

U.S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION I

RO Inspection Report No: 50-29/74-02 Docket No: 50-29
Licensee: Yankee Atomic Electric Company License No: DPR-5
20 Turnpike Road Priority: _____
Westboro, Massachusetts 01581 Category: C
Location: Rowe, Massachusetts

Type of Licensee: PWR, 600 Mwt (W)

Type of Inspection: Routine, Announced

Dates of Inspection: March 11-15, 1974

Dates of Previous Inspection: December 12-14, 1973

Reporting Inspector: *C. R. Oberg*
C. R. Oberg, Principal Inspector

4-12-74
Date

Accompanying Inspectors: *J. N. Hannon*
J. N. Hannon, Reactor Inspector

4-15-74
Date

Date

Date

Date

Other Accompanying Personnel: _____

Date

Reviewed By: *A. B. Davis*

4/17/74
Date

A. B. Davis, Senior Reactor Inspector (PWR)

8011050731

SUMMARY OF FINDINGS

Enforcement Actions

A. Primary System Leak Rate Determination

The procedure for determining primary system leak rates was not followed. (Paragraph 5.a.)

B. Radiation Area Boundaries Not Properly Established.

Boundaries of a contaminated area in the New Fuel Storage Area were not properly identified and marked on all sides. (Paragraph 16.b.)

Licensee Action on Previously Identified Enforcement Actions

A. Control Rod Receipt Inspection

The corrective action of the licensee was verified. (Paragraph 6a)

B. Diesel Generator Surveillance Test

The corrective action (revising surveillance test) of the licensee was verified. (Paragraph 14.b)

Design Changes

Pressurizer-Relief Valve Discharge Piping Restraints

The licensee is planning to install additional restraints on the two 4 inch discharge lines. (Paragraph 5.f)

Unusual Occurrences

Uncontrolled Release of Gaseous Activity

A valve bonnet joint leak in the waste gas system caused an accidental release of gaseous radioactivity. Release limits were not exceeded. (Paragraph 17)

Other Significant Findings

A. Unresolved Items

None

B. Current Findings

1. Refueling is scheduled to start on May 10, 1974. (Paragraph A, Management Interview)
2. The licensee continues to revise plant operating procedures. (Paragraph 4)
3. The licensee will up date and correct their refueling procedures by May 1, 1974. (Paragraph 15)

Management Interview

Inspection findings concerning the following subjects were discussed with Messrs. Autio, Jones, and St. Laurent at the conclusion of the inspection on March 15, 1974:

A. Refueling

The inspector stated that he understood that the Core X refueling is scheduled to start May 10, 1974 and requested that Region I be notified if a change in schedule occurs.

The licensee stated that RO:I would be kept informed of any changes to the schedule.

B. Facility Procedure Review

The overall status of the Facility Procedure Program was discussed. Specific concerns addressed included (1) the lack of procedural coverage in certain normal and emergency operations, (2) the omission of references to appropriate Technical Specifications and applicable associated procedures, (3) the absence of precise limits and specific details which could be prescribed for the operator, and (4) the observation that some procedures do not receive a review commensurate with their level of importance.

The licensee stated that completion of the rewrite effort could be expected in 1975.

C. Refueling Procedures

The status of the facility refueling procedures was discussed with the licensee. A specific problem was addressed regarding accountability of tools and miscellaneous equipment during the refueling.

The licensee stated he would review this area and that all refueling procedures would be revised and reviewed by May 1, 1974.

D. Primary System Leak Rate Determination

The inspector stated that an apparent violation exists wherein the procedure for determining the primary system leak rate has not been followed in several instances. Specific examples were discussed.

The licensee agreed to recalculate the leak rates beginning approximately February 1, 1974. In addition the procedure will be updated and training of personnel responsible for the calculations will be done in order to make the results consistent.

E. Review of Primary Systems/Power Conversion Systems

The inspector stated that one of the objectives of the inspection was to review selected areas of the Primary Coolant and Power Conversion systems. Specific areas examined are documented in the report.

F. Tour of Facility

The inspector stated his observations made during a tour of the Facility. An apparent violation was observed wherein there was a failure to adequately mark boundaries of a contaminated area in the new fuel storage room.

Other observations concerning cleanliness of containment areas and lack of protection for electrical and instrumentation terminal connections inside containment were discussed.

