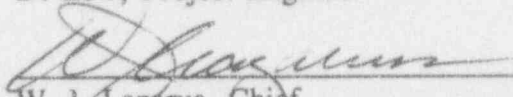


U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report Number: 50-309/94-06  
Docket Number: 50-309  
Licensee Number: DRP-36  
Licensee: Maine Yankee Atomic Power Company  
83 Edison Drive  
Augusta, Maine 04336  
Facility: Maine Yankee Nuclear Generating Station  
Inspection Dates: March 13 to April 30, 1994  
Inspectors: J. Yerokun, Senior Resident Inspector  
W. T. Olsen, Resident Inspector  
D. Lew, Project Engineer

Approved By:

  
W. J. Lazarus, Chief  
Reactor Projects Section 3B

5/23/94  
Date

**Scope:** Resident inspection of plant activities including operations, maintenance and surveillance, engineering and technical support, and overall plant support.

**Overview:** See executive summary.

## EXECUTIVE SUMMARY

### Operations

Plant operations continued to be performed well. Control room supervision was excellent and operators were very knowledgeable of, and up to date with plant issues. Maine Yankee demonstrated a strong safety perspective in response to a potential concern, by safely re-arranging the safety related 4160 Volts circuit breakers so that the more reliable 2-prop spring circuit breakers were located in the more safety significant places.

### Maintenance

Activities were well conducted. Work packages were prepared in accordance with the procedures. Improvements were made in previously identified weaknesses such as with the diagnostics section of the work control procedure (0-16-3).

### Engineering

Engineering efforts were excellent. Good support was provided to the plant in addressing the 4160 volt breaker issues. Appropriate actions were taken to address deficiencies identified in the IST program.

### Plant Support

Radiological controls continue to be well implemented. Security performance was good, however, an instance of degraded control of security keys was observed. Appropriate compensatory actions were implemented when the status of the protected area security fence was indeterminate as a result of misunderstanding the security plan.

### Safety Assessment/Quality Verification

There was good management involvement in plant activities. Good attention was paid to the service water pump issues ensuring the timely resolution of the pumps flow issues.

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	ii
TABLE OF CONTENTS .....	iii
1. OPERATIONS .....	1
1.1 Primary to Secondary Leakage .....	1
1.2 Failure of High Pressure Safety Injection (HPSI) Pump P-14B to Start . . .	1
1.3 Diesel Generator (DG) 1A Inadvertent Load Transient .....	2
1.4 Diesel Generator Fuel Oil Particulate Level .....	2
1.5 Chemical Vaporization in the Water Treatment Area .....	3
2.0 MAINTENANCE .....	4
2.1 Maintenance Observations .....	4
2.2 Surveillance Observations .....	5
2.3 4160 Volt Circuit Breakers .....	5
2.4 D/G 1A Circulating Lube Oil Pump Coupling Failure .....	7
3. ENGINEERING .....	7
3.1 Improper Separation of Safety Related Cables .....	7
3.2 Inservice Testing (P-29A and P-33A) .....	8
3.3 Reroute of Service Water Pump P-29A & D Power Cables .....	9
4. PLANT SUPPORT .....	10
4.1 Radiological Controls .....	10
4.2 Security .....	10
4.3 Emergency Preparedness .....	11
4.4 Fire Protection .....	11
5. SAFETY ASSESSMENT/QUALITY VERIFICATION .....	12
5.1 Licensee Event Reports (LER) .....	12
5.2 Followup .....	13
6. ADMINISTRATIVE .....	15
6.1 Persons Contacted .....	15
6.2 Summary of Facility Activities .....	15
6.3 Interface with the State of Maine .....	15
6.4 Exit Meeting .....	15

## DETAILS

### 1. OPERATIONS

The plant was operated at full power during this period except on March 16, to 17, 1994 when power was reduced to 55% to re-install service water (SW) pump P-29A, and to troubleshoot and repair the fail safe alarms on the steam driven main feedwater pump pressure control module. On a daily basis, inspectors verified adequate control room staffing, appropriate access control, adherence to procedures and technical specifications limiting conditions for operation, and operability of protective systems, including emergency power source. The inspectors also verified operability of selected Engineered Safety Features (ESF) trains and assessed the condition of plant equipment, radiological controls, security and safety. The inspectors observed shift turnovers to ascertain that they were comprehensive and well performed. The inspectors monitored the status of control room annunciators and radiation monitors to ascertain that they were being maintained adequately. The inspectors evaluated plant housekeeping and cleanliness and found them well maintained.

During the inspection period the inspectors conducted backshift inspection on March 16, 21, 24, 27, 28, 29, April 1, 4, 11, and 26, and deep backshift inspection on March 26, April 7, 14, 18, and 25.

#### 1.1 Primary to Secondary Leakage

Maine Yankee continued to closely monitor the primary to secondary leakage rate as well as the trend of the leakage. The rate continued to slowly trend up and remained below 14 gallons per day (gpd). The plant began performing secondary system sample analysis twice every shift as required by AOP 2-49, Steam Generator Tube Leak when leakage exceeded 11 gpd. Per the AOP, plant shutdown would be required at 50 gpd. Using portable N-16 monitors, Maine Yankee was able to determine with a good degree of confidence that the leakage is from Steam Generator (S/G) 2. The inspectors concluded that Maine Yankee continued to take proper actions concerning the steam generator leakage.

