DCS 50-213-821015

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-213/82-21

Docket No. 50-213

License No. DPR-61 Priority -- Category C

Licensee: Connecticut Yankee Atomic Power Company

P.O. Box 270

Hartford, Connecticut 06101

Facility Name: Haddam Neck Plant

Inspection at: Haddam, Connecticut

Inspection conducted: November 8 - December 5, 1982

Inspectors: Theodore A. Rebelowski 12/13/82
T. Rebelowski, Senior Resident Inspector date signed

_____ _____
date signed

_____ _____
date signed

Approved by: T. C. Elsasser 12/13/82
T. C. Elsasser, Chief, Reactor Projects date signed
Section 1B, Division of Project and
Resident Programs

Inspection Summary:

Inspection on November 8 - December 5, 1982 (Report No. 50-213/82-21).

Areas Inspected: Routine inspection by the senior resident inspector of plant operations; licensee action on previous inspection findings; review of periodic and special reports; shift logs and operating records; surveillance activities; storage of new fuel; containment isolation lineups; chemistry sampling review; licensee event report followup; operability of engineered safety features; plant maintenance activities; plant trips/ safety system challenges; and radwaste activities. The inspection involved 74 hours by the resident inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

The below listed technical and supervisory personnel were among those contacted:

G.H. Bouchard, Maintenance Supervisor
M.F. Bray, Shift Supervisor
N.A. Burnett, Operations Assistant
J.L. DeLawrence, Senior Engineer
R.L. Eppinger, Senior Reactor Engineer
J.H. Ferguson, Unit Supervisor
E.J. Fetterman, Shift Supervisor
R.L. Gracie, Operations Assistant
* R.H. Graves, Station Superintendent
G.R. Hallberg, Security Supervisor
T.G. Murray, Engineer
W.F. Nevelos, Radiation Protection Supervisor
D.J. Ray, Engineering Supervisor
* R.Z. Test, Station Services Superintendent

* Present during exit interview

Other licensee staff and operating personnel were also contacted during the course of the inspection.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (213/78-12-01):

Review of plant chemistry following Charging Pump decontamination. The inspector reviewed licensee's response to review plant chemistry based on final water flush of component and normal chemical and radiochemical surveillance program for reactor coolant system; no special program was initiated. Licensee's review of results of surveillance indicated no introduction of impurities into system.

(Closed) Unresolved Item (213/78-05-01):

Procedure SUR 5.3-19 Boration Requirements for Hot and Cold Shutdown, Rev. 3, did not include an updated shutdown margin curve. Procedure was revised to include this curve on 4-15-78. The inspector verified that the present procedure contained an updated shutdown margin curve for present fuel cycle XI.

(Closed) Follow-Up Item (213/80-BU-10):

Licensee to review non-liquid systems for potential unmonitored or uncontrolled releases of contamination through nonradioactive systems. The licensee has completed and documented its results in CYAPC EN 82-803, dated November 29, 1982. The licensee concluded that there was a very low probability that contaminated releases could occur through the systems evaluated (e.g., nitrogen, hydrogen, control and service air).

(Closed) Deficiency (213/78-19-01):

The licensee failed to have updated information of employees' status on form NRC-5. Forms NRC-5 were updated prior to completion of inspection. A sampling review of documents during inspection period of this report found no discrepancies.

(Closed) Unresolved Item (213-77-20-01):

Area radiation monitors to be recalibrated. Radiation surveillances were performed for those monitors indicated in report SUR 5.6.2, 6.3, and 6.5. Discrepancies between local, portable meter readings and area monitor remote readouts were noted at the low end of the remote meter scale. These variations resulted from greater portable instrument accuracy at low radiation levels (less than 10 mrem/hr). No further licensee action is required.

