed to the noisy response of the Source Range Instruments. New cable was routed, and corrective action was taken on the other deficiencies noted. A manufacturer's representative was onsite to assist in the corrective action. As observed during the plant startup from Cycle 9 refueling, all instruments appear to be functioning properly. Channel A still appears to exhibit some noise problem between  $10^{-5}$  percent power and 1 percent power. The licensee is studying this problem. The inspector had no further questions.
- i. (Closed) Follow up Item (84-09-02) Compensatory measures to be taken for access control doors. The inspector held discussions with the Security Supervisor and reviewed the corrective actions that had been taken. The inspector had no further questions.
- j. (Closed) Violation (84-09-05) No audible neutron count rate in containment during core geometry changes. The inspector monitored cycle 9 refueling and verified that an audible count rate was functioning during core geometry changes. Plant procedures have been changed to verify the audible count rate once per shift. This item is closed.
- k. (Closed) Violation (84-09-06) Plant Operations Review Committee (PORC) review of Source Range Instruments Modifications. PORC review of this item was conducted on June 18, 1984. The plant has instituted a process by which any member of the plant can direct an item of concern to PORC's attention.

#### 4. Review of Plant Operations

The inspector reviewed plant operation through direct observation throughout the reporting period. Conditions were found to be in compliance with the following licensee documents:



- Maine Yankee Technical Specifications
- Maine Yankee Technical Data Book
- Maine Yankee Fire Protection Program
- Maine Yankee Radiation Protection Program
- Maine Yankee Tagging Rules
- Administrative and Operating Procedures

a. Instrumentation

Control room process instruments were observed for correlation between channels and for conformance with Technical Specification requirements. No unacceptable conditions in process instrumentation were identified.

b. Annunciator Alarms

The inspector observed various alarm conditions which had been received and acknowledged. These conditions were discussed with shift personnel who were knowledgeable of the alarms and actions required. Operator response was verified to be in accordance with procedure 2-100-1, Response to Panalarms, Revision 5.

During plant inspections, the inspector observed the condition of equipment associated with various alarms. No unacceptable conditions were identified.

c. Shift Manning

The operating shifts were observed to be staffed to meet the operating requirements of Technical Specifications, Section 5, both to the number and type of licenses. Control room and shift manning were observed to be in conformance with CFR 50.54.

d. Radiation Protection Controls

Radiation Protection control areas were inspected. Radiation Work Permits in use were reviewed, and compliance with those documents, as to protective clothing and required monitoring instruments, was inspected. Proper posting and control of radiation and high radiation areas was reviewed in addition to verifying requirements for wearing of appropriate personnel monitoring devices. There were no unacceptable conditions identified.

e. Fire Protection/Prevention

The inspector examined the condition of selected pieces of fire fighting equipment. Combustible materials were being controlled and were not found near vital areas. Selected cable penetrations were examined and fire barriers were found intact. Cable trays were clear of debris. No abnormal conditions were identified.

f. ECCS System Alignment

An operability verification was performed on selected ECCS trains prior to initial startup. Accessible valve positions, power supplies and breaker positions were examined. Visual inspections of major components were performed. Instrument operability and agreement between channels were also reviewed.

For the Auxiliary Feedwater (AFW) System, the following items were reviewed: The licensee's system lineup procedure; equipment conditions such as hangers, supports and housekeeping; installation of required locking devices; and valve position indication. During this review the inspector noticed that the isolation valve from the primary water storage tank to the suction of the steam driven auxiliary feed pump (AFW-4) was not on the AFW locked valve check list. The valve was, however, locked in the required position and is painted so as to designate it as an ECCS valve. A discussion with the licensee indicated that this valve was removed from the check list after modifications to the system which included installation of a check valve. The inspector agreed with the licensee's position that this valve does not need to be included as part of the ECCS valve check list.

No deficiencies were noted.

g. SIAS Actuation

During the Critical Boron Concentration Determination portion of low power physics testing the plant experienced an inadvertant initiation of the train "A" safety injection actuation system (SIAS). The operators immediately recognized the cause of the signal to be due to a monthly surveillance being performed on the SIAS channel.

The operators restored systems to normal within approximately one minute of the SIAS actuation. Because of the operators prompt actions no plant trip occurred. An estimated 150 gallons of borated water were injected into the reactor coolant system (RCS). Primary water was then added to dilute the RCS boron concentration and return to the conditions required by the test. The inspector was present in the control room during this occurrence.

The cause of the SIAS actuation was determined to be stuck closed contacts in the channel B relay. These closed channel B contacts in conjunction with the channel A testing provided the 2 out of 4 coincidence for a SIAS actuation in train A. The relay was replaced and satisfactorily tested.