The licensee stated that the containment would be examined by the plant superintendent. He further stated that the doors were left off the terminal boxes to permit ready access for repair and to eliminate moisture condensation that had been forming inside the boxes.

G. Posting of Operating Procedures for Personnel Hatch

The inspector stated that instructions for the operation of the containment personnel hatch door controls were not posted as stated by the licensee in Yankee letter dated April 11, 1973.

The licensee stated that operating instructions would be posted.

H. Missing Information from Semi-Annual Report

The inspector requested that information missing from the Semiannual

Report be provided to the Commission. Information missing:

- (a) December radioactivity gaseous effluent levels.
- (b) Reactor Coolant System leak rate information on 1st page of Summary of Primary & Secondary Chemistry for each month.

The licensee stated that the information would be forwarded to Region I.

DETAILS

1. Persons Contacted

Mr. H. Autio, Plant Superintendent
Mr. W. Billings, Chemistry & Health Physics Supervisor
Mr. T. Danek, Operations Supervisor
Mr. M. Ebert, Reactor Engineer
Mr. J. Flanigan, Plant Health Physicist
Mr. R. Herzog, Shift Supervisor
Mr. W. Jones, Assistant Plant Superintendent
Mr. B. Kirk, Shift Supervisor
Mr. P. Laird, Maintenance Supervisor
Mr. N. St. Laurent, Technical Assistant to the Superintendent
Mr. R. Paradis, Control Room Operator
Mr. E. Pierce, Control Room Operator
Mr. D. Vassar, Shift Supervisor

2. Operations

a. Plant Operations

At the onset of the inspection Yankee Rowe was operating at approximately 75% reactor power in a coastdown condition. All rods were out at 90-93 inches, Tavg 286.2°F, 135.1 MWe output, with boron < 15 PPM. All systems appeared to be operating satisfactorily.

b. Tour of Facility

The inspector made a tour of the facility, including a visit inside containment. The inspector found an apparent need for housekeeping improvement inside containment in that cleanliness was poor and tools and spare materials were scattered about various areas. In addition, doors to several large electrical and instrumentation connection terminal boxes were off which left the terminals subject to moisture, dust, dirt and physical damage.

The licensee stated that the doors had been left off to eliminate possibility of any moisture condensing inside the boxes. He also stated that this condition would be evaluated in order to determine if the need still exists. These items were discussed during the Exit Interview and will be examined during the next inspection.

c. Review of Semiannual Operations Report and other Plant Records

The inspector reviewed the Yankee Rowe Semiannual Operations Report as part of the inspection. Missing report information was identified

to the licensee. Discussions on several of the items took place with the Plant Superintendent and other supervisory personnel. Results of the discussion are documented in the appropriate section of this report.

The inspector also held discussions relating to any safety items, violations, excessive personnel exposures, and excessive releases of radioactive effluent. Results of the discussions are documented in the appropriate section of this report. No safety items were identified by the licensee. The inspector also reviewed the Shift Supervisor's Log for the period August 25, 1973 to November 2, 1973 and December 2, 1973 to March 11, 1974. No abnormalities were identified. In addition, minutes of the Nuclear Safety Review and Audit Committee (NSRAC) were reviewed covering the two meetings held since the last inspection. Minutes for the Plant Operations Review Committees (PORC) were also reviewed which covered meeting Nos. 74-1 through 74-11.

The inspector also held discussions with operations personnel at various times during the inspection.

d. Review of Scram Records

The inspector examined plant process records and documentation relating to a reactor scram which occurred on August 31, 1973. The following charts were examined:

- (1) Process Records - records of 16 plant parameters including temperature, flows and levels.
- (2) Incore Thermocouples.
- (3) Steam Generator Levels.
- (4) Pressurizer Pressure.
- (5) Total Steam and Feed Water Flow and Pressure.
- (6) Individual Steam and Feed Water Flow.
- (7) Steam Generator Levels (Narrow & wide range indications).
- (8) Flux Channels (No. 1-4)

No abnormalities were noted in the records examined.

3. Administration and Organization

a. Shift Manning

The inspector determined that the requirement of Technical Specification, Change 109, concerning minimum shift manning is being met by the licensee.