3. Review of Plant Operations - Plant Inspections

a. During the course of the inspection, the inspector conducted multiple tours of the following plant areas:

- -- Control Room.
- -- Spend Fuel Pool Building.
- -- Primary Auxiliary Building.
- -- Vital Switchgear Room.
- -- Diesel Generator Rooms.
- -- Turbine Building.
- -- Intake Building.
- -- Control Point.
- -- Security Building.
- -- Fence Line (Protected Area).
- -- Yard Areas.

b. The following observations/determinations were made:

- -- Radiation protection controls. The inspector reviewed or observed the following: Radiation Work Permits (RWP) in use, personnel compliance with RWP's, routine radiation area surveys, posting of radiation and high radiation areas and use of protective clothing and personal monitoring devices.

-- Monitoring instrumentation. Control room instruments were observed for proper operation, correlation between channels and that the displayed parameters were within technical specifications limits. No unsatisfactory conditions were identified.

-- Equipment lineups. The inspector verified that selected valves and breakers were in a position or condition required by the Technical Specifications.

-- Control room annunciators. Lighted annunciators were discussed with control room operators to verify that the reasons for them were understood and corrective action, if required, was being taken.

-- Plant housekeeping controls. Plant housekeeping controls were observed including control and storage of flammable material, control of potential safety hazards, and licensee action to control the spread of surface and airborne contamination.

-- Fluid leaks, piping vibrations. All areas toured were examined for evidence of fluid leaks and piping vibrations. None were found.

-- Fire protection/prevention. The inspector examined the condition of selected pieces of fire fighting equipment. No unsatisfactory conditions were identified. Combustible materials were being controlled and were not found near vital areas. Selected cable penetrations were examined and fire barriers were found intact. Cable trays were clear of debris.

-- Control room manning. The inspector verified that control room manning requirements of the technical specifications were being met.

-- Security. During the inspection, observations were made of plant security including adequacy of physical barriers, access control, vehicle control, and searches.

c. Findings:

During the report period, the unit was off line for repairs to the main steam stop valve (See maintenance paragraph 12); three additional shutdowns occurred due to manual and inadvertent reactor trips. The trips are reviewed and discussed under safety system challenges (paragraph 13).

4. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee pursuant to Technical Specification 6.9.1 were reviewed by the inspector. This review included the following considerations: the report includes the information required to be reported by NRC requirements; planned corrective action is adequate for resolution of identified problems; determination whether any information in the report should be classified as an abnormal occurrence; and the validity of reported information. Within the scope of the above, the following periodic report was reviewed by the inspector:

-- Monthly Operating Report 82-10 for the month of October 1982.

No concerns were identified.

5. Shift Logs and Operating Records

a. The inspector reviewed selected operating logs and records against the requirements of the following procedures:

-- ADM 1.1-5, Control Room Operating Log;

-- QA 1.2-14.1, Bypass and Jumper Control;

-- NOP 2.2-2, Steady State Operation and Surveillance;

-- ADM 1.1-44, Shift Relief and Turnover;

-- QA 1.2-2.4, Housekeeping Requirements;

-- QA 1.2-16.1, Plant Information Reports; and

-- QA 1.2-14.2, Equipment Control.

b. Shift logs and operating records were reviewed to verify that:

-- Control Room log sheet entries are filled out and initialed;

-- Auxiliary log sheets are filled out and initialed;

-- Control Room log entries involving abnormal conditions provide sufficient detail to communicate equipment status, lockout status correction and restoration;

-- Operating Orders do not conflict with Technical Specifications;

-- Plant Information Reports confirm there are no violations of Technical Specification requirements; and

-- Logs and records are maintained in accordance with Technical Specifications and the procedures noted above.

c. The following operating logs and records were reviewed:

-- NOP 2.2-2, Log sheets which consist of Control Room, Part 1 and 2, Primary Side Surveillance Form, Secondary Side Surveillance Form, and Radiation Monitoring System Daily Log;

-- Shift Turnover Sheets;

-- Jumper Log; All active entries were reviewed.

-- Tag Log; All active entries were reviewed.

-- Control Room Operating Log.

d. No unacceptable conditions were identified.

6. Surveillance Observations

a. The licensee's surveillance program provides assurance that required pumps, fans, valves, and other instrumentation will perform their required functions.

