U.S. NUCLEAR REGULATORY COMMISSION
REGION I

MAINE YANKEE ATOMIC POWER PLANT (LICENSE DPR-36)
INSPECTION REPORT 50-309/90-17
JULY 31 - SEPTEMBER 18, 1990

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Approved: Eke C McCabe, Jr. 10/5/90
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OVERVIEW

Operations: Conservative actions were taken on increased reactor coolant activity. The plant shutdown after valve LD-M-2 failed shut also demonstrated safety conservatism. Three open items were closed.

Radiological Controls: Management was involved in ALARA activities and worker attentiveness to radiological control practices.

Maintenance/Surveillance: Maintenance and engineering personnel took positive action to correct a failure and enhance reliability of the HPSI (High Pressure Safety Injection) header isolation valves. A fuel pool purification prefilter was carefully replaced within the budgeted personnel exposure. Active management of repair of the letdown isolation valve contributed to successful completion of a difficult evolution. Four open items were closed.

Emergency Preparedness: An Unusual Event on August 14 was appropriately characterized. An open item on obtaining meteorological data was closed.

Security: A maintenance technician appropriately initiated a "for cause" fitness-for-duty test involving a contractor. When a set of keys was misplaced, compensatory measures and reporting requirements were conservatively applied.

Engineering/Technical Support: Two open items were closed.

Safety Assessment/Quality Verification: During a management meeting, the licensee demonstrated their ability to be constructively self-critical. One open item was closed.

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DETAILS

1. Plant Operation

During daily facility tours the following were checked: manning, access control, adherence to procedures and LCOs, instrumentation, recorder traces, protective systems, control room annunciators, radiation monitors, emergency power source operability, operability of the Safety Parameter Display System (SPDS), control room logs, shift supervisor logs, and operating orders. Weekly, selected Engineered Safety Features (ESF) trains were verified to be operable. The condition of plant equipment, radiological controls, security and safety were assessed. Biweekly, the inspector reviewed a safety-related tagout, chemistry sample results, shift turnovers, portions of the containment isolation valve lineup and the posting of notices to workers. Plant housekeeping and cleanliness were also evaluated.

The inspector observed selected phases of the plant's operations for safety and compliance with the NRC's regulations. No health and safety hazard was found. The following are noteworthy areas the inspector reviewed:

1.1 Increased Reactor Coolant System Activity

On August 10, routine sampling and analysis of the reactor coolant system identified elevated activity. Additional samples were analyzed to confirm the results. Also, the RMS (Radiation Monitoring System) computer history files were accessed and reviewed. The air ejector off gas and letdown radiation monitors both indicated slight increases in activity. No level changes were noted by other RMS detectors, including the primary vent stack detectors. Reactor coolant activity remained below Technical Specification action limits. The sampling frequency was increased and results were monitored closely by the licensee. The Radiation Protection Manager developed an action plan for plant operations with the elevated reactor coolant system activity. Maine Yankee management established an administrative action limit to proceed with plans to address the apparently failed fuel cladding when the equilibrium reactor coolant activity reaches half of the Technical Specification limit. Calculations based on reactor coolant sample analyses indicate that approximately five fuel pins were affected.

The inspector assessed Maine Yankee's actions in response to the increase in reactor coolant system activity as appropriate and conservative.

1.2 Unusual Event Due to Reactor Coolant System Leakage

On August 14, an Instrument and Controls technician working in the PAB (Primary Auxiliary Building) apparently unknowingly repositioned valve SL-62, the seal return filter backwash valve. With the valve open, approximately fifty gallons per minute of the reactor coolant return flow from the reactor coolant pump seals was diverted from the volume control tank to the ADT (Atmospheric Drain Tank). This resulted in an indicated RCS (Reactor Coolant System) leak rate greater than ten (10) gallons per minute, which meets the criteria for declaration of an Unusual Event. An Unusual Event was declared at 12:40 p.m. The cause of the indicated leakage was identified and isolated by auxiliary operators at 12:45 p.m., terminating the event.

Inspector review determined that the the plant operators responded in a timely fashion and were resourceful in the method of locating the source of the leakage. The Operations Department plans to conduct a review of similarly installed valves that may have a similar impact on plant operation to determine appropriate long-term corrective actions.

As part of the investigation to identify the RCS leakage source, control room operators isolated the normal letdown path by closing the motor-operated letdown isolation valve (LD-M-2). After the leakage source was isolated, a control room operator attempted to return normal letdown to service. Valve LD-M-2 did not open. Attempts were made to enter containment and open the valve locally with no success (See Detail 2.2 for details of containment entries). With the normal letdown system out of service, there was no way to purify the reactor coolant. Since normal letdown could not be restored and rapid power reductions are known to cause increases in reactor coolant system activity, a slow plant shutdown was begun at approximately 2% per hour. Because the plant was shut down in a controlled fashion, the RCS activity did not exceed Technical Specification limits. The inspector assessed the actions taken to minimize the RCS activity increase during the plant shutdown as indicative of a conservative safety perspective.

1.3 (Closed) Unresolved Item 50-309/88-80-02: Control of Non-Dedicated Breakers

An NRC inspector identified a potential for inadvertently placing a non-dedicated 4160 or 6900 volt breaker in a 1E application. In response to the concern, the licensee permanently labeled all breakers either "1E USE APPROVED PROCEDURES" or "NNS APPLICATION ONLY," and labeled the floor in front of each breaker cubicle "1E" or "NNS". In addition, procedure 1-1, Revision 42, requires that when RCS pressure is greater than 375 psig but less than 400 psig during startup, maintenance shall check that all 1-E safety class equipment has safety class breakers in their cubicles. The inspector considered these corrective actions adequate. This item is closed.