#### 1.2 Failure of High Pressure Safety Injection (HPSI) Pump P-14B to Start

On March 23, 1994, Control Room Operators (CRO) attempted to start P-14B per station procedure 1-11-6, Chemical and Volume Control System Operation. The pump failed to start, and the plant entered the remedial actions of station technical specification 3.6. The Shift Operating Supervisor (SOS) sent a Nuclear Plant Operator (NPO) to the protected switchgear room to check the condition of the pump circuit breaker. The NPO reported that the circuit breaker was opened and charged and ready to operate. The SOS directed the CRO to attempt to restart the pump but it did not start. Maintenance department electricians then inspected the circuit breaker for P-14B. After maintenance personnel adjusted the circuit breaker elevator positive interlock arm, the control room operator was able to start the pump. Operators then declared the HPSI pump operable and exited the remedial action of the technical specifications. The Plant Shift Supervisor (PSS) directed that the charging pump be swapped with the installed spare pump, P-14S. Maine Yankee has three HPSI pumps (P-14A, B, and S) and with two

aligned as high head injection trains A and B, the third is maintained as a spare. P-14B was taken out of service to review the cause of the circuit breaker failure to close. The inspector determined that Maine Yankee's actions exhibited a strong safety perspective with prompt investigation and followup to identify the root cause of the failure. The issues of the 4160 Volt circuit breaker failure are discussed in section 3 of this report.

### **1.3 Diesel Generator (DG) 1A Inadvertent Load Transient**

During a surveillance test of DG 1A on April 26, 1994, the diesel underwent an unexplained load transient. The surveillance was being performed following routine preventive maintenance (PM) on the diesel. Shortly into the 2 hour run, with the diesel generator paralleled with the main generator and the 345 KV grid, the local power meter increased from 2475 Kw to about 2775 Kw. The load increase was also observed on the control room indicator. The operator reduced the load back to 2475 Kw using the Speed Control Switch and was able to complete the 2 hour run. The diesel was shutdown and declared inoperable. Work order (WO) #94-1879 was generated to investigate the unplanned load pick-up.

Investigations revealed that during the time of the transient, no large load was started and that the frequency of the DG to the grid was stable. Plant maintenance and engineering personnel performed troubleshooting activities with input from the control governor vendor, Woodward Governor. No specific problems were identified with the governor or fuel supply system. A potential cause was identified as a dirty wiper on a motor operated potentiometer (MOP) in the governor. This, however, could not be substantiated. During subsequent troubleshooting activities, the diesel generator performed properly and the inadvertent load increase could not be duplicated. The plant was able to demonstrate that the diesel was operable and could perform its intended function. The plant initiated an unusual occurrence report (UOR) #94-030 to document this event.

Maine Yankee indicated that additional monitoring activities would be performed during the next surveillance test. The inspector noted that the licensee's troubleshooting activities were well controlled. Engineering analysis of the significance of this issue were sound. The results of the troubleshooting activities and engineering evaluation of the safety significance of the transient were well documented in a plant engineering department memorandum dated May 4, 1994. The inspector concluded that Maine Yankee's actions to address this issue were thorough and with good safety perspective. The results and analysis were also properly documented.

### **1.4 Diesel Generator Fuel Oil Particulate Level**

On March 26, 1994, Maine Yankee received test results of the diesel generator fuel oil from Saybolt Laboratories. The sample had been obtained per plant procedure 7-206, and sent to Saybolt Labs in early March 1994 for analysis. The results indicated a particulate level of 103 ppm for Tank 28A and 120 ppm for Tank 28B. The administrative limit is 10 ppm (10 mg/L) per procedure 7-206, Diesel Fuel Oil Surveillance. The limit is based on the standards of ASTM-D2276.

The results of the previous analysis received in November 1993, was 0.5 ppm for tank 28A as well as for tank 28B. Based on the acceptable results of this previous analysis and the fact that the contents of the fuel oil tanks had not changed significantly since, Maine Yankee questioned the results obtained from the lab in March 1994. On March 27, 1994, the plant obtained oil samples from the oil tanks for Saybolt Labs analysis. At the same time, chemistry department performed a test of portions of the oil samples. The results of the on-site analysis were 2.5 and 3.5 ppm for tanks 28A and 28B respectively. The results of the analysis performed by Saybolt Labs were 0.9 and 0.7 ppm for tanks 28A and 28B respectively.

The plant properly responded to this issue by taking quick and appropriate actions to verify the quality of the fuel oil. While the analysis performed on site was not under an approved Quality Assurance Program, it provided some interim confirmation that the quality of the fuel oil was appropriate. The plant initiated an unusual occurrence report (UOR) #94-029 to address this issue. An operability determination was developed to document the basis for finding the fuel oil acceptable and the diesels operable. At the end of the inspection period, Maine Yankee was trying to determine the cause of the erroneous results provided by Saybolt labs on March 26, 1994. The inspectors were satisfied with Maine Yankee's immediate actions to address this issue and expressed no further concerns.

