

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No: 50-29/89-20

Docket No: 50-29

Licensee No: DPR-3

Licensee: Yankee Atomic Electric Company
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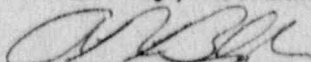
Facility Name: Yankee Nuclear Power Station

Inspection at: Rowe, Massachusetts

Inspection Conducted: November 7, 1989 - January 2, 1990

Inspectors: H. Eichenholz, Senior Resident Inspector
M. Markley, Resident Inspector

Approved By:



A. Randy Blough, Chief, Reactor Projects Section 3A

1-26-90

Date

Inspection Summary: Inspection on November 7, 1989 - January 2, 1990 (Report No. 50-29/89-20)

Areas Inspected: Routine inspection on daytime and backshifts by two resident inspectors of: operational safety; security; plant operations; maintenance and surveillance; engineering support; radiological controls; actions on previous inspection findings; licensee event reports; licensee response to NRC initiatives; and, periodic reports.

Results:

1. General Conclusions on Adequacy, Strength or Weakness in Licensee Programs

The licensee demonstrated a high level of commitment in improving operations staffing and procedures. Several individuals of the current operating staff were advanced to increased license responsibility. Also, the licensee hired several new auxiliary operators.

During this inspection period, the licensee began an operations procedure upgrade program. This was, in part, due to previous NRC identified weaknesses. The inspector routinely observed operators performing procedure walkdowns and technical reviews. Several staff members were activated to support this effort as an operations support group.

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*The NRC Inspection Manual inspection procedure (IP) or temporary instruction (TI) or the Region I temporary instruction (RI TI) that was used as inspection guidance is listed for each applicable report section.

DETAILS

1. Persons Contacted

Yankee Nuclear Power Station

T. Henderson, Plant Superintendent
R. Mellor, Technical Director

Yankee Atomic Electric Company (YAEC)

N. St. Laurent, Manager of Operations

The inspector also interviewed other licensee employees during the inspection, including members of the operations, radiation protection, chemistry, instrument and control, maintenance, reactor engineering, security, training, technical services and general office staffs.

2. Summary of Facility Activities

Yankee Nuclear Power Station (YNPS, Yankee or the plant) has maintained continuous power operation since August 30, 1989. During the inspection period, the plant operated at 100% rated power until December 14, 1989, when the licensee initiated an emergency load reduction due to a loss of generator hydrogen pressure. The leak was quickly secured and full power operation continued through the end of the inspection period.

Effective December 31, 1989, NRC Senior Resident Inspector (SRI) Mr. Harold Eichenholz completed his assignment at YNPS. The NRC has selected Mr. Thomas Koshy, currently a Senior Reactor Engineer in the NRC Region I Division of Reactor Safety, to be the new SRI. In the interim prior to Mr. Koshy's arrival, the current Resident Inspector, Mr. Michael Markley will be the SRI at Yankee.

During the period of November 6-9, 1989, a NRC Region I (NRC:RI) specialist inspector conducted a routine radiation protection program inspection (50-29/89-19).

During the period of November 6-14, 1989, a team inspection was conducted by NRC:RI personnel, NRC headquarters personnel, one contractor, and the resident inspector to examine the Emergency Operating Procedures (EOP) program (50-29/89-80).

During the period of November 27 - December 1, 1989, a NRC:RI operator license examiner conducted SRO requalification reexaminations for three candidates and SRO license upgrade examinations for two candidates (50-29/89-22).

On November 28, 1989, NRC:RI specialist inspectors and the resident inspector conducted an inspection of the annual emergency preparedness exercise (50-29/89-21).

