U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-423/85-18

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: May 6-10, 1985

Inspectors: H. H. Nicholas
H. H. Nicholas Lead Reactor Engineer — 5/31/85 date

H. H. Nicholas for
U. Cheh, Reactor Engineer — 5/31/85 date

Approved by: P. K. Eapen
for L. H. Bettenhausen, Chief
Operations Branch, DRS — 5/31/85 date

Inspection Summary: Inspection on May 6-10, 1985 (Inspection No. 50-423/85-18).

Areas Inspected: Routine unannounced inspection of the preoperational test program including test program implementation, engineered safety test status, emergency diesel generator status, pre-core integrated hot functional test status, and test procedure review and verfication; witnessing of new fuel receipt, inspection and storage; turbine building hot functional test status; quality assurance and quality control interface; and tours of the facility. The inspection involved 80 hours on site by two NRC region-based inspectors.

Results: No items of noncompliance were identified.

DETAILS

1.0 Persons Contacted

Northeast Nuclear Energy Company (NNECO)

J. Crockett, Superintendent Unit 3
G. Bohn, Startup Engineer
A. Elms, Startup Engineer Reactor Engineer
*R. Enoch, I&C
E. Frieze, Startup Engineer
M. Gentry, Assistant Startup Supervisor
*B. Granados, HP Supervisor
*R. Herbert, Station Services Superintendent
N. Hulme, Startup Engineer
K. Jensen, Reactor Engineer
*R. Lager, H. P. Chemistry
J. McConnell, Reactor Engineer
D. McDaniel, Reactor Engineer
F. Meehon, Startup Engineer
*D. Miller, Jr., Startup Manager
M. Potkin, Starup Engineer
*F. Perry, ARPS
*W. Richter, Startup Coordinator BOP
*R. Sochatello, HP Supervisor

Northeast Utilities Service Company (NUSCO)

D. Blumenthol, QA Engineer
*J. LaWare, Engineering Technologist
*L. Nadeau, AP Engineer

U.S. Nuclear Regulatory Commission

W. Baunach, Project Engineer
*J. Cioffi, Radiation Specialist
*T. Rebelowski, Senior Resident Inspector
*J. White, Senior Radiation Specialist

*Denotes those present at exit interview on May 10, 1985.

2.0 Preoperational Test Program

References

References for the preoperational test program are documented in Inspection Report No. 50-423/85-03.

2.1 Test Program Implementation

Scope

In the area of test program implementation, the inspector concentrated efforts on the preparations being made for the Engineered Safety Features (ESF) Integrated Test, the Hot Functional (HFT) Integrated Test, the Turbine Building Hot Funtional Test (TB HFT)(see Section 4.0), and the Emergency Diesel Generator (EDG) problems.

2.2 Engineered Safety Features (ESF) Integrated Test

The inspector held discussions with licensee representatives as to the status of the preparations being made for the ESF Integrated Test including procedures and prerequisites required to be completed in order to accomplish the test. The ESF test without loss of normal power will verify that engineered safeguard signals cause the appropriate safeguards components to actuate as well as overlap and operation of reset and override functions. The ESF test with loss of normal power will demonstrate proper sequencing and operation of equipment under loss of normal power conditions, with and without safeguards actuation signals as well as verifying that separation exists between emergency buses.

The inspector received draft copies of the ESF Integrated Test, for review and comment. They are 3-INT-2003, "ESF Without Loss of Normal Power, and 3-INT-2004, ESF With Loss of Normal Power." Many of the prerequisites are not as yet completed to support the scheduled for ESF testing. The possible critical item is the Emergency Diesel Generator (EDG) Sets. The inspector expressed his concern for the resolution to the EDG problems and subsequent test of the EDG sets to support ESF testing. The inspector will follow this item closely.

2.3 Emergency Diesel Generator Status

The emergency diesel generator sets to date, are still in the testing stage of the preoperational test program with the EDG "A" set mechanical and electrical load testing complete, and with the EDG "B" set with only mechanical testing complete. As documented in Inspection Reports 50-423/85-10 and 50-423/85-14, the inspector pointed out the concern for the recurring problem of EDG fuel injection pumps seizing on both engines.

After the fuel injection pump problem is resolved on both engines, the electrical tests have to be completed for the "EDG" "B" set, and then both EDG sets have to successfully complete the 35 consecutive starts on each EDG set in order to be qualified for use in the ESF Integrated Test. The inspector will follow this item closely.

2.4 Integrated Pre-Core Hot Functional Test (HFT)

The inspector held discussions with licensee representatives as to the status of preparations being made for the Pre-Core Integrated Hot Functional Test. The inspector received a draft copy of the Integrated Hot Functional Test for review and comment, 3-INT-3000 Pre-Core Hot Functional Test, which is the controlling procedure for the entire integrated test.

The integrated test performs the following objectives:

(1) To take the plant from a cold condition, through heatup, testing at 557°F, and then back to a cold condition.

(2) To verify freedom of movement during thermal expansion for major RCS components.

(3) To verify the capacity of the Chemical and Volume Control System (CVCS) to maintain RCS pressure during solid plant operations.