#### **1.5 Chemical Vaporization in the Water Treatment Area**

On April 2, 1994 a nuclear plant operator (NPO) performed plant procedure 1-105-1.1, Water Treatment Regeneration. Per the procedure, he added approximately two gallons of acid to the Waste Neutralization Sump in order to neutralize the Waste Neutralization Tank (WNT). The procedure step directed that acid or caustic be added to the water treatment trench, which drains to a waste treatment area sump. This sump is automatically pumped to the WNT. The WNT is sampled until a constant PH between 6.0 and 8.5 is obtained. When the NPO was adding acid to the trench, a chemical vaporization occurred (assumed to be chlorine gas) which forced the operator to leave the area. The NPO informed the control room of the situation and the Plant Shift Supervisor (PSS) responded to the area. He verified strong fumes in the area of the clarifier and directed all personnel to leave the area. The PSS then called the Chemistry Section Head, Chemistry Specialist, Industrial Safety Specialist and Hazardous Material Specialist for assistance.

At this time the PSS also attempted to call out the HAZ-MAT Team as directed by the Maine Yankee Spill Plan. He was unable to reach any of the designated incident response personnel. The PSS directed that the turbine building ventilation be maximized by opening the turbine building roll up doors and water treatment area doors. The chemistry specialist recommended adding approximately ten gallons of caustic to the water treatment trench/sump in order to neutralize the chemical reaction. A control room operator, wearing a protective chemical suit and self contained breathing apparatus, entered the area and added about ten gallons of caustic to the trench. This subsequently neutralized the trench and sump. The industrial safety specialist arrived on site at approximately 2:00 a.m. and sampled the area for gasses. He detected a very small amount of chlorine gas at this time. At approximately 2:30 am the

chemistry specialist sampled the sump and determined the sump to be neutralized. As a result of exposure to the chlorine gas, two NPOs and a station security officer were taken to the hospital for examination. They were examined, found to be uninjured and returned to work.

Earlier on April 1, 1994, the Sodium Hypochlorite Feed Tank (TK-39) had been pumped to five 55 gallon barrels in preparation for an inspection. Maine Yankee personnel estimate that approximately five to fifteen gallons could not be pumped out and the remaining sodium hypochlorite was drained to the water treatment (WT) trench. This amount of sodium hypochlorite was probably the main source of the subsequent chemical reaction. Investigation by Maine Yankee personnel identified some deficiencies in the process. The work control procedure did not provide adequate guidance for handling hazardous material and the controls in place for dumping chemicals and responding to chemical incidents were inadequate for the operators. Additionally, during the event, there was no proper equipment on site to detect chlorine gas and there were no personnel trained to wear chemical protective clothing and operate equipment.

Station management directed that all operations in the water treatment area be suspended until a review was completed and adequate corrective actions were developed. The inspector reviewed Maine Yankee's actions to resolve this problem and determined that initial response was reasonable in spite of the shortcomings later identified in Plant Root Cause Evaluation Report # 186. The inspector determined that no nuclear safety systems were challenged during the event, however an issue concerning worker safety was identified. Maine Yankee determined that no OSHA reportability requirements were met. The inspector reviewed Maine Yankee's actions and found them appropriate.

## 2.0 MAINTENANCE

Overall, maintenance and surveillance activities continue to be conducted well. The inspectors ascertained that activities were performed safely and in accordance with approved plant procedures. No significant problems occurred during this inspection period. Improvements in previously identified weaknesses such as with the diagnostic portion of the work control process were noted.

### 2.1 Maintenance Observations

The inspectors observed and reviewed selected maintenance activities to assure that the activities complied with technical specifications and work order (WO) requirements; that required approvals and releases were obtained prior to commencing work; that the work procedures were appropriately detailed and followed; that QA/QC was appropriately involved; and that equipment was properly tested and returned to service. The inspectors observed portions of the following maintenance activities:

- WO 94-00803-05, Reroute P-29A power cables
- WO 94-00803-00, Swap P-29A and P-29D feeder cables and heater cables

- WO 94-01242-00, Rerouting of PT-2012 and PT-2013 Cables
- WO 94-01411-00, Inspect 4160 volts circuit breakers, Bus 5
- WO 94-01412-00, Inspect 4160 volts circuit breakers, Bus 6

Maintenance personnel properly conducted the inspection activities involving the 4160 volt circuit breakers. Personnel were well aware of the safety significance of their activities which affected all safety related 4160 volt circuit breakers.

## 2.2 Surveillance Observations

The inspector observed and reviewed selected surveillance activities to assure that the surveillance satisfied technical specification requirements; that personnel adhered to administrative and surveillance procedures; that test instrumentation had been calibrated; and that test results satisfied the acceptance criteria. The inspector observed portions of the following surveillances:

- Procedure No. 3-1-23, Alternate Shutdown Diesel Monthly Surveillance Testing
- Procedure No. 3-1-8, Control Element Assembly (CEA) Exercising

During the CEA exercising, one of the CEAs dropped after it was withdrawn to the upper electrical limit. Based on discussions with personnel and review of documentation, the inspector concluded that Maine Yankee initiated appropriate actions to address the event. The CEA was returned to its proper position; instrument and control personnel initiated troubleshooting to investigate the event; and, an unusual occurrence report was issued.