3. Operational Safety Verification

3.1 Plant Operations Review

The inspector observed plant operations during regular and backshift tours of the following areas:

Control Room	Safe Shutdown System Building
Primary Auxiliary Building	Fence Line (Protected Area)
Diesel Generator Rooms	Intake Structure
Vital Switchgear Room	Turbine Building
Cable Tray House	Spent Fuel Pit (SFP) Building
Safety Injection Building	

The following items were checked during daily routine facility tours: shift staffing, access control, adherence to procedures and limiting conditions of operation (LCOs), instrumentation, recorder traces, protective systems, control room annunciators, area radiation and process monitors, emergency power source operability, operability of the Safety Parameter Display System (SPDS), control room lock, shift supervisor logs, and operating orders. On a weekly basis, selected Engineered Safety Feature (ESF) trains were verified to be operable. The condition of plant equipment, radiological controls, security and safety were assessed. On a biweekly frequency, the inspector reviewed safety-related tagouts, chemistry sample results, shift turn-overs, portions of the containment isolation valve lineup and the posting of notices to workers. Plant housekeeping and fire protection were also evaluated.

Inspections of the control room were performed on weekends and backshifts as follows: November 9, 13, 19, 30 and December 2, 11, 12, and 20. Operators and shift supervisors were alert, attentive and responded appropriately to annunciators and plant conditions.

3.2 Safety System Review

The emergency diesel generators, EDG fuel oil, residual heat removal, and safety injection systems were reviewed to verify proper alignment and operational status. The review included verification that (i) accessible major flow path valves were correctly positioned, (ii) power supplies were energized, (iii) lubrication and component cooling was proper, and (iv) components were operable based on a visual inspection of equipment for leakage and general conditions. System walkdowns to assess the material condition of the ECCS HPSI

and LPSI and the low pressure safety injection accumulator were performed. Selected accessible valves were verified to be in the correct position and locked when required by plant procedures.

The condition of those system components inspected was good. Leakage from system piping and flanged joints was not observed. No unacceptable conditions were identified regarding ECCS pump lubrication.

The inspector verified that local instrumentation was operable by observing channel checks with remote indication. The inspector identified no conditions adverse to safety during inspection of ECCS equipment.

3.3 Review of Temporary Changes Switching and Tagging

Temporary change requests (TCRs), which were approved in support of implementing lifted leads and jumper requests and mechanical bypasses, were reviewed to verify that: controls established by AP-0018, "Temporary Change Control," were met; no conflicts with the Technical Specifications were created; the requests were properly approved prior to installation; and a safety evaluation in accordance with 10 CFR 50.59 was prepared if required. Implementation of the requests was reviewed on a sampling basis.

The switching and tagging log was reviewed and tagging activities were inspected to verify plant equipment was controlled in accordance with the requirements of AP 0017, "Switching and Tagging of Plant Equipment."

Licensee administrative control of off-normal system configurations by the use of TCR and switching and tagging procedures as reviewed above, was in compliance with procedural instructions and was consistent with plant safety. No unacceptable conditions were identified.

3.4 Operational Safety Findings

Operations shift personnel demonstrated noteworthy command and control during significant activities impacting the control room. Specifically, the operating shift crews maintained a high level of safety and decorum while effectively supporting the NRC emergency operating procedures (EOP) inspection, the annual emergency preparedness exercise, SRO operator licensing requalification reexamination and SRO license examination upgrades. The inspector observed no degradation in the quality of operating shift personnel performance. Control room professionalism and decorum for routine plant activities were exemplary. The inspector routinely observed plant personnel obtain proper access prior to entering the operating shift work area. Senior operations management oversight was good.

3.5 Cold Weather Preparations

The inspector reviewed licensee preparations for extreme cold weather relative to station procedures, controls detailed in the response to IE Bulletin 79-24, and good engineering practices. The condition of those systems and components inspected was good. Systems susceptible to freezing were adequately protected with heat tracing, insulation, or space heating units. Inspector observation of control circuitry indicated the systems were properly energized. Routine examination of thermostat indications evidenced adequate temperature settings. The inspector noted no anomalous freezing incidents during sub-zero environmental temperatures. No unacceptable conditions were identified.

3.6 Facility Housekeeping and Fire Protection

During this inspection period, the licensee continued to implement structural upgrades to the primary auxiliary building (PAB) that involved the installation of a new roof and painting of the floors. The activity was being controlled in accordance with Engineering Design Change Request (EDCR) 86-308. On November 8 and 9, 1989, during adverse weather conditions (heavy rain), the licensee discovered that protective measures for roof construction/modification had not prevented water penetration into areas of the upper PAB. Specifically, large quantities of rain water were observed coming through the PAB roof near the sample sink area, the component cooling heat exchangers, and the high pressure safety injection (HPSI) flow control valve SI-MOV-46. A prior NRC observation involving the intrusion of rain water into a plant building during the implementation of EDCR 86-308 roof modification related activities is documented in NRC Inspection Report 50-29/89-17, Section 4.4.