1.4 (Closed) Unresolved Item 50-309/88-01-01: Calorimetric Uncertainties

A static offset effect in steam and feed flow differential pressure transmitters, which are inputs to the calorimetric power calculations, introduced a non-conservative bias in calorimetric power. The inspector reviewed the licensee's assessment of the impact of this error in the calorimetric calculation. The uncertainties for the feedwater flow and steam flow calorimetric power measurements at 100% RTP (Rated Thermal Power) were less than 0.5% and 0.9% RTP, respectively. Operation with the static offset bias did not violate the uncertainty assumption of 2% associated with measured power level. The inspector concluded that the analysis demonstrates that the design value for core thermal power level of 2682.6 MWt assumed in the safety analysis is not exceeded. This item is closed.

1.5 (Closed) Unresolved Item 50-309/87-21-02: Cross-Tying Vital AC Buses

Section 8.3.4 of the FSAR states that "During inverter maintenance, adjacent vital buses can be interconnected to provide an alternate source for the dead bus." The inspector concurred with the YNSD (Yankee Nuclear Services Division) evaluation that cross-connecting two vital buses will "compromise the inherent redundancy of the system since the two buses which are tied could be affected by a single event." When the cross-tie is closed, redundant buses are tied together and redundancy of safety systems requiring 120V AC power is lost. The licensee committed to reviewing Procedure 1-22-2, "Battery and Vital Bus Operation," for placing restrictions on cross-connecting 120V AC vital buses. The installation of a spare inverter power supply to eliminate the need to tie two redundant buses together is scheduled for completion in 1991. UNR 50-309/90-80-05, concerning cross-connecting 125V DC safety buses, will track the completion of this modification and procedure change, since the 125V DC buses supply power to the safety inverters which in turn power the 120V AC vital buses. This item is closed.

2. Radiological Controls

Radiological controls were observed on a routine basis during the reporting period. Areas reviewed included Organization and Management, external radiation exposure control and contamination control. Standard industry radiological work practices, conformance to radiological control procedures and 10 CFR Part 20 requirements were observed.

2.1 Work Practice

While observing maintenance technicians performing work on valve HSI-M-42 (see detail 3.1), the inspector noted that the maintenance personnel implemented appropriate radiological control practices. The worker used proper undressing techniques when removing anticontamination clothing to exit a contaminated area and requested assistance from a radiological controls technician to move a radiological boundary when it was adversely impacting the ability to perform work.

2.2 Loop Entries During Power Operation

On August 14, plant operators made several entries into the "Loop 1" area of containment in an attempt to manually open valve LD-M-2. The area is a high radiation area. Radiological Controls were established for the entries in accordance with Procedure 9.1.32, "Containment Loop Entry at Power." The inspector reviewed the procedure and observed the pre-job briefings of the operators and radiological control technicians who made the entries. The briefing was conducted in a training classroom that had a mock up of a motor-operated valve similar to the one that had failed. Plant personnel present for the briefing included the manager of the operations department, the radiological controls section head and supervisor, the ALARA coordinator, a project engineer with responsibility for the motor-operated valve program, and the operators and radiological controls technicians who made the entries. The briefing was

comprehensive and included consideration of radiological controls, industrial safety, and the potential failure modes of the motor-operated valve. Positive management involvement in the evolution was evident by participation in the pre-job briefing.

2.3 Source Leak Test

On August 6, a Quality Programs Department audit involving radiological controls activities was being performed by the Yankee Nuclear Services Division of Yankee Atomic Electric Company. A member of the audit team identified two radioactive sources which had not received semi-annual leak tests as required by Technical Specification 4.2. These two sources had not been previously identified as requiring leak checks. Both were tested and verified to be leak tight. A reportability evaluation by Maine Yankee personnel found this to be not reportable under 10 CFR 20.403 or 10 CFR 50.72. RIR (Radiological Incident Report) 90-08 was generated to document the audit finding, immediate corrective actions, results of the leak tests and the root cause analysis, and proposed corrective actions. The root cause analysis and corrective actions described in the RIR were assessed as sufficient to prevent recurrence.

To further address the control of sources on site, an inventory of all sources used by all plant departments was performed. By identifying similar sources for disposal, Maine Yankee was able to reduce the number of sources needed on site by approximately forty percent. This aided in making leak testing more manageable.

The corrective action to address this issue was extensive, addressed the root cause and was completed in a timely fashion. Although the licensee failed to perform the Technical Specification required leak test of the two sources, the violation was not cited because the criteria specified in section V.G. of the Enforcement Policy (licensee-identified, minor safety significance, acceptably reported and corrected, and not wilful) were satisfied (NCV 90-017-001).

3. Maintenance/Surveillance

The inspector observed and reviewed maintenance and problem investigation activities to verify compliance with regulations, administrative and maintenance procedures, codes and standards, proper QA/QC involvement, safety tag use, equipment alignment, jumper use, personnel qualifications, radiological controls for worker protection, retest requirements, and reportability per Technical Specifications.

Also, the inspector observed parts of surveillance tests to assess performance in accordance with approved procedures and Limiting Conditions for Operation, test results, removal and restoration of equipment, and deficiency review and resolution. The following were considered noteworthy:

3.1 High Pressure Safety Injection MOV Shaft Keys

On August 8, valve HSI-M-42, a motor-operated high pressure safety injection header isolation valve was stroked as part of routine testing. During the open stroke the valve stopped in mid-position; the valve was declared inoperable. Maintenance personnel identified that the anti-rotation key on the valve stem was broken.