## 2.3 4160 Volt Circuit Breakers

On March 23, 1994, Maine Yankee experienced a malfunction of the "B" high pressure safety injection (HPSI) pump circuit breaker when it failed to close during a pump test. Licensee investigation revealed that a positive interlock switch (micro switch) in the closing circuit failed to close because it had slightly separated from the adjacent upper switch. When the top switch plunger was compressed during breaker operation, the lower switch was not actuated.

The licensee promptly inspected all safety related 4160 volt circuit breakers. Other loose switches and screws that were found were corrected and the breakers tested satisfactorily. However, the root cause for these deficiencies was not yet known. The breakers had all been overhauled by General Electric (GE) during the 1993 refueling outage. On March 25, 1994, NRC regional, headquarters, and resident staff held a conference call with the licensee to discuss this issue, planned corrective actions, and operability of the breakers. The NRC was satisfied with Maine Yankee's on going activities to address this issue.

Since the 1993 refueling outage overhaul of the safety related 4160 volt circuit breakers, the following major problems have occurred:



- On September 26, 1993, diesel generator, (DG) 1A's circuit breaker failed to charge. The positive interlock switch was replaced.
- On September 27, 1993, primary component cooling water pump (PCCW), P-9A's circuit breaker failed to close during a test. The silver coated prop spring was replaced with gold plated spring. This change was also made in other circuit breakers.
- On December 6, 1993, emergency feedwater pump, P-25C's circuit breaker failed to close. The circuit breaker was sent to GE for analysis. A spare circuit breaker was installed in P-25C cubicle. Also, a temporary modification was installed in all safety related 4160 volt circuit breakers to jumper the normally closed contacts of 52 SM-LS switch closed.
- On March 23, 1994, high pressure safety injection (HPSI) pump P-14B's circuit breaker failed to close during a pump test. An unsecured interlock switch with a mounting screw missing female threads was found in the circuit breaker. The switch was replaced and all other 4160 volt circuit breakers were inspected.

On March 29, 1994, three General Electric (GE) representatives were on site to discuss the problems that have occurred with the circuit breakers since the 1993 refueling outage. GE indicated that because of the concerns with workmanship, a "Stop Work" order had been issued at the GE Philadelphia office. A concern with prop springs was raised involving the potential for circuit breaker closing problems if only one prop spring is used. Circuit breakers with one prop spring may be more susceptible to a "trip free" condition because of new bushings which allow parts of the mechanism to operate faster than before. The addition of a second spring would alleviate this potential problem. However, this concern was speculative and not based on any formal test results. GE did not recommend that Maine Yankee replace all single prop spring configuration with dual springs. Maine Yankee assessed the situation and decided to realign the 4160 volt circuit breakers so that the ten breakers that currently have dual prop springs are installed at the more safety significant locations.

On April 4, 1994, three inspectors from the NRC Vendor Inspection Branch, NRR, visited the site. They inspected the 4160 volt circuit breakers including the configuration of the micro switches and discussed the issues with plant personnel. They also examined the defective micro switch that was installed in P-14B circuit breaker, and reviewed the results of the licensee's inspection activities. A NRC regional specialist inspection of the circuit breaker issues is scheduled for the week of May 16, 1994. The results of that inspection will be documented in NRC report 50-309/94-10.

Maine Yankee's QA department initiated a non-conformance report (NCR) #94-001 to address these multiple problems experienced with the safety class 1E 4160 volt circuit breakers. The residents closely monitored Maine Yankee's actions to resolve the problems as they developed to ascertain that adequate actions were taken to ensure the availability of the circuit breakers. The issues were promptly dealt with. Management was kept fully informed of the issues.

Maine Yankee demonstrated an excellent safety perspective in addressing the issues. For example, when GE speculated that a concern with the 1 prop spring configuration might exist, the licensee ensured that the breakers with 2 prop springs were installed in the most essential locations. The residents were satisfied that Maine Yankee was adequately addressing the immediate safety significance of the issues and that there was adequate confidence that the circuit breakers will function as designed in a postulated accident situation.

#### **2.4 D/G 1A Circulating Lube Oil Pump Coupling Failure**

On March 31, 1994, control room operators were alerted to a problem with DG-1A lube oil pressure when a low pressure alarm was received. The lube oil cooler sight glass was empty. DG 1A was declared inoperable because the operability of the circulating lube oil subsystem could not be confirmed. Work Order #94-01525 was initiated to repair the pump. The coupling was found separated. This had disabled the motor from being able to turn the pump. Upon reassembly, the licensee determined that a double set screw was needed to properly secure the flexible coupling together. The pump was later tested satisfactorily.

Maine Yankee investigation revealed that earlier problems lead to this failure. The pump coupling had been replaced on March 1, 1994, (Work Order 93-0400) under the Preventive Maintenance (PM) Program. Later on March 9, 1994, Work Order 94-01072 was issued to troubleshoot what appeared to be high vibration of the lube oil pump. Maine Yankee determined that the coupling was not properly engaged and that was the cause of the loud operating noise and high vibration. The pump was restored, but it wasn't until later when the problem recurred that the need for a double set screw was identified.

