U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket/Report No. 50-423/85-62 License No. CPPR-113 Category B

Licensee: Northeast Nuclear Energy Company
P.O. Box 270
Hartford, Connecticut 06101

Facility Name: Millstone Nuclear Power Station, Unit 3

Inspection at: Waterford, Connecticut

Inspection Conducted: September 24-November 18, 1985

Inspectors:

T.A. Rebelowski, Senior Resident Inspector

F.A. Casella, Resident Inspector

R.J. Summers, Project Engineer

W. Baunack, Reactor Engineer

A. Finkel, Lead Reactor Engineer

Approved by: E. McCabe
E. McCabe, Chief
Reactor Projects Section 3B, DPRP

12/10/85
date signed

Inspection Summary: Inspection on September 24, 1985-November 18,1985 (Report No. 50/423/85-62)

Areas Inspected: Routine onsite regular inspection by resident (512 hours) and region-based (82 hours) inspectors. Areas inspected included: Review of licensee action on previous findings, review of NUREG 0737 action items, and observation and witnessing of hot functional testing and retesting.

Results: No violations were identified. Notable licensee strength was found in the improved detail and completeness of information packages provided for open item closeout, in the attitude and morale of the utility staff while working extensive hours and in the improving levels of cleanliness throughout the project. Areas found in need of increased licensee attention were timely development of procedures and open item information packages for NRC closeout, and coordination between cable pulling and penetration sealing to prevent conditions such as control room pressurization test failure. Also, the absence of Unit 3 Technical Specification provisions regarding hurricane preparations/precautions was identified as an item for licensee review.

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DETAILS

1. Persons Contacted

J. Ferland, President, Northeast Utilities
J. Opeka, Senior Vice President, Nuclear Engineering and Operation
R. Werner, Vice President, Generation and Construction Engineering
R. Busch, Project Mangager, Millstone 3
W. Romberg, Station Superintendent
J. Crockett, Unit 3 Superintendent

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, and Training Departments.

2. Summary of Facility Activities

A period of heightened licensee activity was observed in all areas in preparation for initial fuel load. The licensee performed their Hot Functional Testing (HFT) sequence and is preparing to enter into their fuel load sequence. HFT includes filling and venting the primary systems, performing solid plant pressure control testing, heating up with Reactor Coolant Pumps (RCPs), placing primary chemistry in specification, drawing a bubble in the pressurizer, and performing tests at each 100°F incremental plateau. Tests at each plateau are RTD cross calibrations, RCP vibration testing, loose parts monitor system baseline readings, thermal expansion and snubber measurements, and containment HVAC balancing. Upon reaching the normal operating temperature and pressure plateau (557°F, 2250 psia), a 28 day test period began. Component testing during this period, in addition to the five tests performed at each heat-up plateau, include: coolant sampling system, steam generator chemical feed system, pressurizer controls, pressurizer safety and relief valves, Reactor Coolant System (RCS) heat loss and integrity, RCS loop isolation interlocks, Normal and Reserve station transformer power transfer tests; charging, letdown and boration tests (without actually borating), and containment vacuum testing. Secondary side testing included main and auxiliary feed system, main steam isolation valve stroking and timing, steam generator code safety setpoint testing, and loss of instrument air. For a brief period, the main generator was synchronized to the grid.

When testing at 557° was terminated the plant was cooled down using the remote shutdown boards,simulating a loss of the control room. Once cooldown was transferred to the residual heat removal system (RHR), and plant control returned to the control room, the plant was cooled down and depressurized to ambient conditions and the primary system was drained.

During this period, the two emergency diesel generators completed Reg. Guide 1.108 tests successfully. The licensee began modifications to the lubricating oil systems of the engines to upgrade the existing simplex oil strainers to duplex strainer arrangements.

Other construction and maintenance activity during the period included: (1) replacement of valve guide pins with tabs in all 8 RCS loop stop valves; (2) machining pressurizer PORV bonnets to reduce thickness and correct warpage problems (the 2 PORVs will next be returned to the vendor for installation of new solenoid valve seats); (3) installing lower radial supports to service water pump shafts to reduce excessive runout; (4) replacement of low pressure safety injector accumulator capillary type level transmitters with standard Barton transmitters; (5) replacement of all 3 pressurizer code safeties; (6) installation of jacking bolt alignment assemblies on the 3 charging pumps, and (7) modification of curtain type fire dampers which failed full flow closure tests.

Other activities began during this period but not completed included initial boric acid mixing, boronometer AM 241 source installation and calibration, Solid State Protection System monthly and refueling surveillances, and CO_2 concentration tests.

Millstone Unit 3 instituted full operational security with noted compensatory actions on November 9, 1985, in preparation for fuel load.

The site was visited by NRC Commissioner L. Zech, Hurricane Gloria, the NRR Licensing Staff, and by Region I management. In addition, there were 11 region-based specialist inspections.

3. Licensee Action on Previous Inspection Findings

A. (Closed) Unresolved Item 85-36-01 Licensee procedure ACP-QA-2.02C, Work Orders, requires the QC/Construction QA (QC/CQA) Department to review completed Category 1, Fire Protection QA (FPQA) or Radwaste QA work order packages for final acceptance within four weeks of receipt of the work order.

The licensee added three Level III inspectors to the review and disposition of work orders to support their requirement for a 30 day time limit on work order reviews. The weekly trending of the open work orders has been descending and it appears that the backlog is dropping at an acceptable level. On August 1, 1985, the AWOs on hand was approximately 950 and by October 10, 1985 the AWOs on hand dropped to 100.

This item is closed.

B. (Closed) Violation 50-423/85-22-02 Weld radiographic indications. The inspector reviewed the licensee's corrective and preventive action described in their letter dated September 12, 1985 and discussed this matter with a cognizant licensee representative on October 3, 1985. Based on the above, the inspector concluded that the licensee's actions were adequate.

This item is considered closed.

C. (Closed) Unresolved Item 85-26-01 Interfacing System LOCA Review.

The sample of four pressure isolation valves in two Emergency Core Cooling Systems which were originally chosen for review have been included in Station Procedure SP 3601F.4 Rev 0, "Reactor Coolant System Pressure Isolation Valve Test", PORC approved on October 30, 1985. This is the surveillance procedure by which Technical Specification required valves (Table 3.4.1) are leak tested and verified within the limits of Technical Specification 3.4.6.2. A check of the procedural steps against Piping and Instrumentation Diagrams showed that the leakage flow paths were acceptable. Of the valves sampled, the combination of Technical Specification testing frequency requirements and acceptance criteria and the use of SP 3601.F4 to perform the actual testing satisfied NRC concerns regarding the potential for an interfacing system LOCA.

In addition to the valves singled out in report 85-26, the inspector reviewed section 7.3 of SP3601F.4 covering the pipe run between the RCS hot legs and RHR pump suctions. The NUREG/CR-2069 formatted configuration is RCS-MOV(NC)-MOV(NC)-I-H/L. The two normally closed (NC) motor operated valves (MOV) selected for review were 8701C and 8701A. These valves are leak tested under procedure SP3601.F.4. The pressures and leakage measurement paths set by the procedure were found adequate.

These two valves are interlocked to the Containment Recirculation System low pressure safety injection cross connect valves to prevent simultaneous opening. They are also interlocked to RCS wide range pressure to automatically close and prevent opening at elevated pressures. Integrated Hot Functional procedure 3000, Appendix 3003, tested these interlocks and found them to perform as designed.

The inspector had a question concerning the "use as is" disposition of UNSAT 6876, written against the interlock portion of this test. The test acceptance criteria were given in units of absolute pressure whereas the data was recorded as values of DC voltage. For the high value (automatic closure), the DC voltage value had a linear correlation to pressure and was within the tolerance band of the acceptance criterion. The lower value, however, was not within the tolerance band after correlation. The licensee has stated that the actual values of pressure were read locally and from computer printouts and were satisfactory. The licensee has committed to reevaluate data and will be performing additional required surveillances. This item will be reviewed during the routine inspection program that requires NRC test results evaluation.