The licensee initiated immediate corrective actions to stop the rain water intrusion into the upper PAB. The shift supervisor (SS) examined the leakage and determined no conditions existed which affected equipment operability. However, the inspector observed water running down the front of a wall where a non-watertight electrical junction box associated with valve SI-MOV-46 was mounted. The inspector identified this condition to the SS who similarly examined the condition and concluded that the junction box was safe and that no further action was necessary. The inspector expressed concern that this conclusion was reached without examining the interior of the junction box. The licensee opened the junction box and found a small amount of water in the bottom. However, no water was found on electrical circuitry. The water was removed and the cover was re-installed.

On November 16, 1989, local weather bureaus issued a severe weather warning. The licensee implemented OP-3019, Rev. 1, "Severe Weather Guidelines," to secure loose equipment and materials. Emergency diesel generators were load tested. Although the storm did not negatively impact the plant, licensee preparations were effective.

No subsequent incidents of rain intrusion occurred. Although the licensee demonstrated good initiative in upgrading the condition of the plant, as discussed above, cognizant personnel occasionally lacked the proper sensitivity to maintaining optimum equipment conditions and housekeeping. Therefore, lapses in the quality of performance did occur.

4. Engineered Safety Feature System Walkdown

The inspector independently verified the operability of the emergency feedwater system (EFW) by performing a complete walkdown of the accessible portions of the system to:

- confirm that the licensee's system lineup procedures match plant drawings and the as-built configurations;
- identify equipment conditions and items that might degrade performance;
- ensure that no prohibited ignition sources or flammable materials were present in the vicinity of the system without proper authorization;
- verify appropriate levels of cleanliness were being maintained;
- verify technical specification requirements were adhered to;
- verify proper breaker position at local electrical boards and switch positions at control boards;
- confirm that support systems essential to equipment actuation and performance were operational; and,
- verify valves were properly positioned and locked as appropriate.

Inspector review noted good agreement of procedure No. OP-2259, Rev. 3, "Emergency Feedwater System At-Power Alignment Check," with the station safety systems manual and as-built drawings. Proper system alignment was verified. Component labeling was generally good. However, the inspector noted two valves without tags. The licensee properly initiated measures to have labels made.

Power supply and breaker alignment was verified. Instrumentation calibration data was up to date and indicated proper calibration periodicities. Required flowpath heat tracing was verified energized. Hangers were in good physical condition.

The overall condition of the EFW system is good. Appropriate corrective measures were previously initiated for degraded equipment observed by the inspector. Specifically, the following maintenance request tags were attached to the following components:

- MR 89-312, Valve AS-V-719 (VC Isolation Boundary), Body-to-Bonnet flange leak, initiated January 18, 1989.
- MR 89-1049, Valve AS-PCV-451, Does not Regulate, initiated April 28, 1989.
- MR 89-2256, Valve HIS-V-698, Flange Leak, initiated November 29, 1989.

The inspector discussed the above MRs with the licensee. Valves AS-V-719 and HIS-V-698 cannot be fully repaired during plant operation. Although maintenance has been performed to seal the leaks, ultimate repairs are planned for the June 1990 refueling outage. Valve AS-PCV-451 is placed in the open position (at-power lineup for system operation) pending replacement of the regulating device.

Licensee corrective measures and planned maintenance is adequate to ensure system operability and containment penetration boundary integrity. No unacceptable conditions were identified.

5. Security

5.1 Observations of Physical Security

Selected aspects of plant physical security were reviewed during regular and backshift hours to verify that controls were in accordance with the security plan and approved procedures. This review included the following security measures: guard staffing, vital and protected area barrier integrity, maintenance of isolation zones, and implementation of access controls including authorization, badging, escorting, and searches. No inadequacies were identified.