This item is closed.

b. Nuclear Safety Audit and Review Committee (NSARC)

The licensee reported the following composition of the NSARC, effective March 1, 1974:

D. B. Pike (Chairman)
E. G. Wood
J. S. Shulman
J. W. Stacey (Vice President)
J. W. Singleton
D. W. Riley
J. DeVincentis
A. E. Ladieu
R. H. Graves

c. Personnel Changes

The following personnel assignment were made since the last inspection:

Assistant Plant Superintendent - W. G. Jones
Reactor Engineer - M. W. Ebert
I & C Supervisor - J. H. Shippee
Chemistry & HP Supervisor - W. D. Billings
Technical Assistant to Plant Superintendent - N. St. Laurent

4. Facility Procedures

a. Procedure Status

The overall status of the Facility Procedures Program was reviewed* against the requirements of the Technical Specifications, Regulatory Guide 1.33 (November 3, 1972) and ANSI-N18.7 (November 12, 1973). During the review of selected sample procedures, stress was placed on (1) emergency procedures, (2) plant operating procedures, and (3) refueling procedures, with the latter group receiving major emphasis. The following summarizes the overall status of the procedure upgrading program as determined during the inspection:

* (Annual review of area)

Procedure	% Complete	% In Review	% Not Written	Comments on % Not Written
Administrative	74	7	19	
Emergency	41	59		
Alarm	16		84	
General	58	25	17	12% in old forms
Systems	37	8	55	47% in old forms
Radioactivity	15	8	77	68% in old forms
Surveillance	80	7	13	
Measuring Equip.	30	2	68	11% in old forms
Test Equipment	58		42	
Maintenance	69	17	14	10% in old forms
*Chemistry -	43	18	39	
Radcon (HP)	38	18	44	Most are covered in the Plant Radcon Manual.

The licensee has established a target date for the completion of the program of March 1, 1975. The licensee committed to treat the inspector's comments on a generic basis for upgrading the entire program.

b. Emergency Procedures

The licensee agreed to improve the emergency procedures based on the following comments by March 1, 1975.

- (1) Battery No. 1, 2, or 3 Critical Voltage OP-3754.
 - (a) According to procedure, higher authority is not required to be notified of this casualty.
 - (b) Applicable procedures are not referenced.
 - (c) Technical Specification limits are not defined.
- (2) Battery Charger No. 3 A.C. Failure OP-3747. Although there are no problems for the other chargers, reportedly this procedure will be invoked upon the failure of either No. 1 or 2 Battery Chargers.
- (3) Total Loss of A. C. - Control Room Secondary Plant Operator Guide OP-3252.
 - (a) Symptoms of this casualty are not listed.
 - (b) Immediate actions are not clearly defined.
 - (c) Manual actions are not specified in the event automatic actions fail to occur.
 - (d) The reactor shut down is not addressed.
 - (e) Applicable procedures are not referenced.
- (4) Feed Water Line Break Emergency Action OP-3203.
 - (a) Immediate actions and followup actions, both automatic and manual, are not clearly detailed.
 - (b) Step 7 lists a valve not identified by number.
- (5) Total Loss of Main Coolant OP-3106.
 - (a) In step III.4, figure 1 is mentioned with no location or reference.
 - (b) It is not clear from step III.7 how the operator will determine minimum injection.

(6) Total Loss of Main Coolant Flow Op-3103.

(a) Electrical check-offs are not available for use in step III.10.

(b) Applicable procedures are not referenced to restore the plant to normal. OP-2501, Restoration of Normal A.C. Power after a Total Loss of A.C. is in the revision process.

(7) It was noted that no procedure for emergency evacuation of the control room was available. Discussions with operating personnel indicate that it may be feasible to maintain hot standby remote from the control room, although a remote cooldown may not be possible. The licensee stated that this area would be examined for procedural coverage.

c. Operating Procedures

The licensee agreed to upgrade the operating procedures based on the following comments by March 1, 1975.

(1) Operation of the Control and Service Air Systems RP-2600.

(a) Consideration should be given to upgrading this procedure to an OP, based on its relevancy to plant safety.

(b) Prerequisites do not identify plant conditions that must be met prior to equipment operation.

(c) There is no reference to applicable Technical Specifications.

(d) Periodicity of equipment checks is not specified in precaution No. 2.

(e) Control room alarms are not verified upon shut down.

(2) Feed Water Line Isolation & Return to Service, RP-2250.

(a) The acceptance criteria for weld inspections are not specified.

(b) Applicable procedures are not referenced.

(3) Reactor and Primary Plant Cooldown.

(a) Step III.1 does not describe the specific Technical Specification requirements.

(b) The Minimum Pressurization Temperature (MPT) Curve is not referenced.

