

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 81-04

Docket No. 50-29

License No. DPR-3

Priority --

Category C

Licensee: Yankee Atomic Electric Company

1671 Worcester Road

Framingham, Massachusetts 01701

Facility Name: Yankee Rowe

Inspection at: Rowe, Massachusetts

Inspection Conducted: February 1 - 28, 1981

Inspectors: Robert M. Gallo FOR
T. Foley, Resident Inspector

4/9/81
date signed

date signed

date signed

Approved by: Robert M. Gallo
R. M. Gallo, Chief, RPS No. 1A
Div. of Resident and Project Insp.

4/9/81
date signed

Inspection Summary:

Inspection on February 1-28, 1981, (Report No. 50-29/81-04)

Areas Inspected: Routine unannounced inspection on regular and backshifts by Resident Inspectors of: action taken on previous inspection findings; IE Bulletin, Circular followup; review of shift logs and operating records; plant tours; surveillance testing; operational safety verification; review of Onsite Review Committee; followup of licensee events; licensee organization, administration and staffing; observation of physical security; and inspector actions based on T/I 2515/47. The inspection involved 69 inspector hours by the resident inspector.

Results: Within the areas inspected no items of noncompliance were identified in eight areas: two apparent items of noncompliance were identified in two areas, paragraphs 4.b and 12 of this report.

50-29/80-07-24
50-29/80-07-31
50-29/80-09-10
50-29/80-10-31
50-29/80-11-14
50-29/80-12-19
50-29/81-01-22
50-29/81-01-28
50-29/81-02-04
50-29/81-02-05
50-29/81-02-10
50-29/81-02-13
50-29/81-02-28

DETAILS

1. Persons Contacted

H. Autio, Plant Superintendent
W. Billings, Chemistry Supervisor
L. French, Technical Assistant
T. Henderson, Plant Reactor Engineer
K. Jurentkuif, Assistant Operations Supervisor
L. Laffond, Technical Assistant Training department
D. Laird, Maintenance Manager
F. McWilliams, Engineering Assistant
N. St. Laurent, Assistant Plant Superintendent
J. Staub, Technical Assistant to Plant Superintendent
J. Trejo, Health Physicist Supervisor
D. Vassar, Operations Supervisor

The inspector also interviewed other licensee employees during the inspection, including members of the Operations, Health Physics, Instrument and Control, Maintenance, Reactor Engineering, Security and General Office Staffs.

2. Status of Previous Inspection Findings

- a. (closed) Unresolved Item (29/79-09-02): The inspector reviewed AP-9000 Revision 3 Qualification and Training of Chemistry and Health Physics Personnel. This procedure has been revised to require a formal certification of personnel prior to their performing chemical analysis. The procedure clearly states the qualifications for individuals performing chemical analysis. This item is closed.
- b. (closed) Unresolved Item (29/79-13-01): The inspector reviewed revision 3 to the Operational Quality Assurance Manual dated January 23, 1981. This revision mandates that hold points will be established as required. Additionally the inspector reviewed several Operational Quality Assurance (OQA) inspection sheets and noted that hold points were established in some cases. This item is closed.
- c. (closed) Unresolved Item (29/79-13-02): The inspector reviewed AP-0206 revision 5, Nonconformances. The procedure has been revised to describe in detail when a Nonconformance Report will be issued. The procedure also references other methods that would be used to identify, record and resolve other non-conformances. This item is closed.
- d. (closed) Inspector Followup Item (29/79-14-03): The licensee has installed voltage regulators with automatic tap changers on the low voltage side of the No. 2 and 3 Station Service Transformers. The inspector has witnessed training session

on these regulators and has attended Auxiliary Operators (AO) rounds when recording data from the regulator's parameters. The inspector interviewed selected AO's during the course of the inspection and determined that the AO's were knowledgeable of the regulator's operating characteristics. This item is closed.

3. Shift Logs and Operating Records

- a. The inspector reviewed the following plant procedures to determine the licensee established administrative requirements in this area in preparation for review of various logs and records.

