

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

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Report No. 83-31
Docket No. 50-271
License No. DPR-28 Priority -- Category C

Licensee: Vermont Yankee Nuclear Power Corporation
RD 5 Box 169, Ferry Road
Brattleboro, Vermont 05301

Facility Name: Vermont Yankee Nuclear Power Station

Inspection at: Vernon, Vermont

Inspection Conducted: November 1 - December 30, 1983

Inspectors: William J. Raymond
W. J. Raymond, Senior Resident Inspector

1/25/84

Robert M. Gallo
R. M. Gallo, Chief, Reactor Projects
Section 2A, Projects Branch 2

1/30/84

Inspection Summary:

Inspection on November 1 - December 30, 1983 (Report No. 50-271/83-31)

Areas Inspected: Routine, unannounced inspection on day time and backshifts by the resident inspector of: action on previous inspection findings; plant power operations, including operating activities and records; plant physical security; technical specifications surveillance testing program; maintenance activities; followup on licensee event reports (LERs); followup on IE Circulars; followup on operating events; staffing and organizational changes; and, witness of the annual medical emergency drill. The inspection involved 100 inspection hours onsite by the resident inspector.

Results: No violations were identified in the 10 areas inspected. One concern was identified regarding an improvement in the administrative controls for assuring that Technical Specification changes are incorporated into the Operational Surveillance Test Program - paragraph 6.

DETAILS

1. Persons Contacted

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

Vermont Yankee Nuclear Power Corporation

Mr. R. Branch, Assistant Operations Supervisor
Mr. F. Burger, Quality Assurance Coordinator
Mr. B. Buteau, Reactor and Computer Engineering Supervisor
Mr. J. Desilets, Operations Supervisor
Mr. W. Finnell, Assistant Maintenance Supervisor
Mr. J. Gardner, Chemistry Engineer
Mr. S. Jefferson, Operations Superintendent
Mr. B. Leach, Chemistry and Health Physics Supervisor
*Mr. R. Pagodin, Engineering Support Supervisor
*Mr. J. Pelletier, Plant Manager
Mr. D. Phillips, Senior Electrical Engineer
Mr. M. Prystupa, Chemistry Supervisor
Mr. T. Regan, Assessment Engineer
Mr. D. Reid, Technical Services Superintendent
Mr. D. Taylor, Assistant Maintenance Supervisor
Mr. T. Watson, Instrument and Control Engineer

*denotes those present at management meetings

2. Status of Previous Inspection Items

- a. (Closed) Violation 83-01-02: Compliance with AP 1500 Requirements During Fuel Receipt Inspections. The licensee responded to this item by letter FVY 83-63 dated June 23, 1983. Upon notification of the item, technicians involved in new fuel receipt inspections were orally re-instructed in the requirements of AP 1500. Additionally, the licensee plans to provide formal re-instruction on the AP 1500 requirements prior to its next use, and violation 83-01-02 will be covered as part of that re-instruction. The effectiveness of the licensee's actions will be reviewed during subsequent routine NRC inspections of fuel receipt activities. This item is closed.
- b. (Closed) Violation 83-01-03: Failure to Control Containment Boundary Valve Positions. The licensee responded to this item by letter FVY 83-63 dated June 23, 1983. The valving discrepancies were corrected upon notification by the inspector. The licensee also completed Appendix C of OP 2115 by January 29, 1983 and no further valve position discrepancies were identified. Operations personnel were reminded of the importance of maintaining correct system valve line-ups. The inspector confirmed completion of the licensee's actions for this item at the time the actions were taken. This item is closed.

- c. (Closed) Follow Item 83-14-05: Integrated ECCS Test Results. The completed test results from OP 4100 for the ECCS Automatic Initiation Test completed on May 31, 1983, were reviewed, and the inspector completed an independent evaluation of the test results. This review confirmed that all automatic system actuations functioned as required. The test results from OP 4100, together with the testing conducted by OP 4354 (see paragraph 6 below), demonstrated that the ECCS acutation logic and the load sequencing on the plant emergency buses are proper. No inadequacies were identified. This item is closed.
- d. (Open) Unresolved Item 82-23-08: Licensee Evaluation of Intake Icing. Plant Information Report (PIR) 83-02 documented the licensee's evaluation of the plant transient caused on December 18, 1982 when circulating water pumps tripped due to icing conditions in the intake structure. The evaluation identified the causes for the icing conditions, contained an analysis for the ensuing transient, and provided recommendations for followup and corrective actions. The followup actions included recommendations to: change OP 2180 to clarify when freeze protection actions should be initiated; initiate a preventive maintenance program for debris removal on the intake structure; re-evaluate the current method for pressurizing the fire system; investigate coordination with Vernon dam operators to maintain river level above the 216 foot elevation; and, investigate alternate means to improve service water bay de-icing. No further actions have been taken to improve service water bay de-icing.

