U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-423/84-24

Docket No. 50-423

License No. CPPR-113 Priority -- 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: November 5-9, 1984

Inspectors: H. H. Nicholas 12/13/84
H. H. Nicholas, Lead Reactor Engineer date

L. S. Gesalta 12/12/84
L. S. Gesalta, IAEA, Observer date

Approved by: L. E. Briggs for 12/24/84
L. H. Bettenhausen, Chief date
Test Program Section

Inspection Summary:

Inspection on November 5-9, 1984 (Report No. 50-423/84-24)

Areas Inspected: Routine, unannounced inspection of the preoperational test program including requirements and implementation, test procedure reviews, test results evaluation, test witnessing, auxiliary boiler repair and testing, preparations for steam generator hydrostatic testing, quality assurance and quality control, and tours of the facility. The inspection involved 29 hours on-site by one NRC region-based inspector.

Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted

Northeast Nuclear Energy Company (NNECO)

A. Andreae, Surveillance Group Supervisor
R. Cikatz, QC Engineer
G. Glosins, QA/QC Supervisor
J. Crockett, Superintendent, Unit 3
*J. Harris, Startup Supervisor
M. Hess, Assistant Startup Supervisor
D. Miller, Jr., Manager, Startup Services
S. Sudigala, Assistant Startup Supervisor

Northeast Utilities Service Company (NUSCO)

*D. Blumenthol, QA Engineer
*K. Gray, Jr., Staff Assistant
*J. LaWare, Surveillance Group Leader
*J. Rhodes, Project Staff Engineer

Stone and Webster Engineering Corporation (SWEC)

L. Clifford, Startup Engineer
G. Marsh, Assistant Superintendent, QC

Babcock and Wilcox B&W

F. McGinley, Service Engineer

U.S. Nuclear Regulatory Commission (USNRC)

*T. Rebelowski, Senior Resident Inspector

*Denotes those present at exit interview.

2. Preoperational Test Program References

References for preoperational test program are documented in Inspection Report Number 423/84-17.

2.1 Test Program Requirements and Implementation

Scope

Test program requirements and their implementation were discussed with licensee representatives. The areas explored and discussed during this inspection included testing status; procedure status; preparations for auxiliary boiler repairs and testing; preparations for diesel generator testing; preparations for steam generator

hydrostatic testing; preparations for reactor pressure vessel hydrostatic testing; and, quality assurance and quality control (QA-QC) interfaces during the test program. Applicable documents were reviewed in meetings held with startup personnel, construction personnel, and QA-QC personnel.

Findings

Review of documents and discussions with licensee representatives revealed no discrepancies in the areas explored.

2.2 Test Procedure Reviews

Scope

The approved test procedures listed in Attachment A were reviewed for technical and administrative adequacy and for verification that adequate testing is planned to satisfy regulatory guidance and licensee commitments. The criteria used for review are listed in Inspection Report 423/84-17.

Findings

As a result of the review of the listed test procedures, the inspector ascertained that the procedures are consistent with the referenced regulatory requirements, guidance and licensee commitments. No discrepancies or unacceptable conditions were identified. The inspector had no further questions on these procedures.

2.2.1 Emergency Diesel Generators

The inspector received and reviewed draft copies of procedure T3346-AP001 Emergency Diesel Generator A-Mechanical, and T3346-AP002 Emergency Diesel Generator B-Mechanical, for verification, and administrative and technical adequacy. The inspectors comments and questions were discussed with and acknowledged by the cognizant startup engineer. The inspector will review the approved procedures on a subsequent inspection.

2.3 Test Results Evaluation

Scope

The completed test procedures listed in Attachment B were reviewed to verify that adequate testing was accomplished in order to satisfy regulatory guidance and licensee commitments and to ascertain whether uniform criteria were being applied for evaluating completed preoperational tests in order to assure their technical and administrative adequacy. The criteria used for review are listed in Inspection Report 423/84-17.

2.4 Test Witnessing

Scope

During the course of this inspection the inspector witnessed portions of emergency diesel generator cooling water system flushes, fuel oil system flushes, and the fuel oil transfer pit tank flushes including transfer of flushing oil from tank A to tank B as well as verifying ability to pump out bottom of fuel oil transfer pit tanks. The inspector also observed continued work on EDG1A and 1B for electrical checkout of generators, electrical checkout of controls, and checkout and calibration of instruments.

Findings

No discrepancies or unacceptable conditions were noted during witnessing of these events.

2.5 Auxiliary Boiler Repair and Testing

Scope

Preliminary auxiliary boiler testing has been an ongoing evolution under direction of the vendor field representative and the startup engineer for that system. Testing to date has included combustion setting, valve and damper setting, and setting and testing of safety valves. Proper operation of the auxiliary boiler is a prerequisite to many other tests.

Discussion

During the startup of auxiliary boiler B, a flame-out occurred due to the condensing effect of the unlagged section of piping in the steam atomizer supply line to the regulator. This extinguished the fire in the boilers and, due to the heat existing, ignited the fuel oil in the boiler which caused an explosion in the B boiler.