(4) To verify operation of the atmosphere steam dump valves and the steam dump/bypass valves during heatup and at normal temperature and pressure.

(5) To determine RCS heatup/cooldown rates for various plant conditions.

(6) To determine RCS heat loss at 557°F.

(7) To verify operability of the Plant Sampling Systems.

(8) To perform initial heatup of the secondary system and startup of the main feedwater pump turbine, the main generator and auxiliary feed water turbine.

(9) To determine RCS leakage rate.

(10) To perform initial boron and dilution of the RCS and the CVCS response to those tests.

(11) To perform initial vibration testing/monitoring on RCS Components.

(12) To functionally check the ability of the plant to be cooled down remotely.

(13) To provide a basic guideline for the sequence of performing various startup tests.

Along with meeting the above objectives, many other items are proven

and tested in the Integrated HFT. Supplementing the controlling procedure for the HFT are 33 appendices which range from individual tests to data gathering.

The inspector expressed concern that the 33 appendices are not available as yet for review. The licensee stated that these procedures have been given priority and will be available for the NRC inspector to adequately review in a timely manner.

2.5 Test Procedure Review and Verification

Scope

The test procedures listed in ATTACHMENT A were reviewed for technical and administrative adequacy and to verify that test planning satisfies regulatory guidance and licensee commitments.

Discussion

The procedures were examined for management review and approval, procedure format; clarity of stated test objectives; prerequisites; environmental conditions; acceptance criteria; source of acceptance criteria; references; initial conditions; attainment of test objectives; test performance documentation and verification; degree of detail for test instructions; restoration of system to normal after testing; identification of test personnel; evaluation of test data; independent verification of critical steps or parameters; and quality control and quality assurance involvement.

Findings

The review indicated that the procedures are consistent with regulatory requirements, guidance, and with the licensee's commitments. No discrepancies or unacceptable conditions were identified. The inspector had no further questions on these procedures.

3.0 New Fuel Receipt, Inspection and Storage

References

References for the receipt of new fuel, its inspection and storage, are documented in Inspection Report 50-423/85-14.

Scope

The object of this inspection is to ascertain whether nuclear fuel received at the construction site is properly accepted, safeguarded, inspected and stored in accordance with the NRC license requirements.

Discussion

The witnessing of fuel receipt storage and inspection, was accomplished by the inspector during a three day period which included the arrival of the transportation truck, and unloading of the seven new fuel casks in the fuel building. Documentation reviewed during this inspection included material transfer log; material accountability log; fuel receipt and inspection form; rod control cluster assembly receipt and inspection form; thimble plug receipt and inspection form; spent fuel pool map for fuel assembly location; visitor control access list area authorization; daily log of access and exposure control; radiation survey sheets; radiation permit; shipping container receipt and inspection sheet; transportation truck bill of lading; and consignment of fuel from Westinghouse Electric Company to Northeast Utilities.

The inspector witnessed receipt, preparation, cleaning, inspection, and storage of six of fourteen fuel assemblies from arrival at the fuel building truck bay to storage in the spent fuel pool. The activities included radiation surveys of the truck; outer metal casks; opening of the casks; the initial survey of the two fuel assemblies in each cask; the removal, cleaning and inspection of each fuel assembly one at a time; the final inspection and measurements at the new fuel inspection station; and the final storage of each fuel assembly in the spent fuel pool. Fuel assemblies with rod control cluster assemblies were included in this shipment. The inspector also reviewed documentation and made observations, on a sampling basis, during this period, in the areas of administration, physical security, health physics and radiation control, reactor engineering, quality assurance and quality control, and housekeeping and cleanliness. QA and QC provided coverage for the entire fuel receipt evolution.

Findings

The inspector verified by review of documentation, discussions with licensee's representatives and by observations and witnessing, that receipt, inspection, cleanliness, assembly and storage of new fuel assemblies, was accomplished in accordance with NRC license requirements and licensee's approved procedures.

No items of noncompliance were identified and no discrepancies were noted during these inspections. The inspector will continue to observe and inspect this evolution of new fuel receipt, inspection and storage in subsequent inspections until all fuel is on site. The inspector had no further questions at this time.

4.0 Turbine Building Hot Functional Test

The inspector interviewed the cognizant licensee technical staff and reviewed the draft of Millstone Unit 3 Phase II Test Procedure No. 3-INT-2006 for the Turbine Building Hot Functional Test.

Scope

The test objective is to provide an integrated operation of the major portions of the turbine-gland seal steam, condenser air removal, condensate, condensate polishing, circulating water, feedwater and auxiliary steam and support from the other major secondary systems required for bringing steam into the Turbine Building. The procedure will integrate and sequence all the testing associated with the Turbine Building Hot Functional Test for the test method, test boundaries, acceptance criteria, prerequisites, initial conditions, special precautions, stepwise procedures and restoration of system to normal after test, documentation of personnel conducting test and evaluating test data and independent verification of critical steps or parameters.

Findings

The inspector determined that the test procedure was adequate for the Turbine Building Hot Functional Test, pending approval, and had no further questions.