5.2 Security Allegation (RI-89-A-0140)

On December 2, 1989, the inspector received an allegation from an individual who raised the following concerns:

- At approximately 3:15 p.m. on December 1, 1989, an unidentified individual approached the plant and walked along the protected area fence for approximately 150 yards undetected by plant

security. Plant personnel observed the individual touch the fence several times while traversing the distance. No intrusion alarms occurred.

- (b) alleged contends that cognizant security personnel were inattentive due to excessive overtime, work-related reading, and a lack of dedicated staffing at surveillance positions.

The inspector reviewed this event and found that, immediately following the incident, security personnel tested plant intrusion detection devices. No unacceptable conditions were identified. The inspector verified the accuracy and validity of the licensee findings.

The inspector reviewed security personnel overtime for the months immediately preceding the incident and for the 1989 calendar year. Security overtime was consistent with the overtime worked by other station departments and was not excessive. The average annual overtime for individual security personnel in 1989 was approximately 250 hours.

The work-related reading and staffing dedication contentions were reviewed by NRC Region I security personnel. The licensee practice to allow selected work-related reading was acceptable. Current staffing dedication levels are consistent with the Security Plan and regulatory requirements.

No unacceptable conditions were identified.

6. Plant Operations

6.1 Emergency Load Reduction Due to Generator Hydrogen Leak

At 11:13 p.m. on December 14, 1989, the licensee initiated an emergency controlled plant load reduction due to a loss of generator hydrogen pressure. The licensee identified the pressure loss as a leak by the generator hydrogen supply valve GG-SV-59. Personnel secured the leak of 11:18 p.m. and terminated the load reduction. Operators returned the plant to full rated power without any problems. The total load reduction was approximately 2 MWe. Maintenance Request No. 89-2381 was submitted to effect long term repairs.

Inspector review noted strong operator performance. Personnel actions were conservative in initiating the load reduction. The hydrogen leak was secured in a timely manner consistent with plant safety.

6.2 Operations Staffing and Program Upgrades

During this inspection period, the licensee demonstrated a high level of commitment to improving operations staffing and procedures. One senior reactor operator (SRO) licensed reactor operator (RO) was

advanced to shift control room operator (SCRO) responsibility. Four RO-licensed auxiliary operators (AOs) were advanced to routine control room RO duty. Six new AOs were hired. Also, one RO was dedicated to support plant initiatives to improve plant labeling.

During this inspection period, the licensee began an operations procedure upgrade program. This was, in part, due to previously NRC identified weaknesses. The licensee established a central work facility to support this effort. The inspector routinely observed operators performing procedure walkdowns and technical reviews. Several staff members were activated to form the initial core of an operations support group. The licensee is now being responsive to NRC identified concerns in this area.

6.3 Reactor Protection System Instrumentation Drift

During OP-4601, Rev. 23, "Nuclear Instrumentation Channel Functional Test," on November 22, 1989, the licensee determined that the No. 3 intermediate range (IR) nuclear instrument reactor trip startup rate (SUR) setpoint had drifted in a non-conservative manner. Specifically, the observed setpoint was 5.5 decades per minute (DPM) whereas Technical Specifications (TS) require the safety limit setting to be less than or equal to 5.2 DPM.

The licensee initiated an event reportability evaluation which determined it not reportable for the current condition of the plant (Mode 1-Power Operation). The licensee corrected the setpoint value to 5.0 DPM and returned the instrument to service.

The inspector questioned the licensee what the SUR setpoint had been during the August 1989 startup. The licensee provided the inspector with instrumentation setpoint trending for IR No. 3 for the 1989 calendar year. No unacceptable setpoints were previously identified. The inspector had no further questions. The licensee is continuing to monitor IR No. 3 SUR setpoint performance. The licensee hopes to alleviate many nuclear instrumentation problems when installation and testing of the new indication system is complete. This is planned for the 1990 refueling outage.

7. Maintenance/Surveillance

The inspector observed and reviewed maintenance and surveillance problem investigation activities to verify compliance with regulations, administrative and maintenance and surveillance procedures, codes and standards, proper QA/QC involvement, safety tag use, equipment alignment, jumper use, personnel qualification, radiological controls for worker protection, fire protection, retest requirements, LCOs, evaluation of test results, removal and restoration of equipment, deficiency review, resolution and reportability per Technical Specifications.