The licensee will review the repetitive task process to determine the appropriate actions to be taken so that in subsequent PMs, the coupling is properly installed.

### **3. ENGINEERING**

Engineering continued to provide good support to the plant. Excellent efforts were provided in addressing the 4160 Volt circuit breaker issues and in addressing ongoing issues such as with the service water pumps. Management was well aware of developing issues and proper safety perspective was evident. Issues were well addressed.

#### **3.1 Improper Separation of Safety Related Cables**

On March 18, Maine Yankee engineering personnel determined that two cables associated with post accident containment pressure monitoring were routed in the opposite train cable tray. This was identified when the engineering staff was verifying wiring associated with the Thermolag design change. This condition was contrary to the design basis requirement for train separation.

In accordance with 10 CFR 50.72, Maine Yankee properly reported the condition to the NRC as being outside design basis. After the plant shift supervisor (PSS) was notified, engineering initiated a station Safety Issue Concern (SIC 94-002) to thoroughly document the issue. The PSS made an operability determination based on the fact that station technical specifications require only one channel of post accident containment pressure indication which could be subject to single failure. The PSS initiated a station work order (WO) #94-01242 to resolve the issue and restore proper train separation. The cables were satisfactorily rerouted to the proper train.

Corporate Engineering Department developed a Closeout Plan (COP 94-006) to identify all questions and issues related to the cable separation problem and to provide resolution to any identified concerns. The COP identified four issues initially requiring correction and at the close of the inspection period two were completed. The remaining issues are to identify any similar problems based on the root cause screening, and to complete the accepted root cause analysis recommended action items.

After completion of the evaluation effort, twenty five electrical/I&C work packages were identified as having a possibility for improper installation. Further review determined twenty one packages did not have any identified deficiencies and four packages remained to be reviewed at the end of the inspection period.

### 3.2 Inservice Testing (P-29A and P-33A)

As a result of recently identified service water flow problems, the inspector reviewed inservice testing (IST) associated with the service water pumps. Overall, the inspector noted that Maine Yankee was properly implementing the IST program, and that the trending of service water pump performance was effective. In particular, the inspector considered that IST procedure 3.17.6.6, Inservice Testing of Safeguard Pumps, was thorough and provided clear and concise guidance on the implementation of the IST program.

During a review of past test data sheets, the inspector noted that, on October 3, 1991, the differential pressure for service water pump P-29A was in the alert range. The licensee, however, did not increase the surveillance frequency of the pump as required by the IST program. Subsequent testing on January 17, 1992, showed that the pump differential pressure had returned to the normal parameters. In response to the inspector's observation, Maine Yankee reviewed IST data since 1989, and identified no other similar instance. Although this appeared isolated, Maine Yankee revised the computer database so that alarm conditions are triggered when parameters enter the alert range. Additionally, the IST procedure had recently been changed to include a table with the alert range values.

On March 30, 1994; Maine Yankee reviewed the data sheet for the diesel generator fuel oil transfer pump (P-33A) quarterly surveillance performed a day earlier. The axial vibration was out of specification high and the pump was declared inoperable. The data sheet for the previous surveillance test performed on January 4, 1994, was reviewed and the axial vibration was out

of spec at that time also. However, proper actions had not been taken. The steps of the Inservice Testing Program procedure 3.17.6.6, Inservice Testing of Safeguard Pumps, were not followed since the pump was not declared inoperable at that time.

In response to this observation, Maine Yankee reviewed all IST pump data for the past year and found all data points to be within spec. Also, the pump (P-33A) was restarted and evaluated. A loose dust cover was determined to be the cause of the high axial vibration result. After this cover was properly secured, the vibration was within spec and the pump was returned to service. Maine Yankee initiated an unusual occurrence report (UOR) #94-023 to address this issue.

The failure to increase the test frequency of the service water pump P-29A and declare P-33A inoperable was a violation. The inspector determined that the individual events were isolated, could not have been prevented by a previous finding, were not willful, and had minimal safety significance. Maine Yankee's corrective actions and review of previous IST data was thorough. Consequently, this violation will not be cited in accordance with the NRC's Enforcement Policy in 10 CFR Part 2, Appendix C, Section VII.B(1).

### 3.3 Reroute of Service Water Pump P-29A & D Power Cables

In April Maine Yankee maintenance electricians commenced rerouting the power cables for service water (SW) pumps P-29A and D as directed by station work order 94-00803 and engineering design change request EDCR 94-45. The design basis for the service water system is to remove heat from the component cooling water (CCW) systems during normal, accident and post accident conditions. The original configuration had an "A" electrical train and a "B" electrical train service water pump supplying the primary component cooling water (PCCW) system. The same configuration existed for the secondary component cooling water (SCCW) system. In certain postulated single failures, the possibility existed that both trains of SW/CCW could be affected and would require a certain amount of judgement during realignment. The control room supervisor would be required to send a nuclear plant operator to the heat exchanger area to separate the safety trains.