The inspector's verification of the licensee's surveillance program includes:

-- Review of surveillance procedure for conformance to technical specification requirements, and verify proper licensee review/approval;

-- Verification of test instrumentation calibration;

-- Observations of portions of system removal from service. Confirmation that LCO's are met when operational mode requirements are specified;

-- Observation of portions of the conducted surveillance test;

-- Observation of portions of the system's restoration to service;

-- Review the test data for accuracy and completeness. Independently calculated selected test results data to verify its accuracy;

-- Confirmation that surveillance test documentation is reviewed and test discrepancies are rectified;

-- Verification that test results meet technical specification requirements;

-- Verification that testing was done by qualified personnel; and

-- Verification that surveillance schedule for this test was met.

The following surveillance test was witnessed:

-- SUR 5.1-23, Routine Control Rod Motion Check.

Findings:

SUR 5.1-23, Routine Control Rod Motion Check. The objective of test is to periodically check movement of each rod. A preliminary review of procedure indicated that step 6.8 had been omitted from section 7.3.2. The data box exists for step 6.8, but procedure content under Section 7.3.2 was left out during a procedure revision. The licensee stated that a change to the procedure will be made.

During the inspector's observation of test in Control Room, during a rod bank swap, the "C" bank of eight rods was inadvertently dropped into core. Test terminated, and results of event are detailed in paragraph 13. Test was reperformed prior to unit's return to power, satisfactorily.

b. Additional Surveillance Test Verification

Portions of the following surveillance test were witnessed by the inspector. The tests were scheduled in accordance with the TS, where applicable; procedures were being followed; testing was performed by qualified personnel; LCO's were met, when applicable; and restoration of systems was correctly accomplished. The tests witnessed were:

-- SUR 5.4-3, Refueling Water Storage Tank - Chemistry Surveillance;

-- SUR 5.2-10, Refueling Water Storage Tank Test;

-- SUR 5.1-128, Security Diesel Test.

Findings:

SUR 5.4-3 and SUR 5.2-10 were performed with no observed discrepancies.

SUR 5.1-128, Security Diesel Test. The licensee could not return diesel from test mode to a loaded condition. Repairs were performed on test switch and unit was run with no observed discrepancies.

No violations were noted.

7. Storage of New Fuel

References: SNM 1-4-2, Removing New Fuel From Shipping Containers.
SNM 1.4-3, New Fuel Detail Inspection.

The inspector observed the removal of four assemblies from shipping cask to dry storage on November 17 and 18, 1982. Fuel assemblies P-31, P-35, P-40, and P-50 were observed. Minor scratches on fuel rods due to grid-to-rod contact were evaluated by the licensee and found acceptable.

The licensee has modified their dry storage integrity control to address NRC concern noted in Information Notice 79-12.

No discrepancies were observed.

8. Containment Isolation Lineup.

To ensure licensee's ability to maintain and exercise containment isolation, the inspector verified by a sampling observation:

-- That manual valves required to be shut, capped and/or locked met operating mode;

-- That motor or air-operated valves were not mechanically blocked and power was available where required.

The inspector conducted:

-- Visual inspection of piping between containment and isolation valves for leakage; and,

-- Inspection of selected electrical penetrations, C-3 through C-7.

No discrepancies were noted.

9. Sampling Program Review

The inspector reviewed sampling results for the following tests to verify conformance with regulatory requirements:

The inspector observed the licensee's determination of the Refueling Water Storage Tank Water Boron Concentrations. Procedure PM 9.4.2.16 C Rev. 1 Boron Determinations Mannitol Titration Method was followed. Results were within the criteria established of less than 2% deviation from previous analysis and within T.S. limits.

Results of weekly sampling were reviewed in area of PH, conductivity and chlorides, and found complete.

No concerns were identified.

10. Licensee Event Reports Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

LER 82-09/3L Charging Line Valve Body Leak.

The licensee's action on repairs to valve body are documented in Work Permit NA 3633. Review of documentation package verified that licensee had addressed:

-- Completeness of package;
-- Use of properly certified materials;
-- Test data sheets, process data, QA inspection plans, housekeeping requirements, and fire protection requirements.

A Non-Conformance Report, 82-157, was issued to describe licensee's permanent corrective actions which includes the valve's replacement.