4.1 Condensate/Feedwater Integrated Flushing Test

Scope

The inspector interviewed the cognizant licensee technical staff, reviewed and verified that the Procedure T3319A1F01, "Condensate/ Feedwater Integrated Flush," Revision 0 was prepared, reviewed and approved August 23, 1984 by the NNECO management and the Condensate/ Feedwater Integrated Flushing Test was conducted accordingly. Supporting S & W drawings were also reviewed.

Findings

The inspector determined that the test procedure was adequate for the Condensate/Feedwater Integrated Flushing Test and the test was conducted accordingly. No discrepancies were noted during this review. The inspector had no further questions.

4.2 Condensate Demineralizer System Flushing Test

Scope

The inspector interviewed the cognizant licensee technical staff, reviewed the Procedure No. T3319CIF01 "Condensate Demineralizer Mixed-Bed Flushing," Rev. 0 approved April 2, 1985, and witnessed part of the Flushing Test. The equipment (acid tank, caustic tank) caustic heater, time tank, cation tank, anion tank, mixed bed tank, recovered water and recovered caustic tank, was contained in skids.

Supporting S & W drawings were also reviewed.

Findings

The inspector noted that the licensee identified that an INFILCO DEGREMONT, INC "TYPE F" Air operated valve was not operating properly. E&DCR (Engineering & Design Coordination Report No. T-W-00022 identified problems with this type of valve in June 1, 1983. Presently, the licensee is collecting a list of the affected valves. The number of the affected valves to date is 28. The licensee stated that a Testing UNSAT list will be prepared for those affected valves to replace the rusty carbon steel guidepins with stainless steel guidepins. The INFILCO Air operated valve malfunction didn't affect the Demineralizer System Flushing, but it would affect the Phase II Test for the system.

The inspector had no further questions.

5.0 QA and QC Interface

The inspector interviewed the cognizant licensee QA staff. QA has an independent audit program which includes test witness and test verification for Turbine Building Hot Functional Test Program. The inspector observed QA/QC inspectors' work in progress during several tours of the Turbine Building and reviewed the following QA documents:

1. PT-03-85-4-12 on Pressure Testing for Test Gauges, Test Relief Valves, Test Boundary Identification, Temporary Modifications, Temperature Readings, Hydrostatic Component Test, Documentation, Fire Protection and Personnel Qualification.

2. QA Surveillance Report, G-C-3428 dated March 8, 1985 on mechanical/hydro LWS-33358-2

3. QA Surveillance Report, C-3137 dated December 1, 1984 on mechanical/hydro MSS 3316A

4. QA Surveillance Report, GC-2885 dated September 11, 1984 on mechanical/hydro QSS3309

5. QA Surveillance Report, TC3272A dated January 15-17, 1985 on Flushing T33087B1F01

6. QA Surveillance Report TC-3272A dated February 22, 1985 on Containment-Loops Flushing A, B, C and D

7. QA Surveillance Report, TC3509 dated April 17, 1985 on RCS Flushing Reports

8. QA Surveillance Report, TC3304 dated January 24, 1985 on SIH Piping Flush

The inspector noted that QA/QC and NNECO management were actively involved in the test program.

No unacceptable conditions were identified.

6.0 Plant Tours

The inspector made several tours of the facility including the containment structure, auxiliary building, turbine building, service building, control building, emergency safety features building, emergency diesel generator rooms, control room, fuel building, and circulating and service water pump house.

Particular attention was given to the emergency diesel generator set problems and repair work in progress; receipt, inspection and storage of new nuclear fuel; preparations being made for turbine building hot functional test, pre-core hot function test and ESF integrated test; and inspection and observations for housekeeping and housecleanliness and protection of components, piping and systems. No items of noncompliance were observed during these tours.

7.0 Exit Interview

At the conclusion of the site inspection on May 10, 1985, an exit meeting, was conducted with the licensee's senior site representatives (denoted in Paragrah 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 Computer Programs Test Appendix 3A1, Revision 0, Approved May 6, 1985, "Deviation In Redundant Measurements".

(2) 3-INT-2001 Computer Programs Test Appendix 3P4, Revision 0, Approved May 6, 1985, "Moisture Separator/Reheater Performance".

(3) 3-INT-2001 Computer Programs Test Appendix 3P1, Revision 0, Approved April 22, 1985, "Condenser Performance".

(4) 3-INT-2001 Computer Programs Test Appendix 3P2, Revision 0, Approved April 22, 1985, "Feedwater Heater Performance".

(5) T 3344-BA 050 Revision 0, Approved January 31, 1985", "480 Volt MCC Bus 32-1K".

(6) T 3326-P, Revision 0, Approved May 6, 1985, "Service Water".

(7) Millstone Unit 3 Integrated Testing Requirements, Dated March 19, 1985.

(8) 3-INT-3000, Revision 0, Draft Copy, "Pre-Core Hot Functional Test".

(9) 3-INT-2003, Revision 0, Draft Copy, "Engineered Safety Features (ESF) Without Loss of Normal Power".

(10) 3-INT-2004 Revision 0, Draft Copy, "Engineered Safety Features (ESF) With Loss of Normal Power"