The modification involved switching the power cables for service water pumps P-29A and D in the circulating water pumphouse. This change realigned the service water pumps such that the "A" train SW pumps (P-29C & D) will be aligned to the PCCW heat exchangers and the "B" train SW pumps (P-29A & B) will be aligned to the SCCW heat exchangers. Also included in the EDCR was swapping of power for the SW pump motor heaters, control switches and control room SW pump ammeter wiring for P-29A & D. Additionally, several human factor changes to section A of the main control board (MCB) will be made during the next refueling outage to improve reactor operator interface with the SW system. These changes will include the following swaps:

- PCCW temperature indication TIA-3425 and SCCW temperature indication TIA-1713.
- PCCW flow indication FI-3408 and SCCW flow indication FI-1708.

- PCCW Pumps P-9A & B control switches and SCCW Pumps P-10 A & B control switches.
- PCCW P-9A & B ammeters and SCCW P-10A & B ammeters.

When the changes are made, all controls and indicators for PCCW system will be on the right side of section A (MCB) and SCCW controls and indicators on the left of section A (MCB).

The inspector observed work in the field during power cable rerouting and determined that the work was performed as required by the Maine Yankee work control program. He also reviewed the EDCR to ensure proper preparation, review and approval. The inspector did not identify any safety concerns and concluded that the task was performed properly.

#### **4. PLANT SUPPORT**

##### **4.1 Radiological Controls**

Inspectors routinely reviewed radiological controls including Organization and Management, external radiation exposure control and contamination control. The inspectors also monitored standard industry radiological work practices, and conformance to radiological control procedures and 10 CFR 20 requirements. No discrepancies were noted.

##### **4.2 Security**

The inspectors verified that security conditions met regulatory requirements, the requirements of the physical security plan, and complied with approved procedures. The checks included security staffing, protected and vital area barriers, vehicle searches and personnel identification, access control, badging, and compensatory measures when required.

###### **4.2.1 Failure To Establish Compensatory Actions For Missing Security Keys**

On April 12, 1994, Maine Yankee security personnel determined that a security officer had inadvertently left the site with security keys. The security sergeant noticed that the keys had been logged in and were missing, but failed to follow up immediately because he was being interrupted by routine shift matters. The security officer notified the site of the keys being in his possession and returned them to the on-shift security supervisor. This event is reportable in accordance with 10 CFR 73.71, if the proper compensatory actions are not taken within ten minutes of discovery. At the time of the event it was erroneously reported that compensatory actions were taken as required, however, further investigation revealed that actions were not taken until after seventeen minutes. The investigation also revealed that the security keys remained in the possession of the security officer at all times.

After the security supervisor identified the situation to the Plant Shift Supervisor, a determination that the event was reportable was made and the proper notification was made to the NRC. The inspector determined that Maine Yankee security management made the proper decisions when presented with the results of the event investigation.

#### 4.2.2 Potentially Degraded Security Barriers

On April 28, 1994, Maine Yankee security management determined that a potential existed that security fencing installed at the station may not meet the requirements of 10 CFR 73.2. This item was identified during a security system audit by contracted personnel. Maine Yankee security management directed that compensatory actions be taken until the issue could be reviewed further and properly resolved. After design basis review and further discussions Maine Yankee determined that the existing security fencing was installed in accordance with the NRC approved security plan. The inspectors found no discrepancy with this determination. This item will also be reviewed by regional security specialists during the next routine security inspection. The inspector determined that the licensee's actions to resolve this issue were appropriate.

#### 4.3 Emergency Preparedness

On March 15, 1994, the inspectors observed an integrated Emergency Response Facility (ERF) drill. The drill was well performed. Minor discrepancies observed were discussed with the responsible licensee personnel.

#### 4.4 Fire Protection

On April 22, 1994, an Auxiliary Operator (AO) discovered a fire door (#3401) from the Primary Auxiliary Building (PAB) to the fuel building that was blocked open without the appropriate fire watch in place. Maine Yankee later determined that the door had been blocked open for a period of about half an hour. Technical specification (TS) 3.23 requires that "with a penetration fire barrier non-functional, within one hour a continuous fire watch shall be established on at least one side of the affected penetration. Since the fire door was discovered opened and properly shut well within the one hour limit, the inspector did not consider this a violation of technical specifications. However, the inspector expressed concerns over the effectiveness of plant procedures, specifically 19-29, Fire Door Access and Repair Guidelines, and the training process to adequately prevent such problems from occurring.

The licensee initiated an unusual occurrence report (UOR) #94-028 to document this event. This issue was discussed with the plant's Fire Protection Engineer. He stated that the plant was in the process of repainting all fire doors and improving the posting on the doors. As a result of this finding, the licensee expedited the repainting efforts and plant support personnel were reminded of the requirements associated with blocking fire doors open. The licensee also indicated that applicable plant procedures will be reviewed and enhanced as required to ensure that adequate guidance is available. The inspector concluded that Maine Yankee was adequately addressing this issue.

## 5. SAFETY ASSESSMENT/QUALITY VERIFICATION

Maine Yankee's management actively participated in plant activities. The daily morning meetings continue to be significant in demonstrating the strength in Maine Yankee's focus on safety and ability to assess and resolve issues.