The inspector had no further questions on Interfacing System LOCA provisions.

D. (Closed) Unresolved Item (423/85-61-01) Adjustments were performed on controls of auxiliary feed water pumps (AFW) by the vendor without a manual or procedure.

Observations of AFW testing included in Hot Functional Testing, Appendix 3019 noted that the vendor did not refer to the vendor manual or procedure for steps in turbine governor adjustment. The vendor was knowledgeable but his manipulations were not recorded for use by maintenance personnel during future governor adjustments. The licensee has added to Appendix 3019 the requirement for use of the Terry Turbine Operating Instruction Manual to adjust governor controls to obtain required ranges of speed. This item is closed.

E. (Closed) ACRS Concerns (84-14-03 Section C2) Based on the ACRS meeting of August 28-29, 1984, the licensee was requested to present their method by which full identification of previous NDE inadequacies throughout the industry are factored into the ISI program for Millstone III before ASME code coverage is provided.

The licensee presented the following listing of inputs:

1. Review of NRC documents relative to PSI/ISI related deficiencies at various plants.

2. Review of IE Bulletins.

3. Response to NRC-MEB questions relative to PSI implementation and specific areas of concern.

4. Factoring into NDE procedures specific techniques to address NRC concerns.

5. Compliance to latest NRC accepted "code in effect" for PSI at the time the program was started.

6. State of the art input from major NDE vendors and comparably equipped nuclear power plant owners.

7. NRC-MEB scrutinized the program very closely and had all areas of their concern addressed and implemented to their satisfaction.

8. Input from industry NDE experts relative to resolution of specific industry problem areas:

   1) Component Coolant Stainless Steel piping examination.
   2) Reactor Plant Vessel exams, including RG 1.150 compliance.
   3) Reactor Plant Vessel, Reactor Coolant Pumps, R.C. Valves, RV Studs Examination.
   4) Stainless Steel piping exams.

9. Addressing in the Inspection Plan all NRC documents that were utilized in program development and implementation.

10. Examining (in progress) the entire volume of piping welds (to maximum extent possible) and recording any indications noted-not just the CRV of the bottom third.

11. 0° straight beam mapping of all piping welds requiring UT.

The inspector had no further questions on this item.

F. (Open) Inspector Follow Items 84-14-02,b.4 Anticipated Transient Without Scram (ATWS) Rule Compliance The licensee has responded to the ATWS Rule Schedule required by 10CFR50.62(d). The rule requires that equipment diverse from the reactor protection system be provided to trip the turbine and initiate the auxiliary feedwater system under conditions indicative of an ATWS. In a letter dated October 7, 1985, (Opeka to Youngblood), a schedule was formulated for completion by the end of the first refueling. This schedule is under NRR review. No further action by IE is required at this time.

This item will remain open pending completion of licensee actions.

G. (Closed) Inspector Follow Item (84-03-07) Nuclear Review Team areas of interest The senior resident inspector reviewed the charter of Nuclear Review Team. The team reviews the concerns of NUSCO and NNECO employees. Company issues on seniority, ability to advance, work activities and nuclear concerns are addressed during semi-annual visits. Since mid-summer, the licensee has established a quality concerns office with an independent company to monitor employee concerns at the site. The nuclear review team does provide an additional in house expertise for concerns in the nuclear area.

This item is closed.

4. Licensee Reports of Potential Significant Deficiencies

A. Significant Deficiencies where licensee has determined or completed corrective actions:

(1) (Closed) Construction Deficiency Report 83-00-04 Misoperation of Westinghouse DS-416 Reactor Trip Switchgear. Misoperation of the DS-416 UV attachment was due to a missing retaining ring on one of the two UV attachment pivot shafts. This allowed the pivot shaft to move laterally such that one end came out of its guide hole in the frame of the UV attachment and did not permit the attachment to operate on demand. Westinghouse made a design change which increased the width of the retaining ring, but did not increase the groove in the shaft receiving the retaining ring, thus not locking the UV shaft in the guide hole.

The licensee issued and accomplished, pursuant to Engineering and Design Coordination Report (E&DCR) T-C-00950 dated July 12, 1984, the following three changes:

Westinghouse Field Change No. Notice NEUM-10563, change shunt trip attachment hardware.

Westinghouse Field Change No. Notice NEUM-10564, change undervoltage trip assembly.

Westinghouse Field Change No. Notice NEUM-10565, add the auto-shunt trip panel.

The above changes were verified in Millstone Inspection plans dated between 10-29 to 10-31-84. The three changes were verified using the following test procedures during phase 1 testing.

Test Procedure T-340601E02, Reactor Trip Switchgear

Startup Test Tag Lineup Form.

Valve Component Test Matrix Form.

Low Voltage Power Circuit Breaker Test Data.

Low Voltage Circuit Breaker Electrical/Mechanical Test Data.

Low Voltage Circuit Breaker Trip Test.

Bus Bar Data Sheet.

Termination Resistance Data Sheet.

A review of the above test procedure and data sheets showed that the changes made per E&DCR No. T-C-00950 to the DS-416 breakers were within the specification requirements of drawings 2476-230-001-031, 032 and 033.

This item is closed.

(2) (Closed) <u>Bingham-Willamette Auxiliary Feedwater Pumps (SD-63) 85-00-14-</u>The applicant had reported a potentially significant deficiency involving impeller wear rings on auxiliary feedwater pumps supplied by Bingham-Williamette. The impellers for all 3 pumps have been removed and returned to the manufacturer. The inspector reviewed quality assurance inspection records for impeller removal and shipping, the manufacturers procedure for wear ring replacement, material certification for the new wear rings, and quality assurance inspection records for pump reassembly. Records included IRs M4A00378 and M5A50024, E&DCR FP 39490, and Purchase Order 12179-

21719 with accompanying certifications and procedures. The auxiliary feed pumps have been satisfactorily tested during hot functional testing subsequent to changeout of the wear rings..

This item is closed.

(3) (Closed) Construction Deficiency Report 85-00-07 Unqualified auxiliary feedwater pump lube oil pressure switches. Each auxiliary feedwater pump includes a lube oil system pressure switch provided by the pump manufacturer, Bingham-Williamette. The function of the switches is to provide a start/stop signal to the auxiliary feedwater pumps based on lube oil system pressure. Failure of these pressure switches will prevent the auxiliary feedwater pump from starting or will cause a trip if the pump is running.

The licensee issued Engineering and Design Coordination Report (E&DCR) F-C-37968 dated October 3, 1984 which required the following changes be made to the Bingham-Williamette design:

Remove pressure switches from pump skids and install on instrument stands located near pump skids.

Install tubing to pressure switches.

Add stiffener plates.

Replace pressure switches with qualified switches.

The above installations were completed and verified by quality control in the following inspection reports:

IR5A00918, July 15, 1985

IR5A00919, July 15, 1985

IR5A00920, July 15, 1985

The inspector verified that the design requirements of E&DCR F-C-37968 have been completed and verified by quality control.

This item is closed.

(4) (Closed) Construction Deficiency Report 83-00-02 Clogging of the service water pump lubricating water strainers. The strainer mesh size is such that "stapling" occurs in the mesh resulting in inadequate cleaning of the strainer during the backwash (cleaning) cycle. This condition could cause damage or failure of the pump bearings.

The licensee issued Engineering and Design Coordination Report (E&DCR) P-T-5523, dated April 19, 1983 required the following design changes:

Changing the pump bearing sleeves to chrome plated nitronic 50.

The 40 micron service water pump lube water strainers and the 50 micron circulating water pump lube strainers were replaced with 100 micron strainers.

The E&DCR P-T-5523 changes were made at the Hayward Tyler Pump Co., Burlington VT on pumps 3SWP*PIA,PIB,PIC and PID and certified by the vendor on July 25, 1983. Stone and Webster's vendor quality report dated July, 83, verified that the requirements of E&DCR P-T-5523 were completed on the four pump motor components and delivered to the Millstone 3 site.

This item is closed.