The inspector noted during discussions with the Plant Manager at the exit interview that in the event of a loss of the intake structure due to icing, the ability to cool essential heat loads would be maintained through use of the alternate heat sink by using the RHRSW pumps with a water supply from the cooling tower deep basin. The inspector had no further comment regarding cooling of essential heat loads for the present. Further problems were experienced in maintaining the intake structure de-iced during this inspection period, as discussed in paragraph 10 below. This item remains open pending further NRC review of the implementation of the actions recommended by PIR 83-02.

3. Observations of Physical Security

The inspector verified during regular and offshift hours that selected aspects of plant security were in accordance with the physical security plan and approved procedures. This review included elements of the following security measures: guard staffing; implementation of access controls, including identification, authorization, badging, escorting, personnel and vehicle searches; physical barriers in the protected and vital areas were observed to verify integrity and the isolation zones were monitored; and, random observations of the secondary alarm station. The inspector also

verified the completion of compensatory measures for an access controlled area on November 8 and 11, 1983.

No violations were identified.

4. Shift Logs and Operating Records

a. Shift logs and operating records were reviewed to determine the status of the plant and changes in operational conditions since the last log review, and to verify that:

- Selected Technical Specification limits were met.
- Control Room log entries involving abnormal conditions provided sufficient detail to communicate equipment status, correction, and restoration.
- Operating logs and surveillance sheets were properly completed and log book reviews were conducted by the staff.
- Operating and Special Orders did not conflict with Technical Specification requirements.
- Jumpers (Bypasses) did not create discrepancies with Technical Specification requirements and jumpers were properly approved prior to installation.

b. The following plant logs and operating records were reviewed periodically during the period of November 1 - December 30, 1983:

- Shift Supervisor's Log
- Night Order Book Entries
- CR Information Log
- Jumper/Lifted Lead Log
- Control Room Operator Log
- Maintenance Request Log
- Switching Order Log
- Shift Turnover Checklists
- Discharge Records through Permit 1122
- Radiochemistry Analysis Log
- Plant Information Report 83-02
- RE Log Typer-Core Performance Log

No violations were identified.

5. Inspection Tours

Plant tours were conducted routinely during the inspection period to observe activities in progress and verify compliance with regulatory and administrative

requirements. Tours of accessible plant areas included the Control Room Building, Turbine Building, Reactor Building, Diesel Rooms, Intake Structure, Radwaste Building, Control Point Areas and the grounds within the Protected Area. Inspection reviews and findings completed during the tours were as described below.

a. Fluid Leaks and Piping Vibrations

Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibrations. Pipe hangers and restraints installed on various piping systems were observed for proper installation and condition.

No violations were identified.

b. Plant Housekeeping and Fire Prevention

Plant housekeeping conditions, including general cleanliness and storage of materials to prevent fire hazards were observed in all areas toured for conformance with AP 0042, Plant Fire Prevention, and AP 6024, Plant Housekeeping.

No violations were identified.

c. Containment Isolation

System valve lineups established to maintain containment integrity and isolation capability were reviewed on a sampling basis during inspection tours to verify conformance with the configuration specified by OP 2115. The review confirmed that manual valves were shut, capped and locked as required by procedure; power was available to motor operated valves and no physical obstructions would block operations; and, no leakage was evident from valves, penetrations and flanges.

No violations were identified.

d. Control Room Manning/Shift Turnover

Control Room staffing was reviewed for conformance with the requirements of the Technical Specifications, AP 0152, Shift Turnover and AP 0036, Shift Staffing. A shift turnover was observed on December 30, 1983, and was noted to be thorough and orderly.

No violations were identified.

e. Equipment Tagout and Controls

Tagging and controls of equipment released from service were reviewed during the inspection tours to verify equipment was controlled in

accordance with AP 0140, VY Local Control Switching Rule. Controls implemented per Switching Orders 83-1355 was reviewed on November 8, 1983, and no discrepancies were identified.

No violations were identified.

f. Feedwater Sparger Performance

The inspector routinely monitored the feedwater sparger leakage detection system data and reviewed the monthly summary of feedwater sparger performance provided by the licensee in accordance with his commitment to NRC:NRR made in letter 82-105. The licensee reported that, based on the leakage monitoring data reduced as of November 30, 1983, there were (1) no deviations in excess of 0.10 from the established constant (steady state) value of normalized temperature; and (2) no failures in the 16 thermocouples initially installed on the 4 feedwater nozzles.