The PED (Plant Engineering Department) was involved in the failure analysis since there was a previous example of a similar failure on a similar MOV (Motor-Operated Valve) on June 20, 1990. The PED failure analysis concluded that the failure of the key was induced by wear of the keyway in an adapter plate between the valve yoke and the motor operator. There are four valves in the facility with this adapter plate and keyway configuration. The keyway was remachined into the adapter plate of all four of the valves to return the tolerances to original specifications. Also, after the repair was complete, the four valves involved were stroke tested at an increased frequency. Long-term actions planned by PED include the installation of an improved anti-rotation device to preclude the use of a key and keyway for this application.

The failure analysis was assessed as sound and the use of an increased test frequency was considered a positive action to enhance the reliability of the valves involved.

3.2 Fuel Pool Purification Prefilter Replacement

The inspector observed replacement of fuel pool purification prefilter FL-2 because the filter element had a contact reading of approximately 30 R/hr and was highly contaminated.

The work site was well prepared with the necessary tools present and sufficient personnel available to support the work, both inside and outside the designated contaminated area. The evolution was video-taped by the ALARA coordinator for use in future ALARA briefings. At least two radiological controls supervisors observed portions of the evolution. The maintenance technicians were attentive to information supplied by the radiological controls technician, and worked in a professional manner.

The filter element replacement was completed within the budgeted personnel exposure. The used filter element was placed directly into a HIC (High Integrity Container) for shipment prior to being put in temporary storage.

3.3 (Closed) Unresolved Item 50-309/88-15-01: Inservice Testing (IST) of Charging Flow Control Valve CH-F-38

Monthly tests were not performed as required with a valve stroke time in the alert range. The inspector reviewed the documentation of CH-F-38's subsequent retest and verified valve stroke time was within acceptable limits. In response to this issue, the licensee revised Procedure 3.17.8.2, "ISI/IST Valve Tests for Discrepancy Reports or Repair Orders," to ensure valves that can only be tested during cold shutdown conditions are operating within their normal limits prior

to the plant returning to normal operation. A relief request for stroking CH-F-38 under normal operating conditions was provided in the IST program. Partial stroking of CH-F-38, which is conducted once each quarter, is included in the relief request.

The stroke time limit for CH-F-38 has been increased from 10 seconds to 14 seconds. The inspector concurred with the YSND evaluation that the increase in stroke time limit will not impact on the normal operations or safety function of the valve. This item is closed.

3.4 (Closed) Unresolved Item 50-309/88-15-03: Procedural Deficiencies in IST Requirements

Procedural deficiencies were identified in defining the IST requirements for analysis of leak rates and corrective actions for RCS/LPSI (Low Pressure Safety Injection) barrier valves. Procedures 3.17.3.1 and 3.17.3.2, "LPSI Penetration Testing Barrier A and B," were reviewed for conformance with acceptable codes. The inspector concluded that the procedures have been adequately revised to incorporate the IST requirements of ASME Section XI IWV 3426 and 3427. Also, the IST program has been modified via a relief request to note that 10 CFR 50, Appendix J leak testing of containment isolation valves is performed in place of IST leak testing for other-than-barrier "A" and "B" testing. This is consistent with NRC Generic Letter 89-04. This item is closed.

3.5 (Closed) Unresolved Item 50-309/88-15-02: Inservice Testing of Parallel Train Discharge Check Valves in the Closed Position

The safety position for inservice testing of Primary Component Cooling (PCC) System pump discharge check valves PCC-6 and PCC-14 is open. Open is the required position for the valve to fulfill its safety function. The valves close to prevent backflow through an idle pump. The IST program has been satisfactorily revised to incorporate controls to document that PCC pump discharge check valves close in the reverse flow direction. The inspector reviewed Operations Department Surveillance Procedures for systems with check valves having similar arrangements and confirmed the incorporation of valve testing in the closed position. This change to the IST program is consistent with the requirements of NRC generic letter 89-04. This item is closed.

3.6 (Closed) Unresolved Item 90-13-01: Mispositioned RPS Switch

On July 25, 1990, technicians performing a surveillance of Power Range Safety Channel D discovered that the "summer" control switch was not in the correct position. NRC Inspection Report 50-309/90-13 found that there was no safety significance associated with the mispositioned switch. The item was left unresolved pending conclusion of a licensee review to determine if the 72-hour Limiting Condition of Operation was exceeded.

Maine Yankee LER (Licensee Event Report) 90-005-00, dated August 24, 1990, conservatively assumed that the Technical Specification requirement to maintain four operable channels was not met. The surveillance procedure had been performed on July 13, 1990 with satisfactory results which would imply that the switch was left in the proper position. No other maintenance or

surveillance was performed which required cycling the switch between July 13 and July 25, and the exact time and date when the switch was mispositioned could therefore not be determined. Maine Yankee concluded that personnel oversight during maintenance was the cause of the mispositioned switch; corrective action included a review of RPS surveillance procedures to ensure adequate component position verification, a memorandum to maintenance personnel stressing procedural compliance, and special counselling in work practices and human performance for involved personnel.