- AP-0001, Plant Procedures and Instructions, Revision 8.
- AP-2002, Operations Department Personnel Shift Relief, Revision 10.
- AP-2009, Control Room Area Limits for Control Room Operators, Original.
- AP-2010, Control Room Access During Accidents and Operations Transients, Original.
- AP-0017, Switching and Tagging of Plant Equipment Revision 5.
- AP-0018, Bypass of Safety Function and Jumper Control Log, Revision 7.
- AP-2007, Maintenance of Operations Department Logs, Revision 7.
- AP-0216, Housekeeping and Cleanliness Control, Revision 1.
- AP-0042, Housekeeping for Maintenance and Modifications, Revision 1.
- Rules Governing In-Plant Tagging Procedures Local Control Rules, Revision 3.

The above procedures, Technical Specifications, ANSI N18.7-1972 "Quality Assurance Requirements for Nuclear Power Plants" and 10 CFR 50.59 were used by the inspector to determine the acceptability of the logs and records reviewed.

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

- Control Room logs and shift surveillance sheets are properly completed and that selected Technical Specification limits were met.
- Control Room log entries involving abnormal conditions provide sufficient detail to communicate equipment status, lockout status, correction, and restoration.

4.

- Log Book reviews are being conducted by the staff.
 - Operating and Special orders do not conflict with Technical Specifications requirements.
 - Jumper (Bypass) log does not contain bypassing discrepancies with Technical Specification requirements and that jumpers are properly approved and installed.
- c. The following plant logs and operating records were reviewed:
- Shift Supervisor's Control Room Log: February 1 - February 28, 1981.
 - Plant Operations Review Committee minutes: 81-1 thru 81-4.
 - Special Orders: 494, 497, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511.
 - Daily Plant Status Reports: February 10, 11 and 12, 1981.
 - Safety Related Maintenance Requests: 81-93, 81-101, 81-103, 81-109, 81-111, 81-129, 81-132, 81-153, 81-165, 81-166.
 - Primary Chemistry Log Sheets: February 1 thru February 25, 1981.
 - Radioactive Gaseous Release Permits: 81-21.
 - Radiological Liquid Release Permits: 81-20, 81-19, 81-18, 81-17 and 81-16.
- No inadequacies were identified.

4. Plant Tour

The inspector conducted a tour of accessible areas of the plant including the Primary Auxiliary Building, Turbine Building, Safety Injection Building, Switchgear Room, Diesel Rooms, Control Room, Spent Fuel Building, and HP Control Point Areas. Details and findings are noted below:

a. Monitoring Instrumentation and Annunciators

On several occasions during the inspection, control board annunciators were checked for abnormal alarms. The following monitoring instrumentation was checked to verify operability and where applicable, values indicated were verified to be in accordance with Technical Specification requirements:

- Pressurizer pressure, level and temperature.
- Charging flow path.
- SI Tank level.
- SI Accumulator Level.
- PWST and DWST levels.
- Batteries 1, 2, and bus voltage.
- Megawatt electrical output.
- Stack gas radiation monitor.
- Containment air particulate radiation monitor.

No abnormal annunciators were energized. No inadequacies were identified.

b. Radiological Controls

Radiation controls established by the licensee, including: posting of radiation areas, radiological surveys, condition of step-off pads, and disposal of protective clothing were observed for conformance with the requirements of 10 CFR 20 and OP-8100, "Establishing and Posting Controlled Areas," and OP-8101, "Plant Radiological Surveys."

The following discrepancies were identified.

1. During a tour of the facility on February 4, 1981, the inspector surveyed posted radiation areas within the controlled area.

While surveying a posted and barricaded radiation area surrounding some "Rad Waste Drums" near the "Old PCA storage area," the inspector encountered radiation levels between 200 and 300 millirem per hour at waist level and approximately two feet from several drums. The intensity of radiation when measured on contact with several drums ranged between 500 and 800 millirem per hour. This area was not posted as a high radiation area. Additionally

the issuance of radiological work permit was not required.