No violations were identified.

g. Safeguard System Operability

Reviews of the Residual Heat Removal, Core Spray, Residual Heat Removal Service Water, Containment Air Dilution and the Control Rod Hydraulic Scram systems were conducted to verify that the systems were properly aligned and fully operational in the standby mode. Review of the above systems included the following:

- visual observation of the valve or remote position indication to verify that each accessible valve was correctly positioned.
- verification that accessible power supplies and electrical breakers were properly aligned for active components.
- visual inspection of major components for leakage, proper lubrication, cooling water supply, and general condition.

No violations were identified.

h. 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 AP 0503, Establishing and Posting Controlled Areas. Radiation work permits (RWPs) were reviewed to verify conformance with procedure AP 0502, Radiation Work Permits. The following RWP was reviewed: 83-1407. Radiation surveys were conducted

by the inspector during plant tours to confirm proper posting of radiological areas. Except for the items below, the inspector had no further comments in this area.

- (1) During a tour of the 280 foot elevation of the Reactor Building on November 1, 1983, the inspector found the 'A' Reactor Water Cleanup (RWCU) pump room door to be closed, but not locked at about 8:45 A.M. The room was unoccupied. The door is maintained locked closed during plant power operation to provide access control for the RWCU pump room, which is normally a high-high radiation area. The inspector immediately notified the Duty C+HP Assistant. The inspector subsequently conducted a radiation survey in the 'A' RWCU pump room in the presence of the licensee representative with a licensee RO-2A (#3763) survey instrument. The survey results showed general area dose rates ranging from 400 to 700 mRem/hr and a maximum dose rate on contact with RWCU system piping of about 900 mRem/hr. Thus, at the time of the survey, the 'A' RWCU pump room did not meet the criteria of a defined high-high radiation area (dose rates > 1000 mRem/hr) and the requirements of Technical Specification 6.5.B.1 to maintain the door locked were not applicable. The posting and barricading of the 'A' RWCU pump room was proper for a high radiation area.

The Duty C+HP Assistant determined that no work under an RWP had been authorized in the room and no high radiation area door keys had been signed out for the room. Thus, the room was probably last entered by an Auxiliary Operator during the course of routine operational rounds. Examination of the door showed that the latching bar had loosened from its wall mounting and excessive force was required to engage the lock when the door was closed. The latching bar was re-tightened by 9:30 A.M. to restore proper lock engagement. The Operations Supervisor made an entry in the November 1, 1983, Night Orders to instruct auxiliary operators to ensure doors are locked upon exiting from high radiation areas, and to report degraded door conditions observed during operational rounds to assure timely correction of problems.

The inspector had no further comment on this item at the present time. Implementation of high radiation area access controls will be examined during subsequent routine inspections.

No violations were identified.

- (2) The operational status of fixed and portable Health Physics survey instruments was reviewed on December 29, 1983, by confirming that instrument calibrations were current and that responses to battery

and source checks were proper for portable instruments. Fifty instruments at the health physics control point were checked and forty-nine were acceptable. Portable survey instrument VY 1344 was last calibrated in October, 1983, and was thus outside of its calibration period. This matter was discussed with the Duty Health Physics Assistant, who stated that the instrument would be submitted for calibration.

The inspector had no further comment in this area for the present. Calibration of health physics survey instruments will be reviewed during subsequent routine inspection tours.

No violations were identified.

i. Control Room Log and Panel Reviews

Operating logs and records were reviewed for indications of operational problems and anomalous conditions were reviewed further, as required. The operational status of standby emergency systems and equipment aligned to support routine plant operation was confirmed by direct review of control room panels. The following items were reviewed to verify adherence to Technical Specification Limiting Conditions for Operation (LCOs) and approved procedures.

- Switch and valve positions required to satisfy LCO's, where applicable, and personnel knowledge of recent changes to procedures, facility configuration and existing plant conditions.
- Acknowledged alarms were reviewed with on shift licensed personnel as to cause and corrective actions being taken, where applicable.
- Meter indications, recorder values, status lights, power available lights, front panel bypasses, computer printouts and comparison of redundant readings.

Except for the items below, the inspector had no further comments in this area.