Plant Operations Review Committee (PORC) meetings were conducted in a professional manner with the required personnel present and with good safety perspective.

### 5.1 Licensee Event Reports (LER)

The inspectors reviewed LERs to verify that the submittal of the report was timely, that the details of the event were clearly reported, that the root cause determination was reasonable, and that the corrective actions were adequate. The inspectors determined whether further information was required from the licensee, whether generic implications existed, and whether events warranted further onsite followup. The following LERs were reviewed:

- LER 94-001, Control Room Ventilation System Inoperable During Preventative Maintenance
- LER 94-002, Inadequate Configuration Control in Design and Operation of Steam Generator Blowdown System

The NRC previously reviewed and documented this event in NRC Inspection Report Nos. 50-309/93-28 and 94-03. The issue was left unresolved pending Maine Yankee's determination of the limiting post accident steam generator blowdown flowrates and actions to prevent implementation of design changes that place the plant outside its design bases.

Based on the LER review, the inspector concluded that the licensee's actions taken to address this issue were appropriate. However, the inspector noted that one portion of the LER warranted clarification. The LER stated, "On December 17, 1993, it was determined based on engineering judgement that a blowdown flow of 150 gpm would not have significantly reduced plant safety. Pending completion of more formal analysis, an administrative limit of 75 gpm total blowdown was established". Upon further review by the inspector, the bases for increasing the blowdown rate were well documented, and in-depth calculations supporting the conclusion appropriately referenced. The subsequent limit of 45 gpm on the blowdown flow rate, which was imposed on February 7, 1994, was a result of very conservative assumptions and calculations, which had not been considered in the original analysis. Additionally, Operations Department personnel had operated conservatively and did not implement the higher limit of 75 gpm. The inspector concluded that the Maine Yankees actions taken subsequent to the problem identification were appropriate and conservative.

The licensee stated that the root cause determination and additional corrective actions will be provided in a supplemental LER.

-- LER 94-003, Service Water Flow Measured Outside Design Basis

The NRC previously reviewed and documented this event in NRC Inspection Report Nos. 50-309/94-01 and 94-03. This issue is still being reviewed by the inspectors and tracked under unresolved item No. 50-309/94-01-01. The licensee stated that the root cause determination and additional corrective actions will be provided in a supplemental LER.

-- LER 94-004, Control Room Ventilation Trains Inoperable Due to Preventative Maintenance

## 5.2 Followup

### 5.2.1 (Closed) Violation 50-309/93-23-01, Control Element Assembly Deviation Alarm

On November 4, 1993, Maine Yankee identified that inadvertently withdrawn interlock relay cards for the plant computer rendered the control room alarm, R-1-7U, Control Element Assembly (CEA) Deviation Pulse Hi, inoperable. This event was documented in NRC Inspection Report 50-309/93-23 and Maine Yankee Licensee Event Report No. 93-21. The NRC issued a notice of violation for this event.

In a letter dated January 17, 1994, to the NRC, Maine Yankee attributed the violation to inadequate procedural controls associated with the computer interlock relay cards during troubleshooting activities. To prevent recurrence, Maine Yankee stated that the following actions would be completed: (1) a warning notice will be affixed to the computer cabinet interlock relay cards; (2) enhanced administrative controls will be added to the appropriate procedures, and (3) a new class D procedure for the Computer Section will be instituted.

The inspector reviewed the status of the above corrective actions. The inspector verified that a warning notice was affixed to the computer cabinet and that a new procedure had been implemented for the computer section and also that administrative procedures were revised or were appropriately tracked by the Maine Yankee Task Tracking System. Additionally on April 21, 1994, the inspector observed the performance of procedure 3-1-8, CEA Exercising, which demonstrated operability of the CEA deviation alarms. Based on Maine Yankee's corrective actions and the independently verified operability of the CEA deviation alarms, this item is closed.

### 5.2.2 (Closed) Violation 50-309/92-03-01, Procedural Adherence

On May 5, 1992, the NRC issued a Notice of Violation for failing to adhere to administrative procedures. Details of the procedural adherence issue were documented in NRC Inspection Report No. 50-309/92-03.



In a letter dated June 23, 1992, to the NRC, Maine Yankee attributed the violation to personnel not understanding Maine Yankee's philosophy and expectations regarding procedural use and adherence. In response to the violation, Maine Yankee implemented pre-outage training sessions for contractors, and enhanced annual training for Maine Yankee personnel on procedural adherence and Maine Yankee expectations. Employees and contractors were required to sign forms stating they understood these expectations. The maintenance department issued written rules and expectations regarding procedure and work order compliance. Additionally, Maine Yankee provided guidance on changes to an Engineering Design Change Request test instructions.

The resident inspector had observed a pre-outage session concerning procedural adherence and Maine Yankee expectations. The session was conducted by senior Maine Yankee managers. The inspector verified through documentation that the other above actions were completed by Maine Yankee. Based on Maine Yankee's completion of corrective actions, this item is closed.