Technical Specification 6.12, "High Radiation Area", requires that each radiation area in which the intensity of radiation is 1000 millirem per hour or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit."

The inspector discussed this incident with the licensee. The licensee immediately reverified the radiation levels, then posted and barricaded the specific high radiation area. The licensee stated that the proposed long term corrective action will consist of re-emphasizing the importance of adherence to existing posting and surveying procedures, during the Health Physics Training Program.

The inspector subsequently investigated this incident to determine why the area was not being controlled consistent with existing requirements. The inspector reviewed the most recent survey of the area outside the "Old PCA Storage Area." This survey dated January 28, 1981, did not indicate that "Rad Waste Drums" were present, but did acknowledge that a radiation area was present and barricaded. The survey indicated 30 and 50 millirem per hour as the highest radiation levels in the surveyed area and 3 and 4 millirem per hour as the radiation levels at the boundary. OP-8101 Plant Radiological Surveys requires that "The detection and measurement of direct radiation, contamination and airborne radioactivity within the plant exclusion area must be performed effectively to minimize personnel exposures and the spread of contamination." 10 CFR 20.201 "Surveys" states, in Section (b), "Each licensee shall make or cause to be made such surveys as may be necessary for him to comply with the regulations in this part". The surveys of the area outside the "Old PCA Storage Area" within the "radiation area" were not performed effectively or in accordance with 10 CFR 20.201. This is an item of noncompliance (50-29/81-04-01).

c. Plant Housekeeping

Plant housekeeping conditions, including general cleanliness and storage of materials to prevent fire hazards were observed in all areas toured. Housekeeping and cleanliness were acceptable.

No inadequacies were identified.

d. Fluid Leaks and Piping Vibrations

Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibration.

No inadequacies were identified.

e. Pipe Hangers/Seismic Restraints

Pipe hangers and restraints installed on various piping systems through the plant were observed for proper installation and tension.

No inadequacies were identified.

f. Control Room Manning/Shift Turnover

Control Room Manning was reviewed for conformance with the requirements of 10 CFR 50.54 (k) and technical specifications. The inspector verified, several times during the inspection, that appropriate licensed operators were on shift. Manning requirements were met at all times. Several shift turnovers were observed during the course of the inspection. All were noted to be thorough and orderly.

No inadequacies were identified.

5. Surveillance Testing

The inspector observed portions of the following surveillance tests to verify that testing was performed in accordance with technically adequate procedures, that results were in conformance with Technical Specifications and procedure requirements, that the results were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by management personnel. The following surveillances were reviewed by the inspector.

- OP-4220 Primary System Water Balance
- OP-4204 Monthly Test or Special Test Operations of the Safety Injection Pumps
- OP-4225 Turbine Throttle and Control Valve Surveillance
- OP-4232 Vapor Container Inspection
- OP-4210 Fire System Weekly Operability Check
- OP-4216 Testing of the Post Accident Hydrogen Venting System
- OP-4207 Surveillance of the Station Power System and Emergency Diesel Generators

No inadequacies were identified.

6. IE Bulletin Followup

For the IE Bulletins listed below, the inspector verified the

following: that the written response was within the time period stated in the bulletin, that the written response included the information required to be reported, that the written response included adequate corrective action commitments based on information presented in the bulletin and the licensee's response, that licensee management forwarded copies of the written response to the appropriate onsite management representatives, that information discussed in the licensee's written response was accurate, and the corrective action taken by the licensee was as described in the written response. The following bulletins were reviewed:

- IEB 80-18 Maintenance of Adequate Minimum Flow Thru Centrifugal Charging Pumps Following Secondary Side High Energy Line Rupture.

The licensee's response to this bulletin addresses the facility's High Pressure Safety Injection (HPSI) pumps instead of charging pumps. The charging pumps at Yankee are positive displacement pumps and trip on actuation of a safety injection signal. The HPSI pumps at Yankee are centrifugal pumps and are provided with minimum flow lines which are required to be maintained open during high safety injections and ensures a minimum cooling flow will be provided to the pumps. The response to IEB 80-18 states that all safety related analysis assumed that the minimum flow lines were open, and no additional analysis or calculations are required.