- (1) During routine surveillance testing at 50% full power on November 5, 1983, all main steam isolation valves (MSIVs) tested satisfactorily for closure time, except the outboard valve on the 'A' steam line, MSIV 86A. The valve closed in 2.6 seconds during the test, which was less than the 3 seconds required by the Technical Specifications. The control operator declared the valve inoperable at 9:10 A.M. and closed the inboard valve, MSIV 80A. Subsequent investigation by maintenance personnel identified a small oil leak on the valve actuator speed

controller. The leak was repaired and valve speed was adjusted to be within the range of 3 to 5 seconds. Operations personnel subsequently tested the valve satisfactorily at 4.2 seconds in accordance with OP 4113. MSIV 86A was declared operable at 12:55 P.M. on November 5, 1983 and the 'A' main steam line was returned to service.

The inspector interviewed maintenance personnel and reviewed Vendor Drawing EI-SA-A047C for the Model SA-A063 valve actuator. Maintenance personnel found that the leak was caused by a missing plug on a bleed port in the upper valve control block (dashpot assembly). The plug was found beneath the valve on November 5, 1983 and apparently had become loose during normal operation of the valve. The plug was replaced.

No violations were identified.

- (2) The recirculation weld leakage detection system (LDS) remained in a partially operable status during the inspection period, and, for about a one-week period in November, all detectors were functional. The system was energized periodically to check the status of the detectors. No indications of recirculation system leakage was detected. Starting in December, 1983, plant operators increased the frequency of LDS checks to twice per week.

No violations were identified.

- (3) Plant operators completed testing of the HPCI system at 9:00 A.M. on November 16, 1983, in preparation for removing the RCIC system from service. The RCIC system was declared inoperable and removed from service at 10:00 A.M. Following an unsuccessful search for an electrical ground in the RCIC alternate shutdown control circuitry, the RCIC system was returned to service for operability testing at 5:10 P.M. While shutting down the system following testing, the pump discharge valve motor supply breaker tripped open at 5:20 P.M. Upon investigation, the operators noted a burning odor coming from the supply breaker on MCC DC 2B and the valve was left de-energized. Maintenance personnel determined that a short occurred in the valve motor armature and preparations were made to make an entry into the steam tunnel to complete repairs. The RCIC V13-20 motor was subsequently replaced.

During HPCI system testing on November 17, 1983, position indication was lost at 6:55 P.M. on the HPCI pump discharge valve, V23-20, which rendered the HPCI system inoperable. Plant operators declared an Unusual Event in accordance with OP 3125 and a plant shutdown from 95% FP was commenced to comply with the Technical Specification 3.5.E requirements to be in cold shutdown within 24 hours. However, the valve motor breaker on

MCC DC 1B had not tripped open and subsequent review by the licensee determined that the position indication had been lost due to a limit switch malfunction. The limit switch was repaired, the HPCI system was declared operable following testing at 9:40 P.M., and the Unusual Event was terminated at 10:00 P.M. The RCIC system was returned to an operable status at 3:55 P.M. on November 18, 1983.

No violations were identified.

- (4) During a functional test of the RCIC steam line high flow instrument per OP 4364 on December 13, 1983, I&C personnel found that time delay relay 13A-K31 did not energize within 5 seconds as required by Technical Specification Table 3.2.2. Relay 13A-K31 is a component in the 13-84 instrument channel. Upon review of the Technical Specifications, plant operators determined that one of two instrument channels was still operable, and thus, the RCIC system was operable. Following alternate testing on the HPCI system on December 14, 1983, the RCIC system was declared inoperable and taken out of service to replace the K31 relay. The RCIC system was returned to service at 2:00 P.M. on December 14, 1983, following repair of the relay and operability testing.

On December 16, 1983, the inspector reviewed Technical Specification 3.2, OP 4364 and Drawing B191301, Sheets 1179 and 1180. This review verified that the operability requirements for the RCIC high steam flow trip system are satisfied by having trip system logic input from either instrument channel 13-83 or 13-84.

No violations were identified.

- (5) During routine operations at full power on December 19, 1983, intermittent faults in the motor generator (MG) set control circuitry caused decreasing flow spikes in the 'B' recirculation loop. The spikes occurred about once every 15 minutes and would cause recirculation flow to vary within the range from 31.5 to 25.5 KGPM. The oscillations became intermittent over a period of several hours. Subsequent investigation by I&C personnel determined that the problem was due to faulty operation of relay 2A K4B, in the feedwater flow monitoring circuitry (reference Drawing 5920-1449, Sheets 719 and 725). The relay was replaced on December 20, 1983, and no further problems were experienced in recirculation flow control.

No violations were identified.