(5) (Closed) Construction Deficiency Report 83-00-05 Gould Motor Control Centers (MCCs) pull apart terminal blocks popping out of position as a result of electrical wires connected to the male terminal block.

Engineering and Design Coordination Report (E&DCR) N-EC-00963 superseded F-E-12969 which defines the material, design and inspection criteria necessary for the MCC pull apart terminal block modification.

The inspector verified that the following actions have taken place: (1) New material received and inspected per E&DCR N-EC-00963 and attached drawing, (2) Production Maintenance, Work Order M3-85-36745, which identified the task to be performed, and (3) QC verification that the task was performed.

In addition to the above items, using a sampling approach, the inspector verified that the requirements of E&DCR N-EC-00963 have been completed and installed in the below listed safety related MCCs:

MCC 32-IT (3EHS*MCC1A1) Sections 1F, 2F, and 3H
MCC 32-IU (3EHS*MCC1B1) Sections 3H, 4F, and 5F
MCC 32-47 (3EHS*MCC1A4) Sections R2H, R2G, R3G, R3H, and R7H
MCC 32-34 (3EHS*MCC1B3) Sections F3G, F3K, F3G, F3K, R1K, and R2E

This item is closed.

5. Calibration Anomalies in Safety Injection Accumulator Level Indicators

The licensee had installed Rosemount capillary-type differential pressure cells as level indicators on the four safety injection accumulators. They have been unable to maintain a satisfactory calibration on the pressure cells and initially attributed these problems to pipe configuration and root valve leakage.

Specifically, there were three problems that the licensee initially determined to need correction to allow calibration:

(1) The diaphragm interface flanges that separated the nitrogen/water process fluid from the glycol working fluid were oriented vertically with a vent valve on the upper flange and a drain valve on the lower. The upper diaphragm was subject to nitrogen pressure from the top of the accumulator. That nitrogen was wet, being in contact with the surface of the water. Condensation continually built up in the flange, causing indicated level to drift. With no drain valve, maintenance was required to break the flange to drain the condensation. That necessitated recalibration. To keep the water away from the diaphragm, the flanges were to be rotated so the process fluid line became self draining.

(2) Root valves between accumulator standpipe and flanges were not tight enough to prevent bleed back during calibration. These transmitters must provide a 14 inch water level range at a 600 PSI static load. For accuracy, they must be calibrated at atmospheric pressure. Leakage through the root valves caused difficulties during calibration. These valves were to be replaced with a more positive leak tight design.

(3) Transmitter location: Original design placed the transmitters between 5 and 10 feet above the standpipes to clear the containment flood level. A review of this location concluded that the elevation was excessively high to measure a 14 inch water range, and that there was no safety reason for that location.

The licensee performed the above changes on one accumulator and attempted a calibration unsuccessfully.

Conclusion:

The transmitter was found to have a non-linear static response which was responsible for the lack of accuracy at operating pressure. The Rosemount capillary type transmitter was experimental when it was originally ordered by the licensee. Replacement Barton instruments were ordered simultaneously and have been in storage. The licensee will replace the Rosemounts with the Barton units. The inspector will continue to follow up on these corrective actions as well as subsequent calibration. (IFI-85-62-01)

6. Rate Trip Bistable Calibrations

The inspector verified that the licensee's Instrumentation and Controls (I&C) group had received Westinghouse Technical Bulletin NSID-TB-85-13, "Flux Rate Trip Setpoint." The bulletin had been issued because some Westinghouse plants were using an incorrect value to align their Nuclear Instrument System Power Range Positive and Negative Rate Trip Bistables due to a misinterpretation of the Precaution, Limitations, and Setpoint (PLS) document. The licensee I&C procedure SP3441A01 complies with the flux rate trip instrumention calibration rule set forth by the Westinghouse Bulletin.

7. Test Witnessing

A. Steam Generator Code Safety Valve Testing

The inspector witnessed portions of steam generator safety valve setpoint testing performed under integrated test procedure 3-INT-3000, Appendix 3020 "Main Steam", section 7.5. The objective of this test was to demonstrate proper operation of the safety valves including setpoints, proper reseating and verification that leakage was within design limits. Acceptance criteria were valves opening at +/-1% of design set pressure and leakage within design limits at 94% of set pressure.

The test was performed in accordance with Surveillance Procedure SP3712G Rev 0, Change 1 "Main Steam Code Safety Valve Surveillance Testing". The test director had initiated the change to delete the Appendix 3020 steps and incorporate the surveillance procedure by reference. The inspector verified that this and other changes made to the procedure were approved and did not change the intent of the procedure.

Each of the five Dresser Industry Safety Valves per steam generator were simmer tested using a hydraulic piston to relieve valve spring compression above the valve discs. The piston, called a hydroset, is supplied by the valve vendor to provide a quantifiable vertical lift pressure above the valve spring which is added to system pressure acting below the valve disc. Hydraulic pressure was measured with a calibrated Heise gauge and the value was modified using a curve provided by the vendor for those "R" orificed valves. This modified value was added to system pressure, also measured with a calibrated Heise gauge, which was attached to a steam line test point under the safety valve connections. The sum of these two measurements was the lift pressure.

In many cases, either the valves did not lift at the design pressure or the lift points were not repeatable. In these cases, the valves were adjusted in accordance with SP3712G Rev. 0 and subsequently retested. The valves were required to lift 3 times within tolerance as a final acceptance test.

By direct observation and review of test data sheets, the inspector verified that the valves met the acceptance criteria of the procedure.

B. Containment Vacuum System Test (T3313FP)

The licensee is required to perform a preoperational test (Table 14.2.1, Test 16) to show that the air ejector and vacuum pumps will reach and maintain design containment vacuum conditions. Test procedure T3313FP addresses the various vacuum systems.

A review of licensee's Piping and Instrument Diagrams noted the following concerns:

(1) FSAR Figure 9.4.5 Sheet 1 of 1 depicts flow of check valve V988 in the wrong direction. Observation of the check valve showed the flow path is correct. Figure 9.4.5 Sheet 1 of 1 is being changed by the licensee (IFI 423/85-62-02).

(2) The above figure "note" states that a blank flange connection for the containment isolation valve leakage monitor has been provided. The operations procedure makes no note of removal of the flange in valve line-ups. Upon investigation by the licensee, it was found that flanges on the suction and discharge piping of mechanical vacuum pumps were also blanked. The licensee placed flange removal in the operations procedure checklist.

(3) FSAR 9.5.10.3 states that a "low pressure alarm will annunciate in the main control room." The licensee has chosen to place this low pressure alarm as a computer alarm point that will annunciate on the control board and will be responded to by the operator. This computer point was verified by inspector as to an input to computer readouts.

The inspector walked the system outside containment prior to the test. A personnel safety concern was resolved by roping off the area surrounding the steam air ejector. The test started at 0324 and was completed at 0715; the test criterion of reduction of containment pressure to 9.5 PSIA was met.

C. Boronometer Calibration Test Witnessing

The inspector witnessed the calibration of the boronometer performed under procedure SP3304AP003. Preparations for movement and placing of the 0.67 curie Americium 241 neutron source in the boronometer was controlled by Health Physics (HP) under a Radiation Work Permit (RWP). The inspector attended the HP RWP briefing for the I&C technicians performing the calibrations. Neutron dosimetry was issued. Neutron and beta gamma surveys performed after placing the source were adequate. The area surrounding the boronometer was roped off and posted.

After completion of the electronic calibrations and installation of the neutron source, the procedure called for recirculating different concentrations of boric acid solutions through the boronometer and plotting

the known values against boronometer readings. The inspector witnessed mixing of the test solutions and verifications of boron concentrations. The concentrations were determined by Sodium Hydroxide titration to a PH endpoint. A test change was written to incorporate values of boron concentrations as measured instead of as mixed, due to accuracy problems with original volumes of water. This was acceptable and did not change the intent of the procedure.

For each concentration, after taking a data point from the local boronometer output, another titration of the test solution was run.

Results: The calibration test failed. The measured values were outside the tolerance bands for each range. The licensee is calling in the equipment vendor to realign the instrument. The inspector understands that initial alignment problems with boronometers are not unusual and will continue to follow this evolution incident to routine inspection requirements (IFI 85-62-06).