The inspector has witnessed the disassembly, reassembly and testing of minimum flow orifice's and one of the HPSI pumps. The inspector additionally has witnessed the licensee recording temperature, vibration and other operating parameters from the HPSI pumps, during routine testing of these pumps.

- IEB 80-19 Failure of Mercury-Wetted Matrix Relays in Reactor Protective Systems of Operating Nuclear Plants Designed by Combustion Engineering.

The licensee's response indicated that Mercury Wetted relays are not used in the Reactor Protection System (RPS) at Yankee. The inspector interviewed Instrument and Control personnel to determine how and to what extent the licensee made this determination. This interview indicated that (1) department personnel who are knowledgeable of the RPS system are questioned whether or not the relays are used in the system, (2) that a review of spare parts, parts on hand and parts on order is performed and (3) component history cards are reviewed to determine whether these relays exist at Yankee.

- IEB 80-23 Failure of Solenoid Valves Manufactured by Valcor Engineering Corporation.

The licensee's response declared that no Valcor Solenoid Valves of the model number described in the bulletin are in use at Yankee. The inspector, through personnel interviews determined that the licensee reviewed component History cards, Stock Room records, purchase orders and system flow prints to make this determination.

The inspector identified no inadequacies in this area.

7. IE Circular Followup

For the IE Circulars listed below, the inspector verified the circular was received by the licensee management, that a review for applicability was performed, and that if the circular was applicable to the facility, appropriate corrective actions were taken or were scheduled to be taken. The following circulars were reviewed:

- IEC 80-21 Regulation of Refueling Crews
- IEC 80-22 Confirmation of Employee Qualification
- IEC 80-23 Potential Defects in Beloit Power System Emergency Generators

The inspector identified no inadequacies.

8. Operational Safety Verification

A detailed review of the Safety Injection System Accumulator was conducted to verify that the system was properly aligned and fully operational in the standby mode. This review was performed utilizing system Flow Diagram 9699-FM-83A, OP-4203 Monthly Valve Check, and OP-2652 Preparation of the Emergency Core Cooling System for Normal Operation. Review of the above system include the following:

- verification that each accessible valve in the flow path was in the correct position by either visual observation of the valve or remote position indication.
- verification that power supplies and breakers were properly aligned for components that are required to actuate upon receipt of a safety injection signal.
- visual inspection of major components for leakage, proper lubrication, cooling water supply, general condition and other factors that might prevent fulfillment of their functional requirements.
- verification by observation that the instrumentation essential for system actuation and performance was operational.

The inspector identified no inadequacies.

9. Inspector Followup of Licensee Events

The inspector responded to events that occurred during the inspection to verify continued safe operation of the reactor in accordance with

the Technical Specifications and regulatory requirements. The following items, as applicable, were considered during the inspector's review of operational events:

- observations of plant parameters and systems important to safety to confirm operation within normal operational limits.
- description of event, including cause, systems involved, safety significance, facility status and status of engineered safety features equipment.
- details relating to personnel injury, release of radioactive material and exposure to radioactive material.
- verification of correct operation of automatic equipment.
- verification of adherence to plant procedures.
- verification of conformance to Technical Specification LCO requirements.
- determination that root causal factors were identified and that corrective actions, taken or planned, were appropriate to correct the cause.
- verification that corrective action taken was appropriate to prevent recurrence.
- determination whether the event involved operation of the facility in a manner which constituted an unreviewed safety question as defined in 10 CFR 50.59 (a) (2), or in such a manner as to represent an unusual hazard to health and safety of the public and environment.
- determination whether the event involved continued operation of the facility in violation of regulatory requirements or license conditions; and,
- evaluation of whether applicable reporting requirements were met.

The events reviewed during this inspection period are discussed below.