- (6) During routine power operations on December 20, 1983, plant operators observed a high voltage of 545 VAC on 480V Bus 89A. Following investigation by maintenance personnel and operability testing of valves V10-25A and V10-27A, the 1A uninterruptible power supply (UPS) was declared operable in a degraded mode, and alternate system testing was initiated to allow removal of the system for repairs. The unit was released for maintenance on December 21, 1983. Repairs were completed in accordance with Maintenance Request 83-2281 to replace several faulty electronic components in the inverter circuitry. The 1A UPS was returned to service following operability testing on December 22, 1983. The inspector verified that alternate system testing was completed as required by Technical Specifications 4.10.4 and 4.5.A.4 during the period that the UPS was out of service.

No violations were identified.

j. Analyses of Process Liquids and Gases

Analysis results from samples of process liquids and gases were reviewed periodically during the inspection to verify conformance with regulatory requirements. The results of isotopic analyses of radwaste, reactor coolant, off-gas and stack samples recorded in shift logs and the Plant Daily Status Report were reviewed to verify that Technical Specification limits were not exceeded and that no adverse trends were apparent. Boron analysis results reported for the Standby Liquid Control System on December 20, 1983, were reviewed. The item below warranted inspector followup.

Routine radiochemistry analysis of reactor coolant had shown an increasing trend in gross activity at the start of the reporting period. Gross activity of an unfiltered sample increased from a nominal value of about 75,000 counts per minute (cpm) to values over 120,000 cpm. A spike increase to 140,000 cpm was measured on November 5, 1983. There was no corresponding increase in the reactor coolant total iodine activity, or in offgas release rates, which have remained at the normal background values for full power operation of about 9×10^{-3} $\mu\text{Ci/ml}$ and 750 $\mu\text{Ci/sec}$, respectively. Thus, the above results indicated that no fuel failures have occurred. The licensee noted a corresponding increase in reactor corrosion products (Mn-54, Mn-56, Fe-59, Na-24 and Cu-64) when gross activity increased. The reactor coolant gross activity level decreased to about 90,000 cpm by the end of the reporting period and was on a decreasing trend.

The licensee postulated that a new 'equilibrium' gross activity level was being established due to a change in the rate of corrosion product deposition on the reactor coolant system internal components,

possibly as a result of the reactor vessel decontamination operations completed during the last outage. No adverse conditions were identified as a result of the elevated activity levels. This area will be reviewed further during subsequent routine inspections of RCS chemistry.

No violations were identified.

k. Jumpers and Lifted Leads (J/LL)

Implementation of the following J/LL Requests was reviewed to verify that controls established by AP 0020 were met, no conflicts with the Technical Specifications were created and installation/removal was in accordance with the requests: J/LL Request Nos. 83-246 through 83-263. The item below warranted inspector followup.

- (1) On October 3, 1983, operators noted that DWEDS pump P-15-1A was running without pumping water and the pump was declared inoperable. The alternate DWEDS pump, the flow integrator and associated leakage alarms, and the drywell floor drain sump pumps remained operable. Since the capability to measure 'identified' leakage into the DWEDS sump was provided by the redundant operable DWEDS pump, the drywell sump measurement system as defined in Technical Specification 3.6.C was operable and entry into the Technical Specification 3.6.C.2 action statement was not required. The licensee plans to repair pump P-15-1A at the next refueling shutdown. Region I Inspection Report 50-271/83-29 describes previous NRC review of this item.

J/LL Request 83-246 was implemented on November 8, 1983, to remove the auto start signal from drywell equipment drain sump (DWEDS) pump P-15-1A and reconnect it on pump P-15-1B. This wiring configuration would cause the 1B pump to start on all 'high' level signals from the DWEDS rather than waiting for the 'high-high' level alarm on alternate pump downs of the sump. The request was implemented because needless alarms would occur each time the alternate pump selection logic would 'select' the inoperable 1A pump to drain the DWEDS when the high level point was reached. The inspector reviewed the actions taken to implement the request and noted that a safety evaluation was completed as required by AP 0020. No inadequacies were identified in regard to the conclusions reached by the safety evaluation, or, in regard to implementation of the request.

No violations were identified.

1. SGTS Operability

During an inspection tour of the Reactor Building on December 29, 1983, the inspector noted that workers were painting the 280 foot elevation floor adjacent to the standby gas treatment system (SGTS). The SGTS fans were not operating at the time. Personnel were interviewed and operating records were reviewed to determine whether the fans were operated while painting was in progress in the building, and, if so, whether the testing required by Technical Specification 4.7.B.2 had been completed. It was noted that painting had been completed on various days during the weeks of December 19th and 27th, and, that SGTS operability testing had been conducted during the same period. The paint used by the licensee was a water-based epoxy paint.