D. Solid State Protection System (SSPS) Test Witnessing

The inspector witnessed portions of the SSPS monthly and refueling surveillances, SP 3446B11 Rev 0 and SP4 3446F31 Rev 0 respectively. The tests were performed in accordance with approved procedures. Two I&C technicians were assigned the work-one to read and perform and one to record data. The lead technician was able to adequately answer all questions posed by the inspector. Data was recorded accurately. Any variance from expected indication was resolved before continuing to the next step.

Neither test was completed while being observed by the inspector due to an A train (Orange Bus) outage-the missed steps will be completed later. The inspector had no questions with the portions of the tests which were observed. Test completion will be followed-up during routine inspection (IFI 85-62-07).

E. Voice Page/Evacuation Alarm Test

The inspector witnessed steps 7.2 and 7.3 of 3INT3031, Voice/Page Evacuation Alarm Test in containment. The test crew included 4 individuals: 3 test personnel and 1 QC inspector. The observations were made at various locations on all elevations of the containment. The test instrument (sound level meter) was not identified by procedure. There was no qualification sticker on the sound meter; however, the test supervisor stated that the meter was calibrated at the factory and was satisfactorily sensitivity checked prior to actual test use. The inspector verified that the sensitivity test was completed. During the test, the background noise level was extremely high. The lowest level existed by the Regenerative heat exchanger room (92dB). The highest level was near the

RCP motors (110dB). The test was conducted on all 6 levels of containment and was determined to be unsatisfactory for both voice and alarm at all locations.

The test results, and disposition of the unsats will be reviewed during a future routine inspection (IFI 85-62-08).

F. Control Room Pressurization Test

The licensee's procedure T3314FP Rev 0 addresses Control building Heating Ventilation and Air Conditioning (HVAC). One area of the procedure requires the demonstration of Control Room Isolation in response to a hazardous outside atmosphere.

A system of air storage bottles with the ability to maintain life support to control room personnel and maintain a positive pressure envelope to deter the entry of gases is in service. The inspector witnessed testing of one of two air bottle trains on October 27. This test was unsuccessful due to excessive leakage.

The licensee has made numerous surveys of penetrations and the control of openings and has completed fire stops where required. On November 18, the licensee performed a test on the A train (4 air bottles charged to 2200 psia) and successfully maintained for one hour an acceptable environment in the control room with a leakage rate of 209 cfm. Bottle pressure at the conclusion of the test was 200 psia. The licensee has also concluded the "B" train testing. A variance in maintained pressure will be addressed during review of the final test results. The inspector had no further questions on this testing at this time.

G. SP 85-3-19 HVAC Fire Damper Closure Testing

References:

1. Drawing 12179EM148B-3A
2. SP.05-3-19 Fire Damper Verification

The licensee has modified testing of fire dampers to ensure their positive closure. Previous testing indicated that, although the damper did close upon simulation of burnout of fusible links, the dampers did not totally restrict or retard flow due to the damper not seating properly, that is, not fully entering the closure channel. The licensee has renewed springs to create a greater closure force and provided additional damper guide channels to aid in seating the dampers.

The inspector witnessed the testing of damper DMPF No. 8, which would restrict flow to the charging cubicle if a fire occurred. The inspector examined the No. 8 damper as it was held open by a testable fusible link. Air flow was 4500 cfm. To measure damper closure, the licensee used a D.C. circuit with indicator lights to give positive observation capabili-

ties. The test device was actuated. Damper movement was heard. Positive closure indication was not demonstrated. (Indicator bulb "on," indicating circuit completion, was not observed.)

The air supply duct inspection plate was removed and observation noted that the damper had closed and would have restricted air/flame flow, although not fully seated (an additional 1/4" was necessary). The licensee acceptance criteria for full closure was not met and a stronger closure spring will be required. The NRC inspection program calls for a review of HVAC testing upon completion of all testing. The item will be reviewed during such inspection (URI 85-62-09).

8. Review of Workers Concerns.

A. Allegation RI-85-A-98

A concern was raised in the area of turbine and auxiliary building piping that was heated with preheated flame gas to allow movement to obtain alignments.

(1) The subject of piping flange to pump alignment has been previously addressed in the Construction Activities Team report 84-04. The licensee responded and did monitor pump alignments. This has been reviewed. In areas where unacceptable mating surfaces were recorded, piping has been either realigned, hangers have been changed, or physical cuts of pipe with rewelding of piping runs has been accomplished. This program has been in effect for approximately two years with only a few repairs necessary. This concern was identified prior to receipt of this allegation in 1985.

(2) The licensee's specification M968 for field fabrication and erection of power piping addresses ASME Code Class Plan 1, 2, and 3 and ANSIB31.1 Class 4 on line 17.15 of IB-22. Alignment of pipe allows ANSIB31.1 carbon steel, with the exception of turbine oil piping, to be aligned in the field using the following:

- Application of heat by using a Rosebud Torch with a reducing flame.

- Maximum temperature to be applied is 1200°F, checked by a Tempilstik. If this temperature is exceeded, an N&D shall be generated.

- Heating shall be performed without applied pressure from jacks, come-alongs, etc.

- Pipe must be aligned to required tolerances in the free state (no cold springing) prior to welding.

- For cases where satisfactory movement cannot be obtained using the above method, pressure may be applied from jacks, come-alongs, etc, providing the pipe is heated all around and the temperature limitation is adhered to.

The process of heating pipe was observed onceby the inspector. Also, a sampling of Nonconformance and Disposition Reports No. 7637 and 7332 indicated that the above attributes were performed. The issuance of the above N&D was to resolve the use of quench water as no provision for quenching of pipe was procedurally addressed. This concern was resolved by the licensee by permitting only class 4 piping to be cooled by quenching as long as a surface temperature of 1100° was not exceeded. No unacceptable conditions were found in the licensee's practices for aligning pipe.

B. Allegation RI-85-A-082

This item pertained to alleged insulation of pipe in containment without proper preparation (cleaning).

The licensee's response, dated 9/9/85, which addressed this method of ensuring the cleanliness of stainless steel pipe in containment prior to installing insulation, was reviewed. The response is in agreement with the inspection findings as previously documented (Report No. 50-423/85-35). There is no safety inadequacy involved in this matter. The licensee's method is acceptable and is being followed. The inspector had no further questions.

C. Allegation RI-85-A-50

This allegation pertains to a number of concerns related to the application of protective coatings in the containment structure.

The inspector reviewed the licensee's response, dated August 6, 1985, pertaining to alleged painting inadequacies at Millstone 3. Based on this response, applicable site procedures, QC inspection reports, and Nonconformance and Disposition reports were reviewed on a sampling basis pertaining to the application of protective coatings inside containment.

Findings:

Based on this review of the governing procedures, QC inspection reports and the disposition of selected Nonconformance and Disposition reports, it was determined that: painter qualifications were appropriately specified; QC inspections were conducted to assure that coatings were applied properly; nonconformances, such as holidays, surface defects, etc. were identified and properly dispositioned; and surface preparation for steel pipe, supports and concrete, etc. was a required attribute for QC inspection which, when found unsatisfactory resulted in an "Unsat" inspection report that was appropriately dispositioned. In addition,

during routine tours of the containment structure while coating application was in progress, the resident inspector observed a portion of these activities and found no unacceptable conditions. Although it was found that painter qualification testing was established by spray paint testing, as alleged, this was found to be in accordance with the approved procedures. The inspector identified no conditions that had not been previously identified by the licensee and acceptably dispositioned. One concern, pertaining to supervision inadequately responding to worker identified concerns, is discussed in the followup to allegation RI-85-A-055 (Subparagraph 8F of this report).

D. Allegation RI-85-A-054

This allegation pertains to the alteration of a painter qualification test plate. The inspector reviewed a sample of QC inspection reports to determine if the coatings were being properly applied.