- a. On February 5, 1981 the Resident Inspector reviewed a licensee memorandum concerning primary coolant chemistry results as of January 22, 1981. The memorandum indicating that alpha activity measurement of primary coolant liquid and crud specimens have been repeatedly positive and that the crud level of primary coolant was abnormally high and the isotopic composition contains unusually high amounts of short-lived species (I-132, 133, 134, 135). The I-131 to I-133 ratio suggest tramp uranium, but the activity levels were 100 times higher than likely by uranium contamination of zirconium. The licensee has not positively identified the alpha emitting

nuclides. No primary coolant Technical Specification limit was exceeded.

The resident inspector discussed the implications of the parameters addressed in this memorandum with the Plant Superintendent and the Manager of Operations on several occasions after becoming aware of these chemistry results.

The inspector informed the licensee's representatives that, based upon the results of the primary coolant chemistry addressed in the subject memorandum, there exists evidence of an abnormal degradation of fuel cladding and as such, Yankee should consider reporting this data pursuant to Technical Specification 6.9.4(3).

The licensee maintained throughout these discussions that the chemistry results may be attributed to mechanisms other than a fuel cladding defect, primarily a dislodged fuel pellet from a previous refueling, as a probable cause and therefore believes that these results should not be reported as a degradation of the fuel cladding. Additionally the licensee stated that previous reports of this type were reported only after confirmation of the results, usually during refueling.

The inspector stated that one purpose of reporting this type of event to the NRC was to keep the NRC informed of abnormal plant conditions such that in the unlikely event of an accident the NRC would be able to take appropriate actions to safeguard the health and safety of the public. An NRC interpretation of Regulatory Guide 1.16, paragraph C.2.a.(3), Abnormal Degradation, clarifies the types of abnormal degradation that should be reported to the NRC. The interpretation states that fuel pin defects such as pin holes or cracks, should not be classified as abnormal degradation. It further states that a limiting condition for operation would require a plant shutdown if reactor coolant system specific activity exceeded Technical Specification limits.

This item will be re-addressed during a subsequent inspection when more specific facts of the matter become available. (50-29/81-04-02)

- b. On January 28, 1981, the Instrument and Control department personnel were conducting routine monthly surveillance of the main coolant flow trip system. During this surveillance, the under current relays 2A and 4C for channel B, failed to drop out when deenergized. A redundant channel was tested entirely operational, however, Technical Specifications require that both channels be operable and therefore the

licensee has documented this event in a Licensee Event Report to the NRC.

The licensee subsequently cleaned and satisfactorily tested the channel B relays and inspected all the relays in both channels.

The inspector reviewed the event with the Instrument and Control Supervisor and independently reviewed the applicable schematics and the physical layout of the relays.

The inspector had no further concerns in regard to this event.

- c. On February 13, 1981, the Vapor Container (VC) internal pressure decreased to .72 psig. This is .03 psig below the Technical Specification limit of .75 psig. The inspector interviewed control room operators to determine what action the control room operators took to prevent this occurrence from happening.

Discussions with the operators revealed that the control room operators were aware of an indicated decreasing trend on the VC internal pressure and an accompanying increase in the atmospheric barometric pressure. Subsequently the operators energized the VC heaters as an aid in maintaining the VC internal pressure, and performed the Vapor Container Mass Balance calculation in accordance with OP-4700, Vapor Container Continuous Leak Rate Monitoring. During this calculation operators noted that the VC internal pressure had decreased to .73 psig. The Mass Balance calculation indicated that the Vapor Container integrity was being maintained.

The inspector discussed this event with the Operations Supervisor, who stated that this event will be reviewed by the Plant Operation Review Committee (PORC) and a determination will be made whether to revise the existing procedure for maintaining the VC pressure, to require additional operator action prior to allowing the VC pressure to decrease to the Technical Specification limit.

The inspector had no further questions in regard to this matter.

10. Organization, Administration and Staffing

The inspector reviewed the licensee's onsite organization, administration and staffing and verified the following:

- Changes in organizational structure and assignments have been reported as required by the Technical Specifications (TS);

- Onsite organizational structure is as described in the TS:
- Persons assigned to new or different positions satisfy the qualification requirements of ANSI N18.1-1971; and,
- The authorities and responsibilities of positions affected by organizational structure changes are as delineated in the TS and applicable standards.