7.1 Charging Pump Strainer Maintenance

During a tour on November 30, 1989, the inspector observed "QC Hold Tags" on No. 2 and No. 3 charging pump suction lines. At the time, the No. 3 charging pump was the operating pump providing charging flow to the main coolant system (MCS).

The inspector questioned the operations shift supervisor (SS) why the charging pump was operating with a hold tag. The SS was not aware of the hold tags and had no documentation relative to their issuance. The SS dispatched an operator to examine the tags. It was determined that the hold tags had been installed during charging pump strainer cleaning and fastener replacement per Maintenance Request (MR) No. 89-2106, "Charging Pumps No. 1, 2, and 3 Strainers." The charging pumps and strainers are a Safety Class 2 (SC-2) system. The fasteners replaced on the No. 2 and No. 3 charging pump strainers were commercial grade, non-nuclear safety (NNS) class A194-2H hexagonal nuts. The subject fasteners were purchased for another job and had been maintained in the stockroom "hold area" pending testing and documentation to upgrade the material from NNS to SC-1. On November 7, maintenance supervision obtained authorization from the Plant Superintendent to remove the fasteners from the storeroom and install them prior to possessing upgrade qualification documentary evidence by securing his signature on the QC hold tags. Maintenance personnel completed the work and the Nos. 2 and 3 charging pumps were returned to service on November 8 and 9, respectively. The licensee received the fastener qualification documentary evidence satisfying SC-1 requirements on November 20. The hold tags were removed following identification by the NRC.

The inspector reviewed the above described activities with licensee management relative to station procedures, industry standards, and regulatory requirements. The licensee initiated a quality assurance (QA) assessment which resulted in the issuance of Nonconformance Report No. 89-21.

The licensee determined that the fasteners had been authorized for use contrary to step A.11 of station procedure AP-0206, Rev. 10, "Nonconformance Report." Specifically, after an NCR is approved, the materials or services in question may be placed in service by the Plant Superintendent or alternate, on a permanent or temporary basis, even though, further actions maybe required by the disposition of the NCR. Contrary to the above, no NCR was approved prior to authorization for use and installation of the fasteners.

Licensee corrective actions detailed in the NCR 89-21 disposition included refamiliarizing personnel with the requirements of AP-0206, reminding personnel that adequate information and/or documentation must be obtained in order to install equipment being upgraded for safety class applications, evaluating procedures to better delineate

the method for controlling "Tagged" material, and evaluating the Quality Services Group (QSG) observations and recommendations. The licensee also accepted the installed fasteners based on the documentary evidence supporting upgrading the material to SC-1.

The inspector noted significant weakness in personnel performance and program implementation. Poor communications were evident in that the cognizant Maintenance Services Department (MSD) engineer who purchased the fasteners for another job was not consulted regarding the material qualification and use. Subsequent operations shift crews were not informed regarding the hold tags. No onsite engineering evaluation of the material integrity was performed.

10 CFR 50, Appendix B, Criterion XV specifies measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. It further specifies that nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures.

Licensee personnel, including senior management, demonstrated inadequate knowledge of program guidance for the disposition and use of nonconforming materials. Procedure AP-0207, Rev. 8 "Equipment Control," specifies in step II.A.7.c., that cases where required documentary evidence is not available, the associated equipment or materials shall be considered nonconforming. Procedure AP-0212, Rev. 16, "Control of Purchased Material, Equipment and Services," requires in step II.A.4., that documentary evidence that items conform to procurement requirements shall be available prior to installation or use of such items where required by code, regulation or contract requirements. Contrary to the above, the licensee installed nonconforming materials without the required documentary evidence.

Procedure AP-0206, Rev. 10M, "Nonconformance Report," requires in discussion step No. 4, nonconforming materials, parts or components which depart from specified requirements that render the quality of an item unacceptable shall be reported under an NCR. Step A.11 of the same procedure specifies that the Plant Superintendent may authorize the materials or services in question to be placed in service after an NCR is approved. Contrary to the above, no NCR was issued and the fasteners were authorized for use contrary to station procedures.