The licensee attributed the leak to a high velocity flow condition in valve area. The inspector requested licensee to determine if valve wall thinning was evident in the A. Charging Pump recirculation valve. This item will be reviewed at a subsequent inspection (50-213/82-21-01).

No other areas of concern were identified.

11. Operability of Engineered Safeguard Features

a. The inspector verified through direct observation, and procedural review, the operability of a selected ESF system.

The inspection criteria included:

-- A walkdown of the accessible portions of selected systems;

-- System lineups checked against plant drawings;

-- Verified hangers and supports were operable;

-- Cleanliness of breakers, instrumentation cabinets;

-- Instrumentation is properly valved and calibrated;

-- Valves in proper position, power available, locked and sealed as required by checkoff lists; and,

-- Local and remote control positions correctly established.

b. Diesel Generator Fuel Oil System. Reference: DWG No. 16103-26020 Sh. 1.

Findings:

The following observations were made:

1. The fuel oil, level control valves FO-LCV-136 and 135, pnuematically controlled, are located in a unheated cabinet outside EDG building. The inspector requested that a determination be made for the possible use of heat tracing on air lines feeding these valves.

2. In line connecting diesel oil transfer valves FOV 141B and FOV 141A were checked for proper valve position. The station valve lineup requires both valves to be closed and chained. Both valves were found closed, but FOV 141A was not chained as required. Since FOV 141B was properly secured, system operability was not affected. The licensee immediately properly secured FOV 141A.

3. Calibration dates on fuel oil pump discharge gauges were not on a calibration schedule.

4. At Diesel Storage Tank TK 33-A, pumped supply connection upstream of FOV 118A not capped.

5. FOV 110B not identified.

These items were discussed with licensee for correction and resolution and will be reviewed at a subsequent inspection (50-213/82-21-02).

c. Additional ESF system operability was determined by observation of:

-- Valves in the system flow paths in the correct position;

-- Power supplies and breakers are aligned for components that must activate upon initiation signals;

-- Major component leakage, lubrication, cooling water supply, and general conditions which might prevent fulfillment of their functional requirements; and,

-- Instrumentation essential to system activation or performance operable.

ESF systems inspected included portions of:

-- High Pressure Safety Injection;

-- Diesel Generator Service Water System.

No items of concern were noted.

12. Facility Maintenance

The inspector reviewed portions of safety-related maintenance, and determined through observations and reviews of records that:

-- The maintenance activity did not violate limiting conditions for operation;

-- Redundant components are operable, if required;

-- Required administrative approvals, and tagouts were obtained prior to initiating the work, if required;

-- Approved procedures were being used, where required;

-- The procedures used were adequate to control the activity;

-- The activities were being accomplished by qualified personnel;

-- Replacement parts and materials being used are property certified;

-- Ignition/fire prevention controls were appropriate, and were implemented, where required;

-- QC hold points were observed and provided independent verification of specific points, if required; and,

-- Equipment was properly tested prior to return to service.

Portions of the following maintenance activity were reviewed:

Main Steam Stop Disc Attachment Bolt Failure.

The licensee's return to power after a unit trip indicated that the west main steam stop valve at the high pressure turbine was not permitting steam flow to turbine. During the period of November 12 - 14, unit was removed from the grid and repairs to the valve were performed.

The licensee found that the valve's main disc was detached from the operating mechanism due to a shearing of the attachment bolt. The disc, bolt and securing nut were replaced. The inspector will review the licensee's evaluation of this failure during a subsequent inspection (50-213/82-21-03).

13. Plant Trips - Safety System Challenges.

Three plant trips occurred during this report period. Trips from 100% and 70% power and one from ~10% power were reviewed to the following criteria:

Following the trips from 100% and 70% power, the resident inspector made observations of plant stability to determine if environmental releases occurred and if core cooling was required. Plant parameter check included reactor coolant system, auxiliary systems, secondary systems, engineered safeguards system status, and reactor coolant chemistry.

Licensee's prompt action determined plant status, corrective action, and the review of safety significance of event.