Findings:

Typical attributes observed by the QC inspectors included: application procedures, coating work references, coating materials, shelf and pot life, coating equipment, ambient conditions, film thickness, surface preparation and cleaning, curing time, moisture, color and painter qualification. The application of the coatings was found to have been conducted properly and in accordance with procedures based on the review of the satisfactory QC Inspection Reports.

The inspector had no further questions on this item.

E. Allegation RI-85-A-040

This allegation expressed a concern that individuals who identify problems are reassigned to prevent their doing so. The term "bad-boy trailer" has been used in this regard. Region-based inspector follow-up, including discussions with onsite personnel, found no evidence of such reassignment or of a "bad-boy trailer." A case was identified where individuals who would otherwise have been laid-off due to a planned reduction-in-force were kept on for other work. This case was for review of Westinghouse documentation by Stone and Webster as directed by the licensee (S. Orefice letter NEC-10537 dated 12/11/84). That work was accomplished in a trailer dedicated to that purpose and did involve use of individuals whose qualifications exceeded those needed for the task. Further, 10 CFR 50.7 prohibits discrimination against employees. NRC inspectors look for violations of provisions of the Code of Federal Regulations incident to the specific inspection subjects they address. The resident inspectors and region-based inspectors have not identified any instances of suspect reassignment of workers incident to their inspections. No substantiation of worker reassignments to avoid problem identification has therefore been found. Also, workers who allege that they have been discriminated against are referred to the U.S. Department of Labor (DOL)

for personal redress. The inspector had no further questions on this item.

F. Allegation RI-85-A-055

This allegation pertains to Field Quality Control inspection of welds, primarily on cable tray supports Additional concerns were raised about inspector training, HVAC ducting, and that workers are prevented from discussing concerns with NRC personnel without management presence.

Findings:

NRC Region I asked the licensee to review these concerns and to re-evaluate their response to worker concerns. The utility then developed the formal worker safety concern review program described in Project Procedure MP3 6.12, Internal Investigation and Resolution of Worker Allegations. The program uses a contractor to provide an "independent" contact point (other than the worker's management) to receive worker concerns. The inspector reviewed the program and files maintained by the contractor and determined that the utility was following the formal allegation program. The inspector had no additional questions on the licensee's response to worker concerns.

Also, the licensee stated that there are no restrictions on personnel contacting the NRC. The resident inspectors regularly contact and are contacted by site personnel without supervisory presence. The inspector had no further questions on this aspect.

In a sampling review of the licensee's response to the other concerns the following was determined:

- The licensee considers the FQC inspector training program acceptable. FQC inspector qualifications have also been found acceptable during NRC inspections, including Inspection No. 50-423/85-13. The inspector had no further questions on this aspect.

- Review of cable tray supports with no significant outstanding concerns is noted in Construction Appraisal Team Inspection Report 50-423/85-04. That report also noted that licensee actions were in progress on identification of crumbling concrete under a conduit support. No safety problem was identified with the existing condition. To assure that this concern receives long-term coverage, licensee action to monitor the ongoing acceptability of concrete under supports is an item for follow-up by the first refueling outage (IFI 50-423/85-62-05).

- The ducting pop rivet problem had been previously identified in Inspection 50-423/84-03. The condition resulted in corrective actions to clarify the acceptance criteria for the HVAC duct. These actions were previously reviewed and found acceptable in NRC Report No. 50-423/85-23, Detail 1. The inspector had no further questions on this aspect.

9. Licensee Actions taken as a result of TMI Action Plan Requirements Specified in NUREG-0737

The staff has reviewed the licensee's submittals associated with these items and discussed the results of this review in the Safety Evaluation Reports (SER) related to the operation of Millstone Nuclear Power Station Unit 3. During this inspection, the licensee's actions as described in the SER were verified to have been taken.

A. I.A.1.2 (85-TM-02) Shift Supervisor Administrative Duties (Closed).

The objective of this item is to increase the shift supervisors attention to his command function by minimizing ancillary responsibilities. To achieve this goal, the Senior Vice President, Nuclear Engineering and Operations, committed to periodically issue a management directive that emphasizes the primary management responsibility of the shift supervisor. The inspector verified that a memo by the Senior Vice President, Nuclear Engineering and Operations to all shift supervisors and describing their management responsibilities was issued January 7, 1985. In addition, adequacy of licensed operator attention to licensed duties is routinely assessed by the resident inspectors.

This item is closed.

B. I.A.2.1 (85-TM-04) Immediate Upgrading of Operator and Senior Reactor Operator Training and Qualifications (Closed).

This item requires each applicant for a senior reactor operator license to have been a licensed operator for 1 year. The 1 year requirement is not applicable for cold license candidates. Instead, the licensee has established a program to ensure that all reactor operator and senior reactor operator license candidates have the prescribed experience, qualification and training. The inspector verified through a review of selected training records, course outlines, and discussions with training personnel that each licensed operator candidate was certified competent to take the NRC license examination by the Vice President, Nuclear Engineering and Operations as noted in the SER, and that the candidate training program included topics in heat transfer, fluid flow, thermodynamic and reactor plant transients. Also, each candidate attended simulator training as part of the initial training program. This meets the licensee's commitments.

This item is closed.

C. I.A.2.3 (85-TM-05) Administration of Training Programs (Closed).

This item requires that training staff instructors who teach systems, integrated responses, transients, and simulator courses be technically competent. The inspector verified through a review of records and discussions with the training supervisor that, of the 10 instructors who train facility personnel, all are NRC certified and 5 currently are SRO licensed. The intent is to eventually have all instructors SRO licensed. All licensed instructors are participating in the requalification program at the SRO level. Also, the Millstone 3 Hot Licensed Training Program, Section 6.4.1.3 specifies that "Guest" Lecturers may be used on a limited basis and shall be approved by the Unit 3 Training Supervisor. Training conducted by guest lecturers shall be monitored by a qualified instructor. These findings substantiate the SER statements relative to NUREG 0737, Item I.A.2. This item is closed.

D. I.B.1.2 (85-TM-06) Independent Safety Engineering Group (Closed).

This item required that each applicant for an operationg license establish an onsite Independent Safety Engineering Group (ISEG) to perform independent reviews of plant operations. Also, the Millstone 3 final draft Technical Specifications includes a requirement for an ISEG. At the time of this inspection, the ISEG consisted of 22 individuals. Eight of these were at the Millstone site. The inspector reviewed the following documentation associated with the ISEG:

1. Nuclear Engineering and Operations Procedure, NEO 2.19, Independent Safety Engineering Group Organization and Functions, dated May 29, 1985

2. Independent Safety Engineering Group Quarterly Report (9/85)

3. Fourth Quarter ISEG Assignments.

Results of this review shows that, as described in the SER, a functional ISEG is available as needed. This item is closed.

E. I.C.2 (85-TM-07) Shift Relief and Turnover Procedures (Closed)

This item requires licensees to prepare plant procedures for shift and relief turnover to ensure that each oncoming shift is made aware of critical plant status information and system availability. During this inspection, the following documentation relating to shift relief and turnover was reviewed:

1. Administrative Control Procedure ACP 6, Shift Relief Procedure, Rev 2, April 21, 1984

2. ACP 10.05, Log Book Requirements (Control Room), Rev. 2, November 9, 1982

3. Department Instruction 3-OPS-10.02, Shift Turnover Rev. 1, June 6, 1984

4. Draft Station Procedure SP 3670.1, Control Room Surveillances.

This review verified that procedures and checklists are available which will, as the SER describes, ensure:

1. The availability and correct alignment of essential systems.

2. That critical plant parameters are monitored and are within allowable limits.

3. Identify all systems or components that are in a degraded mode of operation.

4. Compare the length of time each system or component is in the degraded mode with Technical Specification Requirements.

In addition to checklists and logs, the operators have available to them, on the main control board, a train bypass annunciation and ESF Status Panel to alert them to off normal conditions. This TMI action item is closed because the licensee commitment is met.

There are procedure changes outstanding to ACP 6.12, Shift Relief Procedure, ACP 10.05, Log Book Requirements, and SP 3670.1, Control Room Surveillances is currently in draft form. The resolution to procedural problems is discussed at the end of this section.