The installation of nonconforming materials on the Nos. 2 and 3 charging pumps constitutes a violation of station procedures and 10 CFR 50, Appendix B, Criterion XV (50-29/89-20-01)

7.2 Safe Shutdown System (SSS) Surveillance Test

On November 29, 1989, the inspector observed the licensee perform surveillance test OP-4253, Rev. 6, Att. B, "SSS Quarterly Operability Test." Cognizant personnel obtained the proper authorization prior to commencing the surveillance. The licensee performed valve and breaker alignment, switching and tagging in accordance with the procedure.

During the test, a leak was identified on the primary pump P-82 discharge valve SS-V-355. It resulted in a steam plume in the pump room and water on the floor. The licensee evaluated the deficiency and determined that the surveillance test could be continued. No additional anomalies occurred. The surveillance test was completed with all acceptance criteria satisfied. Maintenance Request No. 89-2260 was issued to effect corrective maintenance.

Inspector review noted licensee performance for the test was generally good. Personnel were conservative in assessing the leak. Electrical and operating equipment were not challenged by the leak. Good communication with the control room was maintained. The system was properly restored to the original configuration. No unacceptable conditions were identified.

7.3 Emergency Feedwater Valve Position Indication

On November 9, 1989, the operations department was performing surveillance testing on the Emergency Feedwater (EFW) System and noted a potential position indication problem on the EBF-MOV-555 valve. Specifically, the valve was observed to move only 90% of the full open position while driven by the valve's motor operator. The remaining 10% of travel occurred from mechanical coasting to the back-seat position.

Maintenance Request (MR) 89-2145 was initiated to investigate this apparent equipment discrepancy. Following release of the equipment to the maintenance department on November 9, 1989, testing of the valve was performed. No deficiencies were identified. Stroke times were compared to previous history and found to be acceptable. Maintenance personnel confirmed that standard procedure is to adjust the open limit switch to deenergize the motor operator at 90% of full open travel to preclude the possibility of backseating the valve while the valve operator is energized. The inspector identified no concerns in the manner with which maintenance and surveillance activities were conducted on the EFW System and the way potential deficiencies were resolved. Even though the final resolution of this item indicates there was no actual deficiency, operators displayed good attention to detail and a proper questioning attitude.

8. Radiological Controls

Radiological controls were reviewed on a routine basis relative to industry radiological standards, administrative and radiological control procedures, and regulatory requirements. Selected work evolutions were observed to determine the adequacy of program implementation commensurate with the radiological hazards and importance to safety. Independent surveys were performed by the inspector to verify the adequacy of radiological controls and instructions to workers.

Inplant radiation protection program implementation was consistently good. The inspector identified no unacceptable conditions. Personnel demonstrated a proper questioning attitude in both planning and implementing radiological work controls.

8.1 Disposal of Septic Tank Sludge

In October, 1989, the licensee determined the presence of trace levels of radioactivity in the plant's septic tank sludge. As a result, the Yankee Nuclear Services Division (YNSD) performed an evaluation of several potential options for the disposal of the sludge. This evaluation was documented in YNSD memorandum REG 215/89, dated October 20, 1989, to the Plant Superintendent.

The evaluation recommended that the contents of the onsite septic tank (7000 gallons with approximately 2 microcuries of total radioactivity) be disposed of at a municipal sanitary sewerage treatment facility in accordance with 10 CFR 20.303. Furthermore, the evaluation indicated that the sanitary waste process employed at the facility (septic tank with leach field) does not constitute a complete sewage treatment system. Thus, the existing guidance is NRC Information Notice (IN) 88-22, Disposal of Sludge from Onsite Sewage Treatment Facilities at Nuclear Power Stations, is not applicable.