The inspector verified manual and automatic action taken by personnel after trip and adherence to procedures after the trip.

Findings:

All the events did not constitute an abnormal occurrence. The unplanned transients and unplanned reactor/turbine trips did not involve ECCS activation.

a. Loss of Feedwater Suction Pressure

A unit trip from 100% power occurred at 1:51 p.m. on November 8, 1982. The cause of the trip was determined to be a decrease in suction pressure to No. 1A feedwater pump, resulting in a low-level steam flow/feed flow mismatch. The reactor trip/turbine trip resulted in no offsite or onsite environmental releases or the need for ECCS equipment activation.

Investigation by licensee could not determine cause of reduced feedpump water pressure. Areas examined included testing of heater drain tank level dumps, steam generator feedwater pump seal water supply filter, and feed control valve positions.

The inspector reviewed post-trip parameters and licensee's actions and verified licensee's findings as to plant conditions. The inspector has no further questions in this area.

Unit was returned to power upon engineering review of event.

b. Rod Control Bank C Insertion

A manual unit trip was instituted from ~70% power at 12:13 p.m. on November 17, 1982. Unit was at 100% power while reactor operators were conducting rod motion checks. During a bank selector switch manipulation, bank C (eight rods) dropped into core.

The negative reactivity insertion resulted in an immediate reduction in reactor coolant pressure and temperature with a corresponding decrease in pressurizer levels. The control supervisor instituted a manual scram to mitigate the transient condition at ~70% power. His actions were observed by the inspector who was witnessing the control rod motion tests. All plant parameters were stablized and plant was placed in the hot shutdown condition. The ECCS systems were not required. The licensee's review included review of operator action, control rod system, control rod selector switch core effects, and a transient review. A review of plant parameters did not identify a technical specification violation.

Investigation of control rod bank selector switch and testing in rod control panels did not identify cause of dropped control rod bank. The inspector's observation noted the licensee's prompt operator actions did prevent actuation of emergency core cooling systems in that minimum reactor coolant pressures would have approached trip points if manual scram was not instituted.

The inspector has no further questions on this trip.

c. Personnel Error

The reactor tripped from ~10% power at 10:20 p.m. on November 18, 1982. The transfer of reactor coolant pumps from offsite power to the station generator will trip unit if it occurs above 10% power. The operator failed to monitor power levels prior to transfer. The operator recognized his error and no additional corrective action was required. The inspector has no further questions on this trip.

14. Radioactive Waste System Controls

The inspector verified through observation and calculations the liquid and gaseous release programs at the site. Elements of the program for liquid and gaseous releases reviewed included:

-- Releases were in accordance with approved procedures;

-- Release approvals were documented;

-- Samples were taken and analyzed; and,

-- Release control instrumentation was operable during release.

The inspector reviewed the liquid radioactive waste releases associated with the following permits:

Permit No. L-273, L-274, and L-287. On November 23, 1982, the inspector witnessed a portion of the liquid release, L-288. Flow rates met the requirements of release permit and were monitored by the operator.

Findings: No items of concern were identified.

The inspector also reviewed the airborne radioactive releases associated with the following permits:

Permit No. G-260.

Findings: No items of concern were identified.

15. Physical Security

During the course of the inspection, the inspector observed the implementation of the security plan by noting:

-- The security organization is properly manned and that security personnel are capable of performing their assigned functions;

-- Persons and packages are checked prior to allowing entry into the protected area;

-- Selected vital area barriers are not degraded;

-- Vehicles are properly authorized, searched, and escorted or controlled within the protected area;

-- Persons within the protected area display photo identification badges, persons in vital areas are properly authorized, and persons requiring escort are properly escorted;

-- Communications checks are conducted and proper communication devices are available;

-- Compensatory measures are employed when required by security equipment failure or impairment; and,

-- Response to threats or alarms or discovery of a condition that appears to require additional security precaution is consistent with procedures and the security plan.

Findings:

No discrepancies were identified.

16. Exit Interview

At periodic intervals during the course of the inspection, meetings were held with senior licensee management personnel to discuss inspection scope and findings.