10 CFR 50, Appendix B, Criterion V, requires that licensees use procedures which include acceptance criteria to insure satisfactory accomplishment of important activities. As indicated by the corrective actions taken in response to this event, and based on the licensee's assumption that the switch had been mispositioned since the July 13 surveillance, Maine Yankee identified a failure to have adequate controls in place to insure proper positioning of safety-related components at the completion of the surveillance. The event was determined to have no safety significance (see NRC inspection report 50-309/90-13), was licensee identified by the surveillance on July 25, 1990, and is not being cited because the criteria specified in Section V.G. of the Enforcement Policy were satisfied. (NCV 90-017-02)

3.7 Management Involvement In Maintenance Activities

During the plant shutdown from August 16 to August 18, 1990 for repairs to the letdown isolation valve, the inspectors observed that plant management actively participated in control of the maintenance. Considerable discussion of planned evolutions, careful planning and frequent review of evolving activities, and consideration of worker and plant safety were evident at all levels and contributed to successful completion of a difficult evolution.

3.8 Surveillance Observation

3.8.1 Procedure 3.1.23, Alternate Shutdown Diesel (DG-2) Monthly Surveillance Testing, Revision 11, dated 6-1-90, was observed on August 20, 1990. The procedure was performed carefully and methodically by a knowledgeable AO (auxiliary operator).

3.8.2 Procedure 3.1.5, Emergency and Auxiliary Feed Pump Test, Revision 33, issued 6/90, was observed on August 21, 1990. The AO performing this test was knowledgeable and conscientious; labels on the emergency feedwater pumps were large and easily read, allowing the operator to easily locate and verify valves as required for alignment and position verification.

3.8.3 Turbine control system trouble-shooting was observed on August 20, 1990. As a result of a deviation between turbine control signals in manual and automatic modes of turbine control, operators performed trouble-shooting to further investigate the symptoms. Trouble-shooting activities included shifting to automatic operation, and shifting from "Impulse Out" operation to "Impulse In" operation. The PSS (Plant Shift Supervisor) thoroughly discussed the evolution with the control room operators before beginning the

activity. As a result of the careful approach and the attentiveness and knowledge of the operators, the operators quickly regained manual control when the governor valves started to close, preventing a significant transient.

4. Emergency Preparedness

4.1 Unusual Event Declaration

On August 14 an Unusual Event was declared due to unexplained leakage from the reactor coolant system in excess of ten (10) gallons per minute. (See Detail 1.b) The inspector reviewed the event and the basis for the Unusual Event declaration. It was concluded that the event was appropriately characterized and the declaration was made in accordance with the Emergency Plan Implementing Procedures.

4.2 (Closed) Deviation 50-309/84-05-18: Lack of Formal Guidance for Backup Meteorological Data

During NRC observation of the Emergency Drill in 1984, an inspector identified a lack of formal guidance for obtaining backup meteorological data. The inspector reviewed Emergency Plan Implementing Procedures 2.50.10, Evaluation of Radiological Data, Revision 14, dated 8-27-90, and 2.50.13, Emergency Operations Facility Procedure, Revision 4, dated 6-14-90. Both procedures contained steps providing explicit guidance for obtaining backup meteorological data in the event that the normal source of meteorological data is unavailable. This item is closed.

5. Physical Security

Checks were made to determine whether security conditions met regulatory requirements, the physical security plan, and approved procedures. Those checks included security staffing, protected and vital area barriers, vehicle searches and personnel identification, access control, badging, and compensatory measures when required.

5.1 Fitness for Duty

While observing a maintenance activity, the inspector observed a maintenance technician who questioned the capability of a contractor radiological controls technician to perform his duties and raised the concern to plant management. The Radiological Controls technician was tested "for cause" in accordance with Maine Yankee's FFD (Fitness-For-Duty) Program. The test was positive and the individual was denied further access to the site. Licensee review of his onsite activities revealed no activities that could have impacted negatively on safety-related activities.

The maintenance technician's actions demonstrated professionalism.

5.2 Unaccounted for Security Keys

On September 13, at approximately 4:15 a.m., while donning protective clothing, an auxiliary operator apparently picked up another operator's set of security keys, mistaking them for his own. The other operator noticed that his keys were missing approximately fifteen minutes later. A search was commenced. Security and radiological controls were notified and compensatory measures were established within ten minutes of the notification. The keys were noted to be in the possession of the other operator within several more minutes. Although compensatory measures were established within ten minutes of notification and key control had never been lost, Maine Yankee made a notification under 10 CFR 73.71 while further evaluation of the incident was underway. The inspector noted that reporting requirements were conservatively applied by Maine Yankee in this case.

6. Engineering/Technical Support

6.1 (Closed) Unresolved Item 87-12-07: Lack of Control of Electrical Load Growth

The inspector reviewed Procedure 17-227, Revision 0, Guidelines for Tracking Electrical Load Growth on the Electrical Distribution System (CRS-1). This procedure, incorporated by reference into the administrative controls for engineering design change requests and deficiency requests addressing minor modifications and component substitutions, requires the use of Form 1A in the case of load changes. Form 1A in turn incorporates review and approval of load changes by Yankee Nuclear Services, who update load tracking books kept for each Motor Control Center. In addition, the inspector reviewed the modification package for a load addition to Vital Bus 4 on July 3, 1990; a completed Form 1A was attached to the package as required. The inspector concluded that adequate means exist to assure that changes to electrical loads are adequately tracked. This item is closed.