F. I.C.3 (85-TM-08) Shift Supervisor Responsibilities (Closed).

This item requires licensees to prepare plant procedures and directives to assure that the duties, responsibilities, and authority are properly defined to establish a definite line of command and clear delineation of the command decision authority of the supervisor in the control room relative to other plant management personnel. The licensee has issued Administrative Control Procedure, ACP-QA-1.02 Organization and Responsibilities, Rev 16, April 17, 1985, which establishes the organization of the Millstone Station and delineates the responsibilities of management personnel including the Shift Supervisor. In addition, the Senior Vice President, Nuclear Engineering and Operations, has issued a memo that emphasizes the primary management responsibility of the Shift Supervisor for safe operation of the plant under all conditions on his shift and that clearly establishes his command duties. This meets the licensee's commitment.

This item is closed.

G. I.C.4 (85-TM-09) Control Room Access (Closed)

This item requires establishment of the authority and responsibilities of the person in charge of control room access and clear lines of authority and responsibilities in the control room in the event of an emergency. The licensee has issued Administrative Control Procedure ACP 6.01, Control Room Procedure, Rev 14, June 20,1985 which establishes the conduct of operation, including control room access, of the control rooms at Millstone Nuclear Power Station. This procedure is to be applied to Millstone 3. This item is closed, with the final implementation of acceptable procedures to Millstone 3 to be verified in accordance with the findings at the end of this section.

H. I.C.6 (85-TM-10) Verification of Correct Performance of Operating Activities (Closed)

This item requires that the licensee have an effective system of verifying the correct performance of operating activities. The licensee has issued two procedures which implement a system for the verification of operating activities important to safety. These procedures, Administrative Control Procedure ACP-QA-2.12, System Valve Alignment Control, Rev 7, August 27, 1985 and ACP-QA-2.02C, Work Orders, Rev 4, June 28, 1985 provide for the operations department to perform an independent position verification by qualified personnel, of repositioned valves, circuit breakers, and control switches of systems that are safety-related. Also, these procedures provide for independent position verification of all valves, circuit breakers, and control switches of systems that are important to safety following a cold shutdown outage as designated by the Operations Supervisor. This item is closed.

I. I.C.7 (85-TM-11) NSSS Vendor Review of Procedures (Closed)

This item required NSSS vendor review of low-power and power-ascension test and emergency procedures as a further verification of the adequacy of the procedures. The NRC staff has determined that, because the licensee has committed to implement procedures based on the NRC-approved Westinghouse ERGs, the staff does not consider an additional NSSS vendor review of the EOPs necessary. NRR Human Factors Division, during an on-site visit to review a steam generator tube rupture scenario, found that additional review is necessary. This licensee task is ongoing. In addition, because an NSSS vendor representative is a member of the Joint Test Group that reviews operating and testing procedures, the NRR staff does not consider an additional NSSS review of low-power and power ascension testing procedures necessary. As noted in the SER, TMI Item I.C.7 is therefore closed.

J. II.D.3 (85-TM-14) Direct Indication of Relief and Safety Valve Positions

This item requires that reactor coolant system relief and safety valves be provided with a positive indication in the control room derived from a reliable valve-position detection device or a reliable indication of

flow in the discharge pipe. Each of the two pressurizer power operated relief valves (PORVs) is provided with positive open/closed indication in the control room. The three pressurizer safety valves are also provided with positive open/closed indication. The temperature in each safety valve and PORV discharge line is indicated and alarmed in the control room as described in the SER. At the time of the inspection, the Control Room Alarm Book (CRAB) referenced an incorrect procedure for high temperature alarm response actions and, also, no flow alarm response procedure had been prepared.

The resolution of procedure and CRAB problems is discussed at the end of this section. However, this TMI item is closed based on the installation of acceptable indication of relief and safety valve positions.

K. II.E.1.2. (85-TM-15) Auxilliary Feedwater System Automatic Initiation and Flow Indication (Closed).

This item specifies various requirements with respect to the timely initiation cf the auxiliary feedwater system. The NRR staff has reviewed the Millstone Unit 3 design and was concluded that this design satisfies the requirements of NUREG 0737, Item II.E.1.2. During this inspection the inspector verified that the initiation signals and circuits are testable and that the test requirements are included in the final draft Technical Specifications. The surveillance test procedure which accomplishes this is SP 3622.5, Auxiliary Feedwater Pump Auto Start, which has not yet been approved. Also verified was the ability for manual initiation and control of the system from the control room. Station Procedure OP 3322, Rev. 0, Auxiliary Feedwater System, August 28, 1985, was written to accomplish this. This procedure has been PORC approved, however, certain setpoints remain to be inserted into the procedure. A note in this procedure requires that "If the auxiliary Feedwater Pumps have not been run for 30 days, the bearings should be relubricated prior to pump startup to prevent scoring the bearings." Since the surveillance interval for the pump is 31 days +/- 25%, this note would indicate the pump is inoperable or in need of relubrication after 30 days. The licensee stated he was aware of this problem and, to resolve the matter, the licensee contacted the pump manufacturer and verified that operating the pump each 30 days +/- 10 days was satisfactory to meet bearing prelubrication requirements. The procedure will be changed to reflect this new information. The resolution to procedural problems is discussed at the end of this Section. Also verified was the existence of redundant auxiliary feedwater flow instrument channels and the existence of auxiliary feedwater flow indication at both the main control board and at the auxiliary shutdown panel.

Overall system testing will be performed in accordance with test procedure 3-INT-3000, Appendix 3019, Auxiliary Feedwater. Test results are scheduled to be reviewed by the NRC when testing has been completed. Although some procedural aspects remain to be resolved, the inspector concluded that the auto-initiation and flow indication features of the AFW system satisfy this TMI action item.

L. <u>II.E.4.1 (85-TM-16) Dedicated Hydrogen Penetrations-Combustible Gas Control System (Closed).</u>

This item requires that the licensee provide post-accident combustible gas control of the containment atmosphere. This inspection verified that the licensee has provided a hydrogen recombiner system, a hydrogen monitoring system, and a post-LOCA purge system as described in the SER and FSAR. The hydrogen recombiner system consists of two redundant thermal-type hydrogen recombiners and associated control units located in the recombiner building. This system is manually started and operated from local control panels. A redundant containment hydrogen monitoring system has been installed. Each train of this system contains stand-alone analyzers and control cabinets and analyzes, monitors, alarms, and trends containment hydrogen concentration, with readout in the control room. Also, a backup containment purge system was verified to have been installed. It consists of two vacuum pumps, piping, valves, and instrumentation capable of purging containment as an aid to cleanup. The licensee has provided procedures to the NRR staff for actuating the recombiner system. The staff will review the adequacy of these procedures and supporting justification as a confirmatory item.

The following procedures associated with the combustible gas control system were reviewed for completeness and availability to the operators:

- Operating Procedure OP 3313A, Rev. 0, Hydrogen Recombiners, Hydrogen Monitors and Recombiner Building Ventilation, June 11, 1985. This procedure had been PORC approved, however, certain setpoints remain to be inserted into the procedure. Also, the CRAB was not complete for this system.

- Operating Procedure OP 3313E, Rev. 0, Containment Vacuum, July 6, 1984. This procedure had been PORC approved. However, certain specific values remain to be inserted.

- Emergency Operating Procedure EOP 35 E 1, Rev. 0, Loss of Reactor or Secondary Coolant, December 7, 1984. This procedure had been PORC approved, but still required a specific value be inserted.

- Surveillance Procedure SP 3613 A 1, Hydrogen Recombiner System Low Power Surveillance. This procedure was sent to the PORC for review on October 25, 1985.

As noted above, all procedures associated with the combustible gas control system which were reviewed were not entirely complete and ready for implementation. The resolution of procedural problems is discussed at the end of this Section. However, the combustible gas control system has been found to meet the TMI action item commitment in this case.