Subsequent to the issuance of the above noted evaluation, the plant Technical Director (TD) provided the document to the inspector. The inspector transmitted the licensee evaluation to the NRC Region I Division of Radiation Safety and Safeguards cognizant specialist inspector. Following specialist inspector review of the licensee document, the licensee was informed that the NRC did not concur with licensee plans to dispose of the septage in accordance with 10 CFR 20.303. It was the NRC Region I position that the guidance in IN 88-22 was applicable to on-site septic systems because a septic system is a form of treatment facility. Therefore, transfer to an off-site facility would be acceptable only if NRC approval is first obtained per 10 CFR 20.302. The NRC Office of Nuclear Reactor Regulation (NRR) was consulted and agreed that a 10 CFR 20.302 request is required, since questions of solubility and dispersibility of the material exist.

As of the end of the inspection period, the licensee was in the process of developing a 10 CFR 20.302 application for the proposed disposal of the septage.

9. Licensee Event Reporting (LER)

The inspector reviewed the below listed licensee event reports (LER) to determine that with respect to the general aspects of the event: (1) the report was submitted in a timely manner; (2) description of the events was accurate; (3) root cause analysis was performed; (4) safety implications were considered; and (5) corrective actions implemented or planned were sufficient to preclude recurrence of a similar event.

9.1 LER 89-12

The LER 89-12, "Degradation of a Main Coolant System Boundary Results in Steam Leak," addresses the August 24, 1989, identified main coolant system (MCS) leak from the socket weld of the loop No. 2 bypass line high-point vent valve. Repairs required taking the plant to cold shutdown conditions. An Unusual Event (UE) was declared based on MCS leakage within the capacity of charging pump flow. The preliminary cause of the weld failure was fatigue. A thorough failure analysis is being conducted. The licensee plans to supplement the LER if significant new information results from the analysis. The LER provided a concise description of the sequence of events and noted a similar event reported in LER 83-25. The inspector had no further questions. No deficiencies were identified.

10. Review of Licensee Response to NRC Initiatives

10.1 Defective Overload Relay Heaters

Pursuant to 10 CFR Part 21, Telemecanique Inc. advised the NRC Region I Regional Administrator on October 17, 1989, that a potential for defective relay heaters with the catalogue numbers G30T9 thru G30T16 existed. The concern involves weak resistance welded electrical connections. Visual inspection can be used to identify heaters which have suspect welded connections. Yankee was listed as potential recipient of defective components. A separate advisory was issued to the licensee on this subject by Telemecanique Inc. on October 18, 1989. The inspector noted that the specified catalogue numbers are used in safety related motor operated valve circuits at YNPS.

Independent of the above notification, the on-site technical services department (TSD) was in receipt of an October 11, 1989 Yankee Quality Assurance Department memorandum (QAD 89-586/4-5), that documented a Yankee QA surveillance activity conducted at Telemecanique facility in which overload heaters procured for another plant were found to be improperly welded. The onsite TSD conducted an inspection of

one style of overload heater and determined that six of eleven inspected units were defective. The licensee issued Nonconformance Report (NCR) No. 89-15 on October 17, 1989. The Plant Operations Review Committee (PORC) reviewed the NCR at the October 31, 1989 meeting (No. 89-107). The NCR indicated 1) that the receipt inspection, testing, and post maintenance testing operations checks were effective for the devices installed in the plant; 2) that the remaining stock would be placed in a condition that would restrict the issuance without maintenance supervision approval; and 3) that Yankee Nuclear Services Department was to evaluate the condition and provide a receipt inspection technique to detect the bad welds. The PORC determined that it was not necessary to test all heaters at this time. The cognizant MSD engineer informed the inspector that the installed units (a total of nine) would be inspected in the June 1990 refueling outage. On December 8, 1989, the inspector provided the Quality Services Group (QSG) a copy of the Telemecanique Inc. letter to the NRC dated October 17, 1989. In response, a QA evaluation was initiated. This evaluation reviewed all existing documentation on the subject, inspected all units existing in stock and determined how many units were issued. Out of 139 units inspected, six additional defects were found. Nine units had been issued to the field for installation in overload relays. The results of the QSG evaluation are contained in Quality Assurance Surveillance Report No. 89-77 dated December 14, 1989.