The relay was disassembled and inspected but no cause for the failure was apparent. The inspector had no further concerns.

## 5. Maintenance

### a. Primary Component Cooling (PCC)

During this outage repairs were made to various components in the PCC system which required draining chromated water from large portions of the system. For a period of over 2 weeks makeup to the PCC system was approximately 600 gallons a day. Sump and tank levels were trended and sampled to determine the leak path. Because portions of the system were drained the licensee believed that leakage could have been into those portions of the system. After repairs were completed and the system was filled makeup to the PCC system remained approximately 200 gallons per day.

Underground piping was uncovered and a hole was found in a section of 14 inch diameter pipe. The pipe was weld repaired and upon testing the licensee discovered another hole. The pipe was weld repaired and satisfactorily tested.

Draining and making repairs to the system made one RHR train inoperable. The inspector verified that the conditions of the T.S. and remedial action statement were met for reactor core energy removal.

The licensee determined that both holes were in locations that were in contact with wooden crib work used for support during initial construction. The licensee is presently evaluating both short and long term plans to inspect and protect the piping from further degradation. This is inspector follow item 309/85-30-01.

### b. Environmental Qualification

On October 10, 1985, the licensee reported that Rosemont transmitters (Model 1153, series A,B&D) were not installed in accordance with manufacturers recommendations. The deficiencies would invalidate the environmental qualification (EQ) of the transmitters but would not effect their operability under non-accident conditions.

The manufacturer specifies a torque value and thread sealant for the conduit seal assemblies. A torque value and O-ring grease are also specified for the transmitter cover. However, these transmitters were installed in 1982 prior to resolution of EQ issues related to the transmitters.

The Yankee Nuclear Services Division, EQ Coordinator, has reviewed all Qualification Documentation Reviews (QDR) to determine any other possible deficiencies. An inspection was performed on these transmitters and other EQ components to ensure conformance with the QDRs. The following actions were taken as a result of the review:

1. Torque cover plate screws on NANCO limit switches.
2. Verify or add drain holes to Weidmuller terminal junction boxes.
3. Grease O-rings on Conax RTDs.

To assure that equipment is maintained environmentally qualified after surveillance, the licensee requires o-rings to be replaced when the transmitter cover is removed. An engineering review is required in order for the I & C technician to get the new o-ring from plant stores. The engineering reviews contain instructions for maintaining equipment EQ. A discussion with the licensee indicated that o-rings were not required to be replaced after special functional testing (SFT), and therefore, no engineering review would specify EQ requirements. The inspector requested documentation that the SFT contained adequate instructions to restore EQ equipment or documentation that the EQ inspection had been performed after the SFT.

As a result of this review, the licensee found 2 containment spray header pressure transmitters that had the SFT performed after the EQ inspection without instructions in the SFT procedure to torque the transmitter covers. A repair order was initiated to torque the cover plates. The inspector had no further concerns.

## 6. Surveillance

In addition to low power physics testing the inspector observed testing of the 1B emergency diesel generator and the turbine driven auxiliary feed pump. These tests were conducted in accordance with approved procedures. Discrepancies found during testing were corrected and satisfactorily retested. No concerns were identified.

### a. Low Power Physics Testing

The inspector observed portions of various low power physics tests. The test prerequisites, required plant conditions and adherence to approved procedures were verified. Test results were reviewed and found to meet the acceptance criteria of Cycle 9 Core Performance Analysis and the Technical Specifications.

The following tests were reviewed:

- CEA rod drop times
- Critical Boron Concentration
- Isothermal Temperature Coefficient & Moderator Temperature Coefficient
- CEA Worths
- Worth of the most limiting near full power ejected CEA

Minor discrepancies in recorded data were discussed with the licensee and satisfactorily resolved.



## 7. Observations of Physical Security

The resident inspector made observations, witnessed and/or verified, during regular and backshift hours, that selected aspects of the security plan were in accordance with the regulatory requirements, physical security plan and approved procedures, as noted below.

### a. Physical Security Plan

- Observations and personnel interviews indicated that a full time member of the security organization, with authority to direct physical security actions, was present as required.
- Manning of all three shifts was observed to be as required.

### b. Physical Barriers

Selected barriers in the protected area, access controlled area, and the vital areas were observed and random monitoring of the isolation zone was performed. Observations of truck and car searches were made.

### c. Access Control

Observations of the following items were made:

- Identification, authorization and badging
- Escorting
- Searches
- Communications

## 8. Exit Interview

Meetings were held periodically with senior facility management to discuss the inspection scope and findings.