6.2 (Closed) Violation 88-21-02: Control of Modifications

During review of the modification which installed the Primary Inventory Trending System, the inspector identified an instrument tubing modification which was installed outside the scope of the modification. The cause of the failure to control the tubing modification was failure to adhere to Procedure 17-23-1, Design Change Installation Instructions, and lack of oversight of contractor employees by the Engineering Department. In response, Procedure 17-23-1 was changed to require that conduit shall be supported in accordance with the engineer's instructions specifying the number and type of supports, which shall be, as a minimum, consistent with the National Electric Code. In addition, the Craft Lessons Learned Manual, Electrical Section, addresses obtaining engineering approval prior to running conduit or tubing supports, and Procedure 17-23-6, Job Order Instructions, requires documented training in the Lessons Learned manual for craft personnel prior to beginning work. The inspector considered these actions adequate to prevent recurrence. This item is closed.

7. Safety Assessment/Quality Verification

7.1 (Closed) Unresolved Item 50-309/87-16-08: EQ (Environmental Qualification) and Installation of D.G. O'Brien EPAs (Electrical Penetration Assemblies)

Maine Yankee replaced the D.G. O'Brien EPAs with Conax-Buffalo Corporation EPAs. These assemblies have been qualified in accordance with 10CFR50.49. The Conax-Buffalo EPAs utilize straight-through penetrations vice connectors sealed with Raychem sleeves. This item is closed.

7.2 Management Meeting

On September 17, 1990, Maine Yankee management met with NRC management in the NRC Region I office to discuss plant performance. Maine Yankee first presented their self-assessment and status of improvements, followed by questions and comments from NRC personnel. Maine Yankee's presentation was well prepared and demonstrated their ability to be constructively self-critical. The meeting handouts are appended to this inspection report.

8. Administrative

8.1 Persons Contacted

Within this report period, interviews and discussions were conducted with various licensee personnel, including plant operators, maintenance technicians and licensee managers.

8.2 Summary of Facility Activities

On July 31, the plant was shut down to replace oil seal rings in the exciter for the main generator. The generator was placed back on line on August 4, and the plant was at full power on August 6.

Operators declared an Unusual Event on August 14, as a result of an unexplained decrease in RCS inventory of greater than 10 gpm. The unit was taken off line August 16 to repair Letdown System Isolation Valve LD-M-2. The generator was phased onto the grid on August 19, and was at full power on August 23. The plant remained at full power for the rest of the inspection period.

8.3 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.

8.4 Exit Meeting

Meetings were periodically held with senior facility management to discuss the inspection scope and findings. A summary of findings for the report period was also discussed at the conclusion of the inspection.

8.5 Inspection Hours

The inspection involved 230 inspection hours, including 18 backshift hours and 7.5 deep backshift hours.

ATTACHMENT TO

50-309/90-17

AGENDA

MAINE YANKEE/NRC MEETING

SEPTEMBER 17, 1990

INTRODUCTION

OPERATIONS

RADIOLOGICAL CONTROLS

MAINTENANCE/SURVEILLANCE

EMERGENCY PREPAREDNESS

SECURITY

TECHNICAL SUPPORT

SAFETY ASSESSMENT/QUALITY VERIFICATION

SUMMARY

SELF-SALP ASSESSMENT

OPERATIONS

SALP HISTORY

Last Period	Previous Period
1	1

SELF-SALP ASSESSMENT

OPERATIONS

STRENGTHS

- Management involvement - Morning Meetings
- Good, professional, and well coordinated actions during plant transients
  - High CI
  - Power reductions for steam leak repair, RCP seal failure
  - Recovery from inadvertent SIAS and RAS
  - Increased RCS leakage
- Conservative control of plant configuration during refueling
  - Alternate Spent Fuel Pool Cooling System operation
  - Emergency Diesel/Redundant Power Source Availability
- Component Relabelling Program

STRENGTHS

- Administrative control of non-Tech. Spec. controlled components
- Operator Response during E-Plan exercises
- Pro-active response in modifying Licensed Operator Requalification Course based on NRC concerns elsewhere
- Excellent rapport and teamwork with the Operations Training Section
- Aggressive identification and resolution of problems, mysteries by Operating Crews
- Communication between Front Office and Operating Crews
- Aggressive investigation and identification of root causes of problems and development of corrective actions

AREAS FOR IMPROVEMENT

- Loss of Pressurizer Level during RCS fill and vent
- Inadvertent SIAS while swapping vital bus power supplies
- Incorrect operation of T-1H (main generator disconnect)
- Spent resin spill during resin transfer (repeat)

AREAS FOR IMPROVEMENT

- Incidents of Poor Control of Maintenance Activities
  - PR-A-2 (Pressurizer Spray Valve)
- Loss of control of security vital keys (repeat)

ASSESSMENT

- Inconsistencies in attention to detail by Operations staff
- Inconsistencies in use of procedures by Operations staff
- Inconsistencies in the procedures and revisions

INITIATIVES - CHALLENGES AND ACTIONS

- Maintaining the Department's attitudinal edge
- Communicating expectations
- Maintaining high standards
- Culture change in attitudes towards procedures and habits
- Evaluate establishment of Departmental Event Review Teams
- Continue ALARA focus and dose reduction efforts
- Instill sense of ownership of problems and solutions at all levels of the department

RADIATION PROTECTION PROGRAM

SALP HISTORY

- Rated "2" historically
- Rating fell to "3" in 1987-88
- Rating "2 and improving" last period

STRENGTHS

- Completed Programmatic Assessment of Radiation Protection
- Began total Programmatic Upgrade to address deficiencies
- Strong, active management support of Radiation Protection Program improvements
- Adding staff with prior experience (both technician and professional staff)
- Outage planning and implementation
  - 450 man-rem goal; 557 rem actual (75 rem unplanned S/G work)
  - 291 personnel contaminations versus 452 last outage
  - 9,952 ft^2 contaminated area versus 16,461 ft^2 last outage
  - Over 200 contract technicians for job support
  - Dedicated QC evaluator for Radiation Protection activities
- QPD trending of self-assessment and audit findings
- Discussion of Radiation Protection issues at Morning Management Meetings and monthly Plant Manager's Staff Meetings