M. II.F.1 (85-TM-17) Accident Monitoring Instrumentation Attachments 4,5, and 6 (Closed)

Attachments 4, 5, and 6 of this TMI action plan item require installation of extended range containment pressure monitors, containment water level monitors, and containment hydrogen concentration monitors. The NRR staff has reviewed the information provided by the licensee and determined that these instruments will not cause ambiguous indication for the operator during the accident conditions.

During this inspection, the inspector verified the installation of the following instrumentation which is discussed in the SER:

- Containment Pressure (Extended Range), Two 0-200 PSIA Meters and one recorder (0-100%) have been installed on the main board in the control room.

- Containment Water Level (Wide Level), two meters and one recorderhave been installed on the main board in the control room. The FSAR describes these instruments as indicating 0-1,500,000 Gals. At present, the meters read 1-17 feet and the recorder reads 0-100%. A licensee representative stated scale changes are being considered for these instruments in order to assist the operator in obtaining correct quantities of water indicated. (The instrument extends two feet into the containment recirculation sump making the volume of water for each of the first two feet much smaller than the volume for each of the remaining 14 feet.) These instruments had been initially calibrated during the startup program. However, the instruments were recalibrated to support a test, and the surveillance procedure which will be used to recalibrate the instruments has not yet been approved. The resolution of such procedural problems is discussed at the end of this Section.

- Containment Hydrogen Monitor, two 0-10% meters and one recorder 0-100% have been installed on the main board in the control room.

This inspection verified that accident monitoring instrumentation discussed in the SER relative to NUREG 0737, Item II.F.1, attachments 4, 5, and 6 has been installed. This item is therefore closed.

N. II.K.2.17 (85-TM-20C) Potential for Voiding in the Reactor Coolant System During Transients (Closed).

Westinghouse has performed a study that addresses the potential for void formations in Westinghouse-designed nuclear steam supply systems during natural circulation cooldown/depressurization transients. This study has been submitted to the NRC by the Westinghouse Owners Group. The results of this study have been accepted by the staff. No further action relative to NUREG 0737 Item II.K.2.17 is therefore necessary.

O. <u>II.K.3.9 (85-TM 21A) Proportional Integral Derivative (PID) Controller (Closed)</u>

Westinghouse recommended that the derivative time constant in the pressurizer PORV PID controller be set to "off" to address this item. This action removes the derivative action from the controller so that the actuation signal to this valve is no longer sensitive to the rate of change of pressurizer pressure. The derivative time constant feature had never been a part of the Millstone 3 plant PID controller. No further action on this item is necessary.

P. <u>II.K.3.10 (85-TM-21B) Proposed Anticipatory Trip Modification (Closed)</u>

The licensee performed an analysis using conservative values for core physics parameters and a conservatively high initial power, average reactor temperature and pressurizer pressure. Results of the analysis indicate that the peak pressure reached in the pressurizer would be 2,302 PSIA. That would not cause the pressurizer PORVs to be challenged because the setpoint for these valves is 2,350 PSIA. During this inspection, the startup test calibration data was reviewed showed the PORVs have been set at 2,350 PSIA. Therefore, Millstone Unit 3 meets the requirements of this item.

Q. <u>II.K.3.12 (85-TM-21c) Confirm Existence of Anticipatory Reactor Trip upon Turbine Trip (Closed)</u>

The Millstone Unit 3 reactor protection system includes an anticipatory reactor trip on a turbine trip above 50% of rated thermal power. At the time of this inspection, the surveillance procedure for the trip set point calibration had not yet been approved. The resolution of procedural problems is discussed following this item. This inspector has found that the design is in compliance with TMI Action Plan guidelines in regard to anticipatory reactor trip upon turbine trip.

R. <u>Findings</u>

As a result of the above review of NUREG-0737 items, it was verified that the physical installation of the required systems and instrumentation for those items which were reviewed is acceptable. A problem, however, was noted with the procedures which are associated with the operation and surveillance of the items which were reviewed. For each instance in which the procedures associated with an item were evaluated, the procedure was either not yet PORC approved or was PORC approved and still had setpoints or other numerical criteria missing. The licensee is aware of a significant amount of work to be done in writing, verifying and adding setpoints to procedures. The licensee described a program which has been initiated in which each individual procedure is reviewed for insertion of missing setpoints or numerical data and also the verification of the accuracy of data already in the procedure. A major effort is also underway to complete the surveillance procedures which remain

to be written. This problem of missing surveillance procedures and of missing setpoints or other numerical criteria in SPs, OPs, AOPs, and EOPs had been previously identified and documented as open item 85-37-04 in IE Region I Inspection Reports 85-37 and 85-55. The resolution of that open item will also resolve the problems identified during this inspection.

Another item associated with the Control Room Alarm Book (CRAB) was the identification of certain errors in the existing book in use in the Control Room. These errors were discussed with the licensee. The licensee stated a major effort was underway to upgrade the CRAB and to verify its accuracy. A draft correct CRAB was provided to the inspector and the inspector verified that the deficiencies identified during the inspection had been noted and corrected in the draft CRAB. During a previous NRC Region I Inspection, 85-55, similar problems with the CRAB were identified as unresolved item 85-55-02. The resolution to this previous item will also resolve the issues identified during this inspection.

Additional Items for Start Up and Power Ascension

The following TMI issues fall within this parameter:

Outstanding Item	0737 Designation	Title
85-TM-29	I.C.1.3.b	Additional Review by licensee of accident procedures.
85-TM-30	I.C.8.	Pilot Monitoring of Emergency Procedures for NTOL Applicants Correction Prior Full Power.
85-TM-31	I.G.1.	Preoperational and Low Power Testing.
	I.G.1.1.	Training for each shift.
	I.G.1.2.	Review of Program vs. RG 1.68 and FSAR Chapter 14.
	I.G.1.3.	Define Training Program; conduct prior to full power.
85-TM-32	II.B.1.3.	Procedures for RC Vents
85-TM-33	II.B.2.1.	Radiation and Shielding Review
85-TM-34	II.B.3.3.	Procedures, Implementation
85-TM-35	II.E.3.1.	Emergency Power for Pressurizer Heaters.
85-TM-36	II.E.4.2. (Parts 1-7)	H_2 Control Procedure.

Outstanding Item	9737 Designation	Title
85-TM-37	II.K.3. (Parts 1,2,3,5a,7,17, and 30)	
		1. Auto PORV Isolation 2. Reporting of PORV Failure 3. Reporting of Solenoid and Relief Valve Failure 5a. Auto Trip of RCP-modify 7. Evaluation of PORV opening probability 17. ECCS Outage reports 30. SB LOCA method-analysis review

The above items will be reviewed during a subsequent inspection.

10. NRC Commissioner Visit to Site

On September 25, NRC Commissioner Lando Zech toured safety related areas on site, accompanied by the Unit 3 Superintendent and the NRC Senior Resident Inspector. During the tour, the Commissioner spoke to a number of operating and maintenance personnel in the control room, laboratories and shops. Unit 3 department heads were also given an opportunity to hold informal discussions with the Commissioner. Also, a visit to the licensee's simulator facility was included in the tour. A short discussion with NUSCO and NNECO management was held at the conclusion of the visit. The Commissioner stressed the need for an orderly and safe completion of the remaining construction items to preclude or limit anomalies during start up.

11. Hurricane Gloria

The inspector witnessed the licensee's site preparation to minimize the possible damage from Hurricane Gloria. Numerous areas were walked down to verify proper stowage of gas bottles, loose staging and other construction material. Cranes were laid down. All site auxiliary pumps (dewatering), gas and diesel powered, were tested and assembled in preparation for possible flooding. The two station diesels were available. Trailers were tied down by use of cables anchored by cement blocks. Emergency power for the security system was checked. Sufficient food and cots were made available. Communication systems were tested.

Unit 3 did not have a regulatory action statement in effect due to the unit's construction status. Emergency Plan Implementing Procedure (EPIP) Form 4701-3, "Unit 3 Emergency Action Levels," lists under the classification of natural phenomena any hurricane wind speed greater that 75 MPH, measured at the 142 foot elevation, as an Unusual Event.