Testing of both trains of SGTS was completed on December 19, 1983, in accordance with OP 4117.01. The Plant Chemist was cognizant of the work on the 19th and requested that painting be suspended while the fans were in operation. Painting activities continued on various days over the next week. The next SGTS operability test was completed from 5:00 to 5:20 P.M. on December 27, 1983, in accordance with OP 4116.01. The tests were conducted apparently without consideration for the painting that was completed during the day shift up until about 3:00 P.M. The inspector met with the Operations Supervisor and the Plant Chemist on December 29, 1983, to request that they address whether the SGTS trains were adversely affected by the painting activities on December 27, 1983. Based on a preliminary evaluation of the activities on that day, the Chemist concluded that no adverse effects would be expected. A written evaluation would be made available for inspector review on December 30, 1983.

The inspector reviewed the licensee's written evaluation dated December 30, 1983, and noted that the licensee demonstrated by calculation that a maximum of 0.45 micro-gram of epoxy solvent could have been deposited per gram of charcoal in the SGTS trains as a result of the activities on December 27, 1983. The calculation was performed using information supplied by the paint vendor (obtained from Keeler & Long Technical Bulletin No. 14A dated May, 1981), and accounted for the amount of epoxy used, its drying time and the amount of paint volatilized to the building atmosphere. No inadequacies were identified in regard to the calculation. The inspector noted that the results from the 'A' train charcoal efficiency test scheduled for performance during the week of January 2, 1984, would verify the licensee's conclusions. This item is considered open pending NRC review of the next charcoal efficiency test on the A SGTS (IFI 50-271/83-31-01).

This item was discussed with the Plant Manager during the exit interview on January 9, 1984. The inspector stated that it appeared from

his assessment that communications between maintenance and operations personnel could have been better for the activities on December 27, 1983. The licensee noted the inspector's comments.

No violations were identified.

m. Single Recirculation Loop Testing

The licensee prepared Special Test Procedure (STP) 83-04 to specify the data to be taken during single recirculation loop operation. Testing consisted of reducing reactor power by decreasing recirculation pump speed to 70% on both pumps and then shutting down the B pump. Test data was collected with the A recirculation pump speed at 70%, 50%, 35% and 23%. The test was performed on December 17, 1983, to collect the data required to generate a revised drive flow/core flow curve for single pump operation. Information obtained from the test is expected to be used during a future license amendment proposal.

The inspector reviewed STP 83-04 on December 16, 1983, for conformance with Technical Specification 3.6.G.1 and License requirements. Technical Specification 3.6.G.1 allows single loop operation for periods up to 24 hours. Section 2.0 of STP 83-04 provided the licensee's safety evaluation and the basis for his conclusion that performance of the test would not create an unreviewed safety question. The Plant Operations Review Committee reviewed the procedure on December 16, 1983, and accepted it for performance as written. No inadequacies were identified. The inspector had minor comments on STP 83-04, which were discussed with the Reactor Engineering and Computer Supervisor on December 16, 1983.

No violations were identified.

6. Surveillance Test Program

a. Surveillance Program Review

A special inspection of the Operational Surveillance Test Program (OST) was conducted to verify controls were established to assure that all surveillance tests required by the Technical Specifications were performed; the OST program is revised as required when surveillance requirements are changed by amendments to the Technical Specifications; and, all required surveillance tests are performed on time. All Technical Specification changes from Amendment No. 57 (dated August 22, 1980) through Amendment No. 79 (dated May 2, 1983) were reviewed to identify those changes which affected the OST program. The controls established by the licensee's OST program were determined based on a review of AP 4000, Surveillance Testing Control, and based on an interview with the Surveillance Test Coordinator (STC), who has responsibility for implementation of certain of the AP 4000 requirements. Surveillance test activities reviewed as part of this inspection are identified in paragraph 6.b below. The observations and conclusions listed below resulted from this review.