AREAS FOR IMPROVEMENT

- Program descriptions and procedures
- Staffing, especially at the technician and technical programs levels
- ALARA planning and execution for techs and valve work
- Communication (both intra- and inter- departmental)
- Consistency of job coverage
- Enforcement Action
  - One unplanned exposure resulting in 4 level 4 violations (Inspection Report 90-11)

INITIATIVES

- Complete program upgrade over two years
  - 14 Program Descriptions
  - 213 Procedures
  - $1,000,000
  - 50% staff increase
- Review and implementation of "lessons learned" from 1990 Outage
- Daily Shift Turnover Meeting with techs
  - Covers worker concerns as well as policy or procedure problems
- RC Tech Training revised by Curriculum Committee
  - Place emphasis on job coverage and contamination control skills
  - Training for new programs and procedures incorporated as part of upgrade
- Conducting post-job review of selected tasks for "lessons learned" and improved future performance
- Holding Weekly Interdepartmental Planning Meetings
  - Matches Rad Protection resources and coverage to work schedule
  - Allows for a Rad Controls support plan to be made for each job

SUMMARY

- Radiation Protection Program continues improvement
- Current challenge is to maintain strong performance while undergoing upgrade

MAINTENANCE/SURVEILLANCE

SALP HISTORY

- Last Rating - "1"
- Previous Rating - "1"
- Minimal adverse impact on plant operations
- Stable, dedicated staff
- Strong Management involvement
- High quality work

STRENGTHS

- Maintenance Work Control Center Concept
  - Produces Quality Work Packages
  - Staffed, on rotating basis, with Maintenance workers to help promote ownership of final product

- Self-Assessment
  - Developed Code of Professional Standards
  - Living Quality Improvement Plan under development

- Outage Management Organization
  - OPIT

- Response to emergent work

- No plant trips due to Maintenance evolutions

- No missed surveillances

- ALARA Initiatives

- Enforcement History
  - No events resulting in enforcement action during current SALP period
  - Very few NRC open items

AREAS FOR IMPROVEMENT

- Supervisor presence at work location
- Procedural culture
  - Procedure quality
  - Communicating management expectations
  - Worker attitude toward procedure adherence
- Material control and traceability
- Process to define qualification of Maintenance Technicians
- Contractor oversight
- Monitoring rework, failure trending
- Management attention to plant material condition

IMPROVEMENT INITIATIVES

- DR/RO Procedure major rewrite

- Computerized Maintenance Management System

- Increasing staff to relieve supervisor of administrative burden

  - One Supervisor, two Facilitators to date
  - One Supervisor and three Facilitators planned for 1991

- Developing Quality Improvement Plan with focus on:

  - Procedure quality
  - Personnel training and adherence to prescribed standards and procedures
  - Job planning

- Post Outage Management Retreat

- Re-establishing Department Manager inspections

- Developing a formal plan

STRENGTHS

The Maintenance Work Control Center (MWCC) was staffed with an effective mix of Maintenance and contractor personnel prior to the outage. Utilizing work package development procedures and a prioritization system, high quality work packages were developed for all identified and emergent refueling work. Maintenance workers are assigned to the MWCC on a rotating basis in an effort to promote ownership for the final product and to help foster both respect and appreciation for good procedural guidance.

In addition to the Maintenance Performance Assessment Program which has been in effect for a number of years, several new self-assessment initiatives have been undertaken. A Maintenance Code of Professional Standards has been developed by Maintenance Department Supervisors at all levels to more clearly define expectations. A Maintenance Department Quality Improvement Plan is in the final stages of development receiving input from internal sources as well as from Operational Support Engineering and an independent contractor commissioned by the Plant Manager. This plan is not designed as a "get well" plan, but rather a "stay well and get better" plan.

The Outage Management Organization was supplemented by an Outage Planning and Integration Team (OPIT). This team was formed about four months prior to the outage and was responsible to plan the schedule, integrate, and coordinate inter-functional activities and be prepared to respond to emergent problems. The result of their effort was a schedule that was credible and sufficiently detailed to keep the overall effort on track despite several major emergent problems.

The Maintenance Department continues to be very responsive to supporting plant operations. Emergent issues are reviewed at the Daily Morning Management meetings, and the Maintenance Department addresses the emergent work as specified by a clearly defined priority system with the priority set by the Plant Shift Superintendent.

STRENGTHS - CONTINUED

During the present SALP period to date, there have been no missed surveillances, no plant trips, and no lost time accidents within the Maintenance Department.

There have been no events during the current SALP period that have resulted in enforcement action within the Maintenance area. There are very few NRC open items (one for which action is complete, one action pending).

In the ALARA effort at Maine Yankee, the Maintenance Department has emerged as one of the most innovative and proactive. Initiatives have included development of a dedicated in-house ALARA group during the outage and the Maintenance Department Manager serving as Chairman of the ALARA Committee. The results have been much heightened sensitivity to ALARA by Maintenance workers and a substantial reduction in exposure from previous outages. The 1990 Outage was 239 man-rem compared to 356 in 1988 and 571 in 1984 which was more comparable based upon radiological work performed.