The senior resident inspector was in the control room during the day on September 27 and witnessed a loss of off-site power due to shorting of insulators in the bus yard. Both diesels were on line prior to the loss. Voltage ranged

from 340 to 360 KV prior to loss of power. Salting of switchyard insulators and lines forced the utility to keep incoming lines isolated until winds diminished in force, permitting wash down of the salt spray from switchyard lines. The meteorological tower data was lost at approximately noon because of loss of power to the tower. The storm passed over the area and was essentially over by 1600 hours.

Findings:

No criteria exist in the Unit 3 technical specifications for hurricane warning plan implementation. (Unit 2 Technical Specification addresses action with wind direction, speed and barometer pressures listed as criteria for canning service water pumps.) The licensee should review the Technical Specifications for inclusion of shutdown criteria based on the loss of outside electrical lines due to adverse wind conditions similar to those that were associated with this hurricane (IFI 423/85-62-03). However, no unacceptable practices were identified in the actual response to this hurricane.

12. Carbon Dioxide Fire Suppression System

The inspector witnessed preparations for and testing of the carbon-dioxide system in the cable spreading area. Testing was performed in accordance with procedure T3341CP Carbon Dioxide Fire Protection System, Revision 0 through Change 5, Section 7.12. Test objectives were to assure that the fire protection system provides the designed concentrations and that those concentrations can be maintained for the time specified in the design. For the cable spreading room, the acceptance criteria was at least 50% concentration of carbon dioxide within 7 minutes at a rate not less that that required to develop a concentration of at least 30% in two minutes, and the ability to maintain 50% concentration for 20 minutes. In addition, all associated circuits, equipment and interlocks must function as designed.

Personal safety precautions were strictly adhered to; initial conditions were met prior to commencing the test. Calibration of the carbon dioxide concentration test instrumentation was required by the procedure and performed by the test technicians. However, the inspector was not satisfied that the calibration was consistent with the measuring requirements of the test. The licensee has been performing a span check as a calibration, sampling standard atmosphere to adjust the zero and then saturating the sample tubes with the discharge of a fire extinguisher into a closed container to set the 100% point. There were no linearity checks performed, nor was there calibration data on linearity provided with the instrument. The inspector therefore questioned the accuracy of the concentration measurements taken around the acceptance criteria of 50%.

The instrument in question is a Model CH3F recording gas analyzer, manufactured by the Tuure Instrument Co. of Roscoe, Illinois. It is essentially a 3 channel thermal conductivity bridge circuit which relies on carbon dioxide being less conductive than air, causing a bridge imbalance which reads out as movement of the trace on a strip chart. Effects of variations in humidity are cancelled by calibrating in a water saturated medium. This is conservative.

The instrument operating and calibration procedure is the manufacturer's technical manual, incorporated into special procedure SP 85-3-24, which was approved by PORC on 22 October 1985. In that procedure, the manufacturer allows a span check (as described above) to set the output range, but also requires an instrument calibration with a known concentration of the gas to be tested. The licensee has not performed this check with a known concentration of test gas because of the difficulty in mixing an accurate sample. The inspector is concerned that instrument linearity may not be sufficient for accurate measurement of concentrations at mid-scale as required by the test acceptance criteria. The span check is a 2 point calibration; at least 3 points are required to check linearity. The manufacturer has reportedly stated the instrument is linear, but no documentation to this effect has been identified. A second instrument manufactured by Peerless, also in use for this test, has the same basic design. Peerless also reportedly states their instrument is linear, but has no periodic calibration requirements to check it so. Until this adequacy of calibration concern is resolved, test results cannot be evaluated.

This remains open as Unresolved Item 85-62-04.

With the exception of the above calibration question, the results of the remainder of the cable spreading room test appeared to meet the acceptance criteria.

13. Safety Evaluation Report (SER) Items for Verification

The licensee has presented to the Office of Nuclear Reactor Regulation (NRR) a number of physical and procedural items that will resolve NRR concerns. This inspection verified the following items.

A. (Closed) SER Section 2.4.2.2-Installation of Watertight seal for Control Room Roof (85-SE-01)

The licensee has augmented roof hatch seals with additional caulking. No leaks were identified after a number of heavy rains.

This item is closed (85-SE-01).

B. (Closed) SER Section 4.2.4.2-Online Failed Fuel Rad Monitor. (85-SE-03)

The licensee stated in the SER that an online failed fuel radiation monitor would be installed in the letdown portion the of chemical and volume control system. Verification of installation of the monitor, designated CHS-RE69, was performed. The inspector reviewed procedure AOP 3533, High Reactor Coolant System Activity, which is a guideline for response to a Failed Fuel Monitor Alarm. The procedure requires sampling of the reactor coolant system following a technical specification action statement and filter and purification actions. The section of AOP 3573, "Radiation Monitor Alarm Response" covering annunciators CHS 69-1 and

69-1 brings the operator into Technical Specification Action statements. Table 2 on the Process Radiation Monitor refers the operator to procedure AOP 3553. Additional responses to the Monitor require that the operator address Emergency Plan Implementation Procedure EPIP 4701-3 "Emergency Action Levels"- Barrier Failure section. The licensee has therefore addressed SER statement 85-SE-03.

This item is closed.

C. (Closed) SER Section 6.1.2-Protective Coating Systems. (85-SE-04)

The inspector reviewed procedure C954, Application of Protective Coating Materials Within the Reactor Containment Structure and procedure FCP-363, Field Epoxy Painting of Reactor Containment Concrete Flatwork (Floors). Both procedures were properly approved and referenced applicable requirements for Quality Assurance. A sample of QC inspection reports were reviewed and it was determined that the materials, applicators, and applied film thicknesses were all in accordance with the approved procedures. Where noncomformances were identified, such as some painters failing a qualification test or damage to coatings as a result of the 1981 containment fire, the discrepant items were properly documented and dispositioned. In addition, appropriate testing had been conducted on February 1, 1985 at Oak Ridge National Laboratory in accordance with Stone and Webster procedure No. 2199.190-733, Test Program to Evaluate the Design Basis Accident Performance of Coatings for Carbon Steel Inside the Reactor Containment. The test report summary stated that all test samples passed the acceptance criteria. Two test plates had evidenced small blisters, however, these were within the acceptance criteria. The application of coatings to on-site test plates was witnessed by the inspector on two occasions. The wet thickness was satisfactory. The inspector had no further questions on this item.

D. (Closed) SER Section 9.5.4.1(2) Concrete Dust Control (85-SE-09)

NRR concerns on concrete dust caused by movement of equipment, personnel movement and additional conditions that would induce generation of dust was addressed to the licensee. The licensee had committed to minimize this generation of dust by treatment of Emergency Diesel Generator (EDG) enclosures with appropriate sealant or paint.

The applicant has applied one coat of dustproofing to the EDG floor slabs at the 24'6" level, the underside of the 51' level slab, walls and wall plugs and entrance labyrinth. A review of Engineering and Design Reports PS 0 7236 and 6852 confirmed completion of the above efforts. Inspector observations in EDG structures did not identify a dust problem.

This item is closed.

E. (Closed) SER Section 9.5.7 (85-SE-10)

The Safety Evaluation Report in Section 9.5.7 states that the licensee's action to preclude low lube oil temperatures in the Emergency Diesel Generator rocker arm lubrication system is satisfactory if required actions on low temperatures are included in the alarm response procedure.

The inspector verified that a diesel generator area temperature low alarm is installed on the main ventilation and air conditioning panel. OP3314H, "Emergency Generator Enclosure Ventilation System", Paragraph 8.1 contains actions required to correct a low temperature of 45°. One of the actions stated in the SER is taken (the use of portable heaters). Any one of the 3 items identified in the SER is a sufficient measure.

This item is closed based on the alarm and portable heater provisions meeting the licensee's commitment on this item.

14. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable or not. An unresolved item identified during this inspection is discussed in Detail 8.

15. Exit Meeting

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection. No proprietary information was identified as being in the inspection coverage. At no time during the inspection was written material provided to the licensee by the inspector.