- (1) Technical Specification Amendment Nos. 58, 61, 63, 68, 70, 73 and 76 resulted in changes in surveillance requirements that affected the OST program. The changes effected by each amendment were reviewed in detail with the STC to verify that the OST program or schedule were updated, as required. Procedure changes necessitated by instrument setpoint and core limit changes effected by Amendments 68 and 70 were reviewed on previous NRC inspections (reference: NRC Region I Inspection Reports 50-271/83-29 and 81-19). Based on the above reviews, it was determined that technical specification changes were correctly incorporated into the facility procedures and implemented.
- (2) The licensee has established a systematic method in AP 4000 to assure that all technical specification surveillance items are implemented and completed in accordance with the established test frequencies. The STC maintains a Master Surveillance List which cross references each technical specification surveillance requirement with the plant procedure that covers the item. The master list also identifies the responsible implementing departments and the required test interval. A Surveillance Schedule is developed from the master list and is distributed monthly to responsible plant departments for implementation. The STC is then responsible for independently verifying that testing was completed in accordance with the schedule. The set-up and maintenance of the OST scheduling function was reviewed during a meeting with the STC on November 23, 1983. This review determined that the requirements of AP 4000 have been effectively established and implemented.

A method has also been established to assure that technical specification changes are incorporated into plant surveillance procedures. The STC maintains Controlled Copy No. 14 of the Technical Specifications. Upon receipt of each technical specification amendment, the STC reviews the change for impact on the OST program and procedure changes are made as required. However, this review function is completed informally and is not addressed by AP 4000.

Based on the review discussed in paragraph 6.1.(1) above, it was apparent that the informal method of incorporating technical specification surveillance changes into the OST program has been effective. However, this review function should be incorporated into a plant procedure to provide positive assurance that the review will be completed. This item was discussed with the Plant Manager on January 9, 1984. The Plant Manager noted

the inspector's remarks and stated that the matter would be reviewed. This item is unresolved pending revision of plant procedures to incorporate the appropriate administrative controls, and subsequent review by the NRC (IJNR 50-271/83-31-02).

b. Surveillance Activities

The inspector reviewed portions of the following tests to verify that testing was performed by qualified personnel; test methodologies were technically correct, test data demonstrated conformance with Technical Specification requirements; and, system restoration to service was proper.

- OP 4126, Diesel Generator A/B Operational Readiness Demonstration, November 8, 1983.
- AP 4113, MSIV Quarterly Stroke Time Surveillance, November 7, 1983
- OP 4364, RCIC Steam Line High Flow Test, December 13, 1983
- OP 4100, ECCS Integrated Automatic Initiation Test, May 31, 1983
- OP 4354, RHR Subsystem A/B Logic Test, November 23, 1983

No violations were identified.

7. Maintenance Activities

The maintenance request log was reviewed to determine the scope and nature of work done on safety related equipment. The review confirmed: the repair of safety related equipment received priority attention; Technical Specification limiting conditions for operation (LCOs) were met while components were out of service; and, performance of alternate safety related systems was not impaired.

Maintenance activity associated with the following was reviewed to verify (where applicable) procedure compliance and equipment return to service, including operability testing.

- MR 83-1929, Core Spray Valve 7B Breaker Trip Setting
- MR 83-2091, MSIV 86A Fast Closure Time
- MR 83-2146, RCIC Pump Discharge Valve V13-20
- MR 83-2148, HPCI Pump Discharge Valve V23-20

No violations were identified.

8. Review of Licensee Event Reports (LERs)

The licensee event reports (LERs) listed below were reviewed in the NRC Resident/Regional Office. The reports were reviewed to determine whether: the information provided was clear in the description of the event and identification of safety significance; the event cause was identified and corrective actions taken (or planned) were appropriate; and, the report satisfied the requirements of Technical Specification 6.7. Those reports annotated with an asterisk (*) concern events that required inspector followup action and inspector review/evaluation of the event is documented elsewhere, in this or other inspection reports.

- *+ LER 83-28/3L, RHR Pump 1D Inoperable Due to Suspected Motor Fire, November 14, 1983
- + LER 83-29/3L, Quarterly Stack Gas Strontium Analysis Incomplete, December 6, 1983
- *+ LER 83-30/3L, MSIV 86A Fast Closure Time, December 2, 1983
- + LER 83-31/3L, Safety Relief Valve Setpoint Drift, December 2, 1983
- *+ LER 83-32/1P, Concurrent Loss of HPCI and RCIC Systems, November 18, 1983
- + LER 83-33/3L, Main Steamline 'C' Radiation Trip Setpoint Greater Than 3X Normal, December 19, 1983

No violations were identified.

9. IE Circular Review and Followup

Licensee responses and actions taken for the IE Circulars listed below were reviewed to verify that:

- the circulars were received onsite and reviewed for applicability to the facility;
- action items, if applicable, and identified problems were appropriately dispositioned; and,
- corrective actions taken, or planned, were appropriate.