The inspector requested that the licensee review their material issue process and maintenance records to provide the assurance that components in the field have not been subject to the identified defect. The cognizant MSD engineer informed the inspector that post maintenance testing provides a proper basis that the replaced component is not defective. This testing includes multi-amp trip testing of the thermal overload relay heater following replacement followed by valve cycling. On December 11, 1989, the cognizant MSD engineer documented that none of the replaced heaters had been the result of the weld separation defects; that all replaced units in the field had been overload trip tested in accordance with plant procedures OP-5758 or OP-5755; and that Telemecanique Inc. concurred with the licensee position that deferral of visual inspection of installed relay heaters until the 1990 refueling outage is appropriate based upon the post-maintenance testing employed by the licensee and the continued satisfactory operation of the installed equipment.

The licensee was responsive to NRC concerns on this subject and the inspector had no further questions on this item.

10.2 ASCO Solenoid Valve Concerns

On December 1, 1989, two of eight main steam isolation valves (MSIVs) at the River Bend Station (an NRC Region IV plant) reopened after being slow closed following plant cooldown. This event was attributable to sticky solenoids on ASCO dual coil solenoid valves, Model No.

8323. To aid the NRC events assessment and draft generic communications on this subject, the NRC Region I Director, Division of Reactor Projects requested on December 8, 1989, that the inspector obtain answers to questions related to the use and testing of the subject valves at the Yankee Nuclear Power Station. Following discussion of the concerns with licensee personnel and the review of procurement records, the inspector determined that the subject solenoids were not in use at this facility.

The licensee also provided the inspector with a March 13, 1989, evaluation of operating experience for NRC Information Notice No. 88-43, Solenoid Valve Problems, which described a number of operability problems associated with the dual-coil solenoid valve Model NP8323 manufactured by ASCO, determined that the subject valves are not in use at this facility.

The inspector had no further questions on this matter.

11. Status of Previous Inspection Findings

11.1 (Closed) Unresolved Item (50-29/89-11-02), Review of Licensee Actions to Address Uncontrolled Plant Modification.

This item is related to the uncontrolled modification to the safety injection accumulator drain valve SI-V-50 (Safety Class 2) configuration. Licensee corrective actions detailed in Nonconformance Report No. 89-10 were adequate in ensuring that no unreviewed safety questions existed for the as-found conditions. Inspector review noted the engineering evaluation was technically sound and conservative. Resolution of corrective actions to preclude recurrence was adequate. This item is closed.

11.2 (Closed) Unresolved Item (89-11-01) Review of PORC Actions to Address Task Force Results from July 25 Loss of Emergency Bus

This item is related to the plant operations review committee (PORC) review of the task force analysis of the July 25, 1989 inadvertent loss of the No. 1 480V emergency bus. The licensee effectively examined the root causes and contributory factors.

The PORC reviewed the task force analysis which included a detailed engineering evaluation (MSD Memo. 109/89, RE Memo. 89/49) and an emergency response evaluation of Emergency Plan Implementation (TS Memo. 89/164). The task force findings and corrective actions to preclude recurrence were approved by the PORC in Meeting No. 89-81 on August 22, 1989.

Additionally, the licensee conducted a thorough human performance evaluation which identified additional opportunities for improvement. Inspector review noted the licensee assessment and review demonstrated a strong safety perspective. The Task Force adequately addressed operations and maintenance department activities relative to this event. Corrective action recommendations detailed in the engineering evaluation were effectively evaluated and appropriately included in Licensee Event Report No. 89-11. This item is closed.

12. Review of Periodic Reports

Upon receipt, the inspector reviewed periodic reports submitted pursuant to Technical Specifications. This review verified, as applicable: (1) that the reported information was valid and included the NRC-required data; (2) that test results and supporting information were consistent with design predictions and performance specification; and (3) that planned corrective actions were adequate for resolution of the problem. The inspector also ascertained whether any reported information should be classified as an abnormal occurrence. The following reports were reviewed:

- Monthly Statistical Reports for plant operations for the months of November and December, 1989.

13. Management Meetings

At periodic intervals during this inspection, meetings were held with senior plant management to discuss the findings. A summary of findings for the report period was also discussed at the conclusion of the inspection and prior to report issuance. No proprietary information was identified as being included in the report.