The inspector noted that the following positions had personnel changes since the last inspection in this area.

- Maintenance Supervisor, to a newly developed position, Maintenance Manager reporting to the Assistant Plant Superintendent.
- Assistant Maintenance Foreman, to Maintenance Supervisor reporting to the Maintenance Manager.
- Instrument and Control Supervisor, to Instrument and Control Senior Advisor reporting to the Maintenance Manager.
- Instrument and Control Technical Assistant to Instrument and Control Supervisor reporting to the Maintenance Manager.
- Maintenance Foreman, to Senior Advisor Maintenance reporting to Maintenance Manager.
- Assistant Operations Supervisor, to Operations Supervisor reporting to the Operations Supervisor.

The preceding changes took place on January 1, 1981. The inspector verified by review of personnel records that the newly assigned personnel met the requirements of the Technical Specifications (TS) and ANSI N 18.7.

The inspector noted that the creation of the new position, Maintenance Manager, reporting to the Assistant Plant Superintendent requires a T/S change in order to be in accordance with the operating organization as defined in the T/S. This has been discussed with the licensee management on several occasions, in which licensee representatives have stated that the organization change to the Technical Specifications have been submitted to the corporate office. The inspector has contacted the NRR Licensing Project Manager and has determined that the NRC has not received documentation from the licensee requesting a change pursuant to Technical Specification 6.2.2. This matter is unresolved (50-29/81-04-03)

11. Onsite Review Committee

On February 27, 1981, the inspector attended a Plant Operations Review Committee (PORC) meeting 81-08, to ascertain whether the PORC functions

are conducted in accordance with Technical Specifications and other regulatory requirements. The inspector verified the following:

- PORC meetings were conducted at the frequency required by the Technical Specifications
- PORC meetings were convened with the proper quorum and possessed expertise for the areas reviewed
- PORC reviewed activities required by Technical Specifications
- PORC membership is consistent with Technical Specifications

The inspector identified no inadequacies.

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13. Inspector Actions Based on Performance of T/I 2515/47, Licensee Actions in Response to IEB 80-24, dated December 19, 1980

This temporary instruction was sent to resident inspectors to aid in the inspection of the licensee's response to IEB 80-24, "Indian Point Unit - 2 Flooding." The inspector held discussions with licensee personnel cognizant of IEB 80-24 prior to the licensee submitting their response to the NRC and discussed the details and supplemental information required to satisfactorily address all aspects of the bulletin.

The inspector subsequently reviewed the licensee's response to IEB 80-24 and discussed this information with NRC personnel cognizant of this bulletin.

At present, the facility has several mechanisms in which leakage inside the containment structure could be detected. These were reviewed by NRC personnel, and a determination was made that these mechanisms do not appear to satisfactorily assure that detection of a leak inside containment would be discovered in a timely manner.

The inspector discussed this with the licensee's representatives. The licensee subsequently issued Special Order 504 which requires the Shift Supervisor to watch the Vapor Container Drain Tank (VCDT) level for an indication of leakage inside the vapor container on a shift basis; to plot the VCDT level on a daily basis and if no change is indicated on the plot, then operators are required to drain/pump the VCDT until a level change is observed. If no change is observed the VCDT level gage is to be verified operational by the Instrument and Control department.

This mechanism of verifying the operability of the VCDT level gage provides the NRC with sufficient assurance on an interim basis until a redundant VCDT level gage is installed during the next refueling outage.

The inspector had no further concerns in this area.

14. Unresolved Items

Unresolved items are those items for which further information is required to determine whether they are acceptable or items of non-compliance. Unresolved items are contained in Paragraph 10 of this report.

15. Management Meetings

Licensee management was periodically notified of preliminary inspection findings by the resident inspector during the inspection period. A summary of the inspection was also provided at the conclusion of the inspection on March 3, 1981.