- (c) Special manning requirements are not addressed.
- (4) Primary Plant Startup from Cold Condition, OP-2100.
 - (a) The electrical pre-startup check-off line is not referenced in step II.6.
 - (b) The MPT curve is not referenced.
 - (c) Applicable Technical Specifications are not referenced.
 - (d) The applicable procedure was not referenced in step III.7.
 - (e) No provisions are made for heat up if decay heat is negligible.
- (5) Changing Plant Load OP-2107.
 - (a) Statements such as "all systems" do not provide specific guidance for the operator.
 - (b) Applicable Technical Specifications are not referenced.
 - (c) Check off by initials or signature is not provided for.
- (6) It was noted that no specific procedures were in existence for the operation of the Steam Generator Blow Down System or the Steam Dump Valve System.

d. Surveillance and Maintenance Procedures.

The licensee agreed to upgrade the Surveillance and Maintenance Procedures based on the following comments by March 1, 1975.

- (1) Monthly Test of Safety Injection System OP-4204.
 - (a) Technical Specifications are not referenced and limiting conditions for operation are not specified.
 - (b) Acceptance criteria for satisfactory completion of the test are not specific.
- (2) Flow Test of Two ECCS Trains with Emergency Power, OP-4209.
No comment.
- (3) Emergency Boiler Feed Pump Surveillance Test, OP-4211.

No correlation of previous test data is provided for by this or other similar procedures.

(4) Maintenance Department Surveillance Schedule, AP-5000.

- (a) Technical Specification 4.5 in step 2.e should be 16.5.5 per the proposed Technical Specifications.
- (b) AP-0214, Installation and Maintenance of Safety Classified Systems, Components, or structures, is not referenced.

e. Instrumentation Procedures

The licensee agreed to upgrade the procedures applicable to instrumentation based on the following comments by March 1, 1975:

- (1) Reactor and Turbine/Generator Permissive Switch and associated Time Delay Relay Calibration and Functional Test, OP-6103.
 - (a) The test frequency is not specified by procedure.
 - (b) Electrical safety rules are not referenced in step 2 under Precautions.
 - (c) Jumper accountability is presently controlled by the Lifted Lead Log. The licensee stated that a new procedure, AP-0018, Lifted Lead, Jumper Control & Accountability, will be written.
- (2) Inspection and Stroke Calibration of V. C. Trip Valve No. _____ OP-6450.
 - (a) Statements such as "observe general safety precautions" are not sufficiently specific.
 - (b) Frequency of the test is not specified.
 - (c) Removal of the valve from service is not addressed, including any limits on plant operations that may be imposed.

f. Health Physics Procedures.

The licensee agreed to upgrade the Health Physics procedures based on the following comments by March 1, 1975.

- (1) Establishing and Posting Controlled Areas, OP-8100.
 - (a) This procedure (DP-8100) was not available (except for the first page) at the HP control point.
 - (b) HP personnel were not familiar with specific limits regarding requirements for shoe covers.

(c) One procedure with this title was numbered OP-8105, while the master was numbered OP-8100.

(2) Use of Protective Clothing RP-8400.

Condition for the use of protective clothing are not detailed as to the requirements for each specific article.

g. Administrative Procedures.

The licensee agreed to improve the administrative procedures based on the following comments by March 1, 1975 unless otherwise indicated.

(1) Plant Procedures, AP-0001.

(a) Operator adherence to written procedures is not specified.

(b) Provisions for temporary changes are not specific regarding impact upon procedural intent.

(c) Low Power Physics Tests and Power Ascension Tests reportedly will be prepared prior to refueling.

(d) Safety related operating memos are not addressed and do not receive proper managerial review.

5. Primary Systems

a. Determination of Primary System Leak Rate

Yankee Operating Procedure No. OP-4220, dated January 31, 1974 requires a water inventory determination be made three times a day. Once a day an overall water inventory change is made for the previous 24 hours. The purpose is to monitor the primary system leakage.

The inspector examined calculations for several days and found inconsistencies in the way various shift supervisors determined Leak Rates. Procedure was not followed in that a change in the Primary Drain Tank level was not accurately reflected in the calculations on March 2 & 3, 1974 (0900). Other examples were brought to the attention of the licensee. This is an apparent violation of OP-4220.

The licensee stated that water balances would be recalculated, the procedure would be revised to clear ambiguities, and training would be conducted for those who are responsible for the calculations.