AREAS FOR IMPROVEMENT

Further improvements are needed in relieving supervisors from administrative tasks and increasing their presence at the job site.

The procedural culture that has evolved within the Maintenance Department warrants increased management attention. Communication of management expectations regarding procedural responsibilities, the general quality of Maintenance procedures, and the worker attitudes about procedural adherence are areas where improvement opportunities exist.

Material Control and traceability continues to be a problem in large part due to the lack of easy access to pertinent data.

The process currently used to qualify Maintenance technicians to perform activities that are categorized as being "within the skills of the trade," is informal and may not ensure that only adequately trained individuals perform work on equipment when using generic corrective maintenance procedures.

The trend toward increased reliance on contractors, particularly during outages, has resulted in problems with adequate contractor oversight.

Monitoring rework, failure analysis trending, and other performance data management is done essentially by hand. Better data management capability is needed.

IMPROVEMENT INITIATIVES

The DR/RO Procedure which is the main work control document has undergone approximately 1200 man-hours of evaluation and revision by a multi-discipline team including Maintenance, Engineering, Operations, Quality Programs, Training, and Rad Controls representatives. Engineering input to corrective maintenance has been enhanced and clearly defined. Implementation is scheduled for October, 1990.

The Maintenance Department is working in concert with the Operational Support Department and Plant Management has developed a Maintenance Quality Improvement Plan that should be ready for implementation in November of 1990. The major focus of this plan will be on procedure quality and adherence, personnel training and work practices, and job planning and ALARA.

A computerized Maintenance System (MIPPS) has been procured and is currently being fitted to the Maintenance Department processes. This system will be a significant enhancement over current manual search of hard copy files as necessary to identify rework issues and provide equipment trend analysis. The system will also interface with the Stores Procurement Systems to greatly enhance material accountability and traceability.

The Maintenance Department Staffing is being increased to relieve supervisors of administrative burden. During the current SALP period, one supervisor and two facilitators have been added to the Maintenance Department Staff. Another supervisor and three facilitators are currently planned for 1991.

IMPROVEMENT INITIATIVES - CONTINUED

A post outage management retreat was held with key outage managers to discuss the outage and provide recommendations to corporate management on how to better handle outages in the future. Two major recommendations resulted:

- Staff a permanent outage management group consisting of the key outage management personnel and continue to supplement the outage staff with people from other departments.

- Develop a formal outage plan that captures all pertinent information under one cover. This should include everything from staff needs to parking lot assignments.

A program is being re-implemented for department manager inspections. This program involves having each department manager make an inspection tour of a different area of the plant each week accompanied by a non-management member of a different department.

EMERGENCY PREPAREDNESS

SALP HISTORY

- RATED 2 AND IMPROVING
- PREVIOUSLY RATED 1
- GOOD EMERGENCY RESPONSE CAPABILITY
- STAFFING PROBLEMS
- RESPONSE TO FEMA CONCERNS THOROUGH
- GOOD INITIATIVES

EMERGENCY PREPAREDNESS

STRENGTHS

QUALIFICATION OF EMERGENCY RESPONSE ORGANIZATION

QUALIFICATION OF EMERGENCY PREPAREDNESS STAFF

CLOSE RELATIONSHIP WITH LOCAL COMMUNITIES AND STATE OF MAINE

EXERCISE PERFORMANCE

MANAGEMENT SUPPORT

USE OF SIMULATOR FOR EXERCISES

EMERGENCY PREPAREDNESS

AREAS OF IMPROVEMENT

- TRAINING
- IMPLEMENTING PROCEDURES
- EOF EXERCISE PERFORMANCE
- INADVERTENT SIREN ACTIVATIONS
- LINE ORGANIZATION OWNERSHIP
- EP STAFF TEMPORARY ASSIGNMENTS

EMERGENCY PREPAREDNESS

INITIATIVES

- IMPROVEMENT PROGRAM
- INCREASED STAFFING
- UPGRADED ALERT AND NOTIFICATION SYSTEM
- REVISED IMPLEMENTING PROCEDURES
- UPGRADED TRAINING PROGRAM
- EMERGENCY PREPAREDNESS RETREAT
- EMERGENCY RESPONSE ORGANIZATION DEPTH
- AUTOMATED ERO NOTIFICATION

SALP HISTORY

1988-89	2
1987-88	2
1986-87	1

SUMMARY

- FIRST THIRD OF ASSESSMENT PERIOD SECURITY PROGRAM DETERIORATING
- ESCALATED NRC ENFORCEMENT ACTION AFTER NOVEMBER 1988 INSPECTION
- SIGNIFICANT MANAGEMENT ATTENTION
- SIZEABLE EXPENDITURES OF CAPITAL RESOURCE
- GREAT DEAL OF WORK ACCOMPLISHED BY LICENSEE MANAGEMENT AND STAFF

RECOMMENDATIONS

- CONTINUE QUARTERLY SECURITY MANAGEMENT MEETINGS WITH THE NRC
  - REGION RECENTLY REQUESTED SEMI-ANNUAL MEETINGS
- EVALUATE THE ADEQUACY OF TRAINING OF SECURITY MANAGERS
  - HIRED THIRD SECURITY TRAINED PROFESSIONAL
- INSPECT SECURITY PERFORMANCE DURING THE NEXT REFUELING OUTAGE
  - ACCOMPLISHED MAY 1990 - NO VIOLATIONS