Damage to the boiler system consisted of bowed boiler side plates, bow of the exhaust ducting and outlet damper, damage of the soot blower movement, and slight tube wall deformation and refractory damage, as well as damage to the outlet expansion joint. Pressure from the B boiler explosion also damaged the outlet damper and flexible joint on the A boiler.

Findings

Repairs are underway to repair and replace damaged parts and to modify piping and ducting. The inspector will follow-up on all resolutions and subsequent testing on future inspections.

2.6 Steam Generator Hydrostatic Testing

Scope

The objective of the secondary system hydrostatic test is to verify the leak tight integrity of the steam generators and associated piping. The test includes the main steam piping to the main steam isolation valves and portions of the main steam, steam generator blowdown, feedwater and recirculation, auxiliary feedwater and chemical feed to steam generator systems.

Discussions

The inspector received and reviewed a draft copy of procedure T3316-AP002 Main Steam Generator Secondary Side Hydrostatic Test - SG-3RCS-SG1A, SG1B, SGIC and SGID.

The inspector met with licensee representatives responsible for the steam generator hydrostatic tests. The discussions included the inspectors questions and comments on the procedure, notification of test date, conduct of testing, and interface between construction and startup.

The inspector's questions were answered adequately and comments were addressed and incorporated for review and insertion into the approved procedure. The inspector will follow up on this test in subsequent inspections.

3. Quality Assurance and Quality Control

References

-- NNECO Administrative Control Manual
-- NNECO Unit 3 Startup Manual
-- NUSCO Quality Assurance Manual
-- NUSCO Quality Assurance Branch Procedures
-- NUSCO Quality Assurance Program Topical Report

Scope

The inspector met with quality assurance and quality control personnel of Northeast Nuclear Energy Company (NNECO) and Northeast Utilities Service Company (NUSCO) representatives for purposes of discussions on QA-QC interface throughout the startup test program. Discussions included the roles of QA and QC regarding test procedures, audits, in process verifications, surveillances, maintenance and monitors.

Findings

This was the first formal QA-QC meeting with licensee representatives to discuss the areas of quality assurance and quality control during the startup test program. The inspectors questions and comments were adequately addressed during this meeting. Implementation of QA-QC activities and interface will be verified on subsequent inspections during the startup test program.

4. Plant Tours

The inspector made several tours of the facility including the containment structure, turbine building, auxiliary building, service building, control building, engineered safety features building, emergency diesel generator building, battery rooms, control rooms, fuel oil transfer tank pits, auxiliary boiler area, circulating and service water pump house and hydrogen recombiner building.

Particular attention in observation was given to auxiliary boiler repair and testing, emergency diesel generator flushes, fuel oil transfer tank flushes transfers and pump out, and work in progress. This included housekeeping, cleanliness controls and storage and protection of components, piping and systems.

No items of noncompliance were identified. No unacceptable conditions were noted.

5. Exit Interview

At the conclusion of the site inspection on November 9, 1984, an exit meeting was conducted with the licensee's senior site representatives (denoted in paragraph 1). The findings were identified and previous inspection items were discussed. At no time during this inspection was written material provided to the licensee by the inspector.

ATTACHMENT A

TEST PROCEDURE REVIEW

(1) 3-INT-2001 Revision 0, Approved October 19, 1984
Computer Programs Test
Appendix 353 Revision 0
Curve Fit Program

(2) 3-INT-2001 Revision 0, Approved October 5, 1984
Computer Programs Test
Appendix 3A7, Revision 0
Enviornmental Technical Specification Alarms

(3) 3-INT-2001 Revision 0, Approved October 26, 1984
Computer Programs Test
Appendix 3T5 Revision 0
Battery/Battery Charger Testing

(4) 3-INT-2001 Revision 0, Approved October 19, 1984
Computer Programs Test
Appendix 3J13 Revision 0
Pressurizer Heatup/Cooldown Rate

(5) 3-INT-2001 Revision 0, Approved September 27, 1984
Computer Programs Test
Appendix 3R1 Revision 0
Rod Supervision Test Case

(6) 3-INT-2001 Revision 0, Approved October 26, 1984
Computer Programs Test
Appendix 3S1 Revision 0
Specific Properties of Water

ATTACHMENT B

Test Results Evaluation

(1) T3315-EA Revision 0, Approved March 5, 1984
Auxiliary Boiler Room Ventilation
Test Results Approved October 25, 1984

(2) T3332-AP001 Revision 0, Approved February 24, 1984
Instrument Air - Turbine Building
Test Results Approved October 5, 1984

(3) T3344-AA002 Revision 0, Approved August 9, 1983
480V Load Center 32B
Test Results Approved October 25, 1984

(4) T3344-AA013 Revision 0, Approved August 9, 1983
480V Load Center 32N
Test Results Approved October 25, 1984

(5) T3344-AP017 Revision 0, Approved August 9, 1983
480V Load Center 32S
Test Results Approved October 24, 1984

(6) T3344-AP020 Revision 0, Approved August 9, 1983
480V Load Center 32V
Test Results Approved October 24, 1984