This item was discussed in the management interview and is considered open.

b. Primary System Check Valves

The inspector held discussions with the licensee and examined records pertaining to the primary system check valves. A history of worn bushings and pins was evident. The valves become noisy under constant flow conditions and are monitored by listening to the valve. Repairs have been made in the past:

November, 1972 - Replaced disc, arm, pin and blocks of loop No.2.
October, 1972 - Replaced internal assembly, disc, arm, blocks, pins, space washers. The RH (facing closed disc) block was almost completely worn through so that most of the pin was exposed. The disc was unable to close closer than one inch and hanging crooked. The arm was worn sufficiently to allow the discs to drop.

The licensee has a design change approved and is in the process of obtaining proper materials to modify the valves during the Core XI refueling. At the present time all check valves are operating satisfactorily.

c. Steam Generators

The inspector held discussions with the licensee and examined appropriate records relating to the performances of the steam generators.

The steam generators have performed satisfactorily since the modification to the feedwater lines in April, 1968. Prior to that time severe feedwater hammer was experienced during startup operations. The modification involved the installation of a loop seal just before the pipe enters the steam generator.

Some steam generator tubes have been plugged. Records of the licensee indicate the following:

<u>Steam Generator</u>	<u>Number of Tubes Plugged</u>
No. 1	19
No. 2	1
No. 3	11
No. 4	12

There are 1620 "U" type stainless steel tubes in each steam generator. There is some evidence that there may be steam generator tube fouling (Paragraph 19). The licensee is also monitoring a possible leak in No. 4 steam generator. At present, calculations indicate that the leak is less than 2 gal/day.

An insurance company inspection report of February, 1972 stated that No. 2 & No. 4 Steam generator did not have any abnormalities. Radiation levels were 200-400 mr/hr in No. 2 and 50-150 mr/hr in No. 4.

d. Main Coolant Stop Valves

The inspector examined records and held discussions with the licensee concerning the Main Coolant Stop Valves. These valves are motor operated and are required to open or close in 120 sec. \pm 10%. The latest exercise of the valves indicated the following:

<u>MOV NO</u>	<u>Close (min-sec)</u>	<u>Open (min-sec)</u>
301	1-58.5	1-58.1
302	2-3.2	2-1.9
309	1-59.8	1-59.8
310	1-58.4	1-57.9
318	1-59.1	1-58.7
319	1-59.4	1-59.5
325	2-3.1	2-3.2
326	1-59.0	1-58.5

The operators of the valves were last inspected in February of 1972. MOV 325 was found to contain hardened grease. This was replaced. All operations will be inspected again during the 1974 refueling.

e. Other Primary System Valves

The inspector examined reports and held discussions with the licensee concerning primary system valves. Records indicate that 13 valves have various amounts of leakage. The majority of these valves have been capped.

The licensee conducts visual inspections of the primary system (inside containment) whenever the reactor is shutdown and hot. Each valve is inspected and results are documented.

f. Pressurizer Safety and Relief Discharge Piping

The inspector reviewed a report concerning the Stress Analysis for Pressurizer Safety and Relief Valve Discharge Piping.

The pressurizer is provided with two safety valves and one power-operated relief valve. The safety valves discharge into four inch lines and the relief valve into a three inch line. The three discharge lines merge into a common leader which connects to a relief tank.

Two methods of analysis were used and both revealed that a stress problem exists in the discharge piping, and in particular the two four-inch lines. Additional restraints will be required.

The licensee plans to install the additional restraints during the refueling shutdown starting in May, 1974.

This item remains open.

6. Reactivity and Power Control

a. Control Rod Receipt Inspection

References: RO Inspection Report 50-029/73-04
Yankee letter to RO:I dated November 6, 1973

The corrective action stated in the letter of November 6, 1973 was verified by the inspector.

b. Malfuction of Safety Related Westinghouse W-2 Switches

The inspector determined that the Yankee Rowe facility does not utilize W-2 switches. They had not received the NSD technical Bulletin (NSD-TB-73-26, dated December 12, 1973).

7. Core and Internals

Not inspected.

8. Power Conversion System

a. Steam Turbine Bypass System

The inspector examined records and held discussion with appropriate licensee personnel concerning the Steam Turbine Bypass System.

The system provides capability to remove steam during startup and shutdown by using a flow control valve in either automatic or remote manual operation. The 6 inch line passes sufficient steam for approximately 5% reactor load, exhausting into the main condenser.