SECURITY PROGRAM
-STRENGTHS-

- MANAGEMENT OVERSIGHT/INVOLVEMENT
- SECURITY/OPERATIONS INTERFACE
- SELF-ASSESSMENT PROGRAMS
- EVENT REPORTING
- CONTINGENCY DRILLS
- REFUELING SUPPORT
- PREVENTIVE MAINTENANCE PROGRAM
- ENHANCED HARDWARE UPGRADE

AREAS FOR IMPROVEMENT

- TRAINING
- ACCESS CONTROL COMPUTER SYSTEM
- HUMAN PERFORMANCE / HONING SKILLS
- COMMUNICATIONS UPGRADE

INITIATIVES

- IMPROVE CONTRACTOR TRAINING PROGRAM
- ACCESS CONTROL COMPUTER SYSTEM
- ENHANCED ASSESSMENT PROGRAM
- COMMUNICATIONS SPECIALIST

ENGINEERING/TECHNICAL SUPPORT

SALP HISTORY

- CATEGORY 2 FOR PAST TWO SALP ASSESSMENTS
- ENGINEERING AND TECHNICAL SUPPORT - GENERALLY GOOD
- MANAGEMENT INITIATIVE AND INVOLVEMENT IN ROUTINE PLANT ACTIVITIES - EVIDENT
- RESPONSIVENESS TO NRC INITIATIVES - FOR THE MOST PART TIMELY
- MARKED IMPROVEMENT IN PROCUREMENT AND DEDICATION OF COMMERCIAL GRADE ITEMS

ENGINEERING/TECHNICAL SUPPORT

STRENGTHS

- FIVE YEAR PLAN FOR MODIFICATIONS AND MAJOR TASKS
- PREDICTIVE MAINTENANCE PROGRAM TO TREND AND FORECAST EQUIPMENT PERFORMANCE
- DESIGN BASIS RECOVERY PROGRAM
- INTERNAL SSFI PROGRAM
- CONSERVATIVE APPROACH TO RESOLUTION OF TECHNICAL ISSUES
- TECHNICAL SUPPORT TO PLANT
- PROJECT ENGINEERING/PLANT ENGINEERING RELATIONSHIP
- YANKEE NUCLEAR SERVICES DIVISION RELATIONSHIP
- QUALIFICATION AND EXPERIENCE OF PERSONNEL
- WORK PLANNING
- STAFF SUPPORT DURING OUTAGES

ENGINEERING/TECHNICAL SUPPORT

AREAS FOR IMPROVEMENT

- OVERSIGHT OF CONTRACTORS
- INDIVIDUAL PERFORMANCE
- ENGINEERING PROGRAMS
- PROJECT MANAGEMENT

ENGINEERING/TECHNICAL SUPPORT

INITIATIVES

- UPGRADED ELECTRICAL CONTAINMENT PENETRATIONS
- ELIMINATION OF COPPER IN FEED TRAIN
- MOLDED CASE CIRCUIT BREAKER DATA BASE AND TEST PROGRAM
- INCREASED I&C SUPPORT TO PLANT
- SUPPORT OF PORC PROCEDURE REVIEW SUBCOMMITTEE
- UPGRADED IST PROGRAM
- FORMALIZE TRANSFER OF INFORMATION TO CONTRACTORS
- USE OF ADVISORY ENGINEERS
- FORMAL TRAINING PROGRAM - CONTRACTORS AND STAFF
- FORMALIZE LESSONS LEARNED
- PERFORM PERSONNEL SURVEYS
- DEFINE EXPECTATIONS
- CONTINUE DEVELOPMENT/DOCUMENTATION OF ENGINEERING PROGRAMS
- DEVELOPMENT OF AN OPERATION PLAN

SAFETY ASSESSMENT AND QUALITY VERIFICATION

HISTORICAL PERFORMANCE

- SALP RATINGS OF 2 FOR PAST TWO ASSESSMENT PERIODS.

- "Key management oversight and involvement in plant activities continued to be proactive and aggressive, promoting a high level of safety-consciousness. Plant safety committees and managers' meetings were effective and promoted a high level of safety conciousness. Management improvement initatives demonstrated the licensee's commitment to the pursuit of performance excellence. The QP Department provided technically sound audit and surveillance programs, but weaknesses in the identification of certain repetitive deficiencies (i.e., radiation protection concerns) remain. The licensee's submittals in regard to licensing actions were generally sound and of good quality, although a noted disparity between the quality of licensee-initiated licensing submittals and NRC-initiated licensing activities warrants management attention. Management attention to weaknesses identified by the NRC in emergency preparedness and physical security is warranted." - 1988-1989 SALP REPORT

SAFETY ASSESSMENT AND QUALITY VERIFICATION

STRENGTHS

- Daily management of problems and resources
- Safety Review Committees
- Performance-based audits/surveillances
- Environment encourages innovation
- Vigorous response to emergent issues
- Implementing company-wide behavioral changes
- Strong management support for improvement initiatives
- Reduced violation rate in 1990
- Experience level of personnel
- Large number of degreed people
- Depth in degreed operators

AREAS FOR IMPROVEMENT

- Effective communication of policies to contracted personnel
- Recurring rad con problems
- Quality of plant procedures
- Corrective actions to prevent recurrence
- Apply lessons learned from NRC violations to similar activities
- Close longstanding NRC open items
- Increasing reliance on contractors
- ALARA planning for rad con support/valves

INITIATIVES

- Ambitious ALARA goals
- Outage management organizational changes
- Use of technical specialists in surveillance program
- Resolution of nuclear safety issue concerns procedure
- Improved definition and control of licensing activities supporting responses to NRC initiatives
- Increased communications with NRC Project Manager
- Management of quality assessment