### 5.2.3 (Closed) Violation 50-309/93-17-01, Failure to Follow Procedure

On September 21, 1993, the licensee tested motor operated valve HI-M-42 "B" train HPSI header stop valve and over-torqued it in the closed direction because the motor operator's torque switch settings were incorrect. The over-torque caused the adapter plate bolts to strip tilting the motor operator and resulting in a bent valve stem. The investigation by the licensee found the torque switch had been installed incorrectly by contract electricians following maintenance.

The licensee responded to the violation on December 9, 1993 detailing the root cause and corrective actions. The licensee determined that step 5.15.7 of procedure 5-18-5 "Limitorque Operator Overhaul (SMB-0 through SMB-4)" was not performed as written (the step required the torque switch to be set at 1-1 before installation). The electricians did not install the torque switch with the setting of 1-1 as required by the procedure because they mistakenly believed that the 1-1 setting was for ease of installation. The electricians were counseled and disciplined for not adhering to the procedure. The event was discussed with contractor management with a follow up letter that stated "payment for work that results in damage will not be paid." The retraining of contractors and site personnel was conducted with updated procedures emphasizing the importance of procedural adherence, and the mechanism that exists for asking for assistance if there is a disagreement between past practice and the written procedure. The inspector reviewed documentation confirming the above corrective actions.

The valve was subsequently repaired and successfully tested on September 22, 1993. Based on the review of the licensee's actions, the inspector considers this item closed.

## **6. ADMINISTRATIVE**

### **6.1 Persons Contacted**

During this report period, inspectors conducted interviews and discussions with various licensee personnel including plant operators, engineers, maintenance technicians and the licensee management.

### **6.2 Summary of Facility Activities**

A security inspection (50-309/94-07) of Access Authorization was conducted during this inspection period.

On April 26, 1994, the Maine Yankee SALP (Assessment period; June 29, 1992 - February 5, 1994) Management meeting was held in the Information Center. The meeting was attended by NRC regional and headquarters management and Maine Yankee corporate and site officers and managers (slides attached). There were also representatives from the state of Maine and the media. The SALP was documented in report 50-309/92-99.

### **6.3 Interface with the State of Maine**

Periodically, the resident inspectors and the onsite representative of the State of Maine discussed findings and activities of their corresponding organizations. No unacceptable plant conditions were identified.

### **6.4 Exit Meeting**

Inspectors periodically held meetings with senior facility management to discuss the inspection scope and findings. At the conclusion of the inspection, the inspectors also presented a summary of findings for the report period.

**ATTACHMENT**

**SALP SLIDES**

**MAINE YANKEE SALP  
MANAGEMENT MEETING**

# Maine Yankee SALP Management Meeting

---

Assessment Period  
June 28, 1992 - February 5, 1994



# Presentation

---

- Introduction W. Kane
- Report Presentation W. Lanning
- Licensee Presentation MYAPCo
- Discussion
- Closing Remarks W. Kane

## Revised SALP Process Effective July 14, 1993

---

- Changed from 7 areas to 4
- SA/QV incorporated into each area
- EP, Radiological Controls, and Security combined into "Plant Support"
- SALP Board Membership consists of 4 senior managers
- Emphasis on the last 6 months of the period
- Trends no longer included in the category ratings

# SALP Functional Areas

---

- Plant Operations
- Engineering
- Maintenance
- Plant Support

# Performance Category Ratings

---

- Category 1 Superior Performance
- Category 2 Good Performance
- Category 3 Acceptable Performance



# SALP Category Ratings for the Previous Period Ending June 13, 1992

---

▪ Plant Operations	1
▪ Engineering & Tech Support	2
▪ Maintenance/Surveillance	2
▪ Radiological Controls	1
▪ Emergency Preparedness	2 Improving
▪ Security	1
▪ Safety Assessment	
Quality Verification	1

## SALP Category Ratings for the Period Ending February 5, 1994

---

▪ Operations	1
▪ Engineering	2
▪ Maintenance	2
▪ Plant Support	1

# Operations

## Category 1

---

- Management demonstrated an excellent safety oriented philosophy
- Management closely involved with day-to-day issues and provided excellent oversight of plant activities
- Operations staff performance was excellent
- Operator training program was very effective
- Operations staff displayed excellent initiative in improving maneuvering procedures

# Maintenance

## Category 2

---

- Oversight and control of maintenance activities was generally very good
- Oversight and control of contractors showed some weaknesses
- Technical problems were properly evaluated
- Programmatic activities were strong
- Maintenance personnel displayed excellent technical knowledge
- Surveillance and testing activities were typically well controlled
- Overall — performance was improved over previous assessment

# Engineering

## Category 2

---

- Engineering management coordinated plant activities well
- Technical quality of engineering work products was very good
- Generally timely and thorough in addressing plant equipment problems
- Occasional weaknesses existed in pursuing implications of engineering modifications
- On occasion, adequate procedures were not provided to the site as part of the modification process

# Plant Support

## Category 1

---

- Performance in the radiation protection area continued to improve
- Personnel exposure for the 1993 refueling outage was lowest since 1977
- High number of personnel contamination incidents is a concern
- Environmental monitoring and effluent control programs continued to be strong
- Strong performance was noted in emergency preparedness area with a number of improvements implemented
- Security program performance remained strong