No problems have been experienced with the operation of this system.

b. Steam Generator Blowdown System

The inspector reviewed available records and held discussions with appropriate licensee personnel concerning the Steam Generator Blowdown System.

Only one problem exists in this system. A pin hole leak in the blowdown line for No. 1 Steam Generator will be repaired during the 1974 refueling period. The leak has a temporary patch on at the present time.

9. Auxiliary Systems

Not Inspected.

10. Electrical Systems

DB-50 Reactor Trip Breakers

The inspector determined that the Yankee Rowe Facility does not utilize DB-50 reactor trip breakers, and the requirement of NSD-TB-74-1 does not apply.

11. Containment

References: Yankee letter to Licensing, dated December 12, 1973
Licensing letter to Yankee, dated January 14, 1974

The inspector examined the records relating to monitoring containment integrity by continuous leak monitoring. The examination revealed that the licensee is utilizing the system and that the integrity of the containment is intact.

This item is considered closed.

12. Emergency Core Cooling System

Not inspected.

13. Other Engineered Safety Features

Not inspected.

14. Emergency Power

a. DC Control Circuits Blown on No. 3 Emergency Diesel Generator (AO-73-05)

Reference: RO Inspection Report No. 50-29/73-04

Modification to the control circuit has been completed.

This item is considered closed.

b. Diesel Generator Surveillance Test

References: RO Inspection Report No. 50-029/73-04
RO:I letter to Yankee, dated October 19, 1973
Yankee letter to RO:I, dated November 6, 1973

The inspector confirmed that the licensee action was as stated in their letter of November 6, 1973.

This item is considered closed.

15. Fuel Storage and Handling

Refueling procedures

The licensee agreed to upgrade the refueling procedures based on the following comments by May 1, 1974, except where otherwise indicated:

- (1) Inspection of Fuel Handling Equipment (OP-4505)
 - (a) Sources of control power are not specified.
 - (b) Jumper installation in step 40 lacks appropriate controls and accountability.
- (2) Testing of Fuel Handling Equipment (OP-4226)

Interlocks are not clearly defined or referenced.
- (3) Refueling Accidents (OP-3117).
 - (a) Inspection and evaluation requirements for new fuel damaged during refueling are not addressed.
 - (b) The chemical shut down procedure, OP-3107, was not referenced in step I.2.
 - (c) Appropriate Health Physics procedures are not referenced in step III.3.
 - (d) Step II.4 does not make provisions for clearing the alarm condition.
- (4) Reactor Fuel Loading, Component Replacement, OP-1200.
 - (a) This procedure was due for annual review on March 10, 1974. The licensee stated that it would be reviewed and revised where necessary at a Plant Operating Review Committee (PORC) meeting during the month of March. If there are no revisions to a procedure, the PORC meeting minutes reportedly will provide doc-

umentation of compliance with the periodic inspection requirements.

- (b) Calibration and response checks of incore and excore detectors and a prescribed periodicity for same has not been addressed. It was noted that RP-1602, Refueling Nuclear Channel Operation, was in the review process.
- (c) Incore flux monitor requirements have not been addressed. The licensee stated that the vendor for the movable incore system (to be installed during the refueling outage) would provide the technical interface for the system, including how it relates to refueling.
- (d) Prerequisite number 1 does not specify exactly what is to be tagged out of service. The licensee stated that OP-1202, Locked Valve Checklist for Refueling, would cover this area.
- (e) Verification of containment integrity including closing and tagging valves and confirming operability of valves and hatches was questioned. The licensee stated that his interest was only to control the large openings in the lower portion of containment and not to provide an air tight boundary, and that the procedure would be revised accordingly.
- (f) The spent fuel cooling system was not addressed. It was noted that RP-2164, Placing the Spent Fuel Pit Cooling and Purification System in Service, was being prepared.
- (g) Installation of neutron startup sources was not addressed. The licensee stated that OP-1000.5, Master Refueling Procedure Core X-XI, and OP-1209, Operation of the VC Manipulator, will cover verification and installation of the sources.
- (h) Radiation protection requirements are not addressed. OP-4812, Calibration Check of the Gamma Guards, is in preparation.
- (i) The status of all systems required for fuel loading, including operability and lineup, was not specified.
- (j) The operability of the VC purge system is not confirmed by procedure prior to refueling operations.
- (k) Inspection of fuel within a specified time prior to fuel loading is apparently not prescribed, although OP-7200, New Fuel Inspection, is in the review process.
- (l) The operability of fuel handling cranes, equipment, and tools does not appear to be verified by procedure within a specified

time prior to fuel loading. It was noted that DP-5951, Vapor Container Crane-Inspection and Maintenance, was in preparation.

- (m) The status of protective systems, including special trip functions, does not appear to be verified by procedure. RP-1600, Refueling Level & Pressure Detector Protection Alarm, covers this area, although it may not be all inclusive.
- (n) Minimum requirements for maintaining coolant circulation in the core are not specified. RP-2162, shutdown Cooling System Start-up, and RP-2163, Shutdown Cooling System Removal from Service, reportedly will include these requirements.
- (o) Limits on the water level in the fuel pool are not prescribed. OP-1203, Filling of Shield Tank Cavity, and OP-1214, Transfer of New Fuel from the New Fuel Vault to the Spent Fuel Pit, reportedly will provide limits on the fuel pool water level.
- (p) The Operating License lists 140°F as the reactor coolant system temperature limitation. Procedure 504MA lists 130-150°F as the limit.
- (q) Control and accountability of tools, eyeglasses, flashlights, rags, paper, tape, supplies and other like items during refueling is not defined. The licensee stated that he would take this item under consideration and make a decision prior to refueling.
- (r) Limitations on fuel loading in the event of a communications failure are not addressed.
- (s) The analysis, frequency, and acceptance criteria for sampling borated water during refueling are presently not covered by procedure.
- (t) OP-3105, Emergency Boron Injection, is not referenced.
- (u) Dual independent verifications of each fuel assembly serial number and core position are not required by procedure prior to insertion.
- (v) The procedure does not presently require two persons to be present at any location where fuel handling is taking place.
- (w) Low count rates are not addressed. The licensee stated that a procedure would be prepared for use during this event if it occurs.
- (x) Appropriate Health Physics procedures which control shift exposures are not referenced.

16. Radiation Protection

a. Loop Seal Monitors

The inspector questioned the nine failures of low pressure loop seal monitors reported in the facilities semi-annual report. The licensee reported that the water condenses on the inside of the GM tube window shorting out tube. The licensee is obtaining a different type to replace one presently used.

b. Radiation Area Boundaries Not Properly Established.

During the tour of the facility, the inspector noted that radiation control procedures were not being carried out correctly. An access to radiation area (contaminated) was not properly marked (470 dpm/100 cm²). This is an apparent violation of procedure OPS100, "Establishing and Posting Controlled Areas," dated June 13, 1973. This procedure states, in part, "All controlled areas shall be adequately surveyed to insure that the boundaries established completely define the controlled area and that no loose surface contamination, airborne activity, or excessive radiation exists immediately outside the local boundary." (Underlining provided)

The rope boundary did not completely enclose the contaminated area.

This item was discussed in the management interview and is considered open.

c. 10 CFR 19 Inspection

The inspector verified posting by the licensee of notices required by 10 CFR 19.

This item is closed.

17. Radioactive Waste Systems

Unplanned Release of Radioactive Material (A074-1)

References; Yankee letter to Licensing dated March 8, 1974

The inspector verified the action taken to preclude a repetition of the valve leak.

This item is considered closed.

18. Experiments and Tests

Core Flow Test

The inspector reviewed documents and discussed with appropriate licensee personnel the results of a test conducted to determine if any significant changes had taken place in reactor core flow. The Semi-annual report indicated "---a noticeable decrease in core flow from Core VIII to Core X. This result was found to be due to Core X fuel."

Subsequent analysis of the data by Westboro Engineering Staff indicated that (1) Core X fuel (Zircoloy Assemblies) have caused a reduction in flow at less than 1%, (2) Precise cause of the increase in core and loop ΔT 's has not been determined (3) An increase in average main coolant temperature is most likely caused by crud deposits in the steam generators.

The licensee indicated that this matter would be followed and that, for safety and transient analysis of core XI, the loop ΔT would be increased from 42^oF to 44^oF.

This item remains open.

18. Miscellaneous

Facility tour.

During a tour of the Waste Disposal Building, it was noticed that the hydrogen meter was incorrectly marked "Oxygen." The licensee stated that the nameplate would be corrected. It was noted that the system contained approximately 45% hydrogen which is normal for the facility.