Inspector review of licensee actions is summarized below.

a. IEC 80-03, Protection From Toxic Gas Hazards

This circular provided recommendations for licensee's to review their facility designs against the criteria of NUREG 75/087 with respect

to protection from toxic gases. Engineering Service Request OPVY 80/8 was closed by plant management on March 18, 1981, on the basis that the concerns raised by the circular would be addressed by the licensee's response to NUREG 0737, Item III.D.3.4, Control Room Habitability. The licensee provided this protection to the control room by installing the Toxic Gas Monitoring System (TGMS) and the Control Room Emergency Breathing Air System (CREBAS) under design changes EDCR 82-33 and 82-38, respectively. The systems were made operational on September 30, 1983.

The inspector completed a partial review of the EDCR 82-33 and 82-38 design change packages. The TGMS monitors the control room outside air intake for the presence of vinyl chloride, ammonia, chlorine, carbon dioxide and methanol. Upon detection of hazardous levels of these gases, the TGMS will isolate the control room ventilation system and place it in the recirculation mode of operation, and, initiate the CREBAS. Activation of the CREBAS will pressurize the main control room for several minutes, which will provide the control room operators with sufficient time to put on self contained breathing apparatus. Six portable breathing units are maintained in the control room for the basic shift compliment of three operators.

The inspector had no further comment on this item at the present time. This area will be reviewed further as part of the NRC staff review of the implementation of NUREG 0737 Item II.D.3.4.

No violations were identified.

b. IEC 80-11, Diesel Generator Lube Oil Cooler Failures

Licensee actions on this item were summarized in a Maintenance Department memorandum dated July 10, 1980. The licensee's review indicated that there were no corrosion problems associated with the emergency diesel generator lube oil coolers.

No violations were identified.

10. Review of Plant Evolutions and Events

The inspector reviewed 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 approved operational limits;

- description of event, including cause, systems involved, safety significance, facility status and status of engineered safety feature systems;
- verification of proper manual actions by plant personnel and verification of adherence to approved plant procedures; and,
- verification that notifications were made to the NRC and offsite agencies in accordance with 10 CFR 50.72 and NUREG 0654, as applicable.

Items reviewed during this period included sulfuric acid spills on November 20 and 22, 1983, and, icing conditions on the intake structure on December 20, 1983.

a. Acid Spills

As part of a planned evolution to remove sludge from the Makeup Demineralizer System Acid Tank, slurry from the tank was transferred to a tanker truck for discharge to the Connecticut River. The tanker truck was parked at the intake structure and set up to discharge acid into the intake bay at a 2 gpm rate during the evening of November 19, 1983. The discharge rate was selected to allow sufficient dilution of the 0.53 pH slurry to assure plant discharge pH limits would not be exceeded. Plant operators noted a leak on the hose connection from the truck to the intake bay at 4:30 A.M. on November 20, 1983, and the discharge was terminated.

The licensee's subsequent review of the event determined that a volume much less than 50 gallons of the undiluted slurry leaked onto the ground near the intake structure and none of the leakage went to the Connecticut River.

During subsequent operations to transfer additional residue from the acid tank to the tanker truck on November 22, 1983, about 50 gallons of the slurry overflowed from the tanker truck while it was parked in the Turbine Building loading bay. The inspector observed licensee activities to contain and cleanup the spill at 3:00 P.M. on November 22, 1983.

The inspector determined based on interviews with licensee personnel that the discharged slurry did not contain radioactive material in either of the spills.

No violations were identified.

b. Intake Icing

During routine operations at full power on December 20, 1983, icing conditions at the intake structure resulted in a decreasing level

in the circulating water outer bay. The low levels caused plant operators to reduce plant load to maintain condenser vacuum conditions and to stabilize the plant until additional de-icing flow could be established for the intake bays. The plant cooling towers were placed on line to increase the level of flow through the recirculation line and to increase the de-icing flow to the circulating water and service water bays. The plant operated at reduced loads from 9:00 P.M. on December 20, 1983 until about 6:00 A.M. on December 21, 1983. The intake structure was sufficiently de-iced to allow a resumption of the normal cooling mode on December 21, 1983.

The inspector reviewed the event with the Operations and Maintenance Supervisors. The licensee found that a combination of ice and river debris had clogged the intake gates below the river water line, which created a dam that allowed intake level to drop below the river level. The debris was cleared from the intake gates on December 21, 1983.

The inspector had no further comments on this item at the present time. Inspection item 82-23-08 is open pending completion of a review of the licensee's procedures and preparations for cold weather operations (see paragraph 2.d above).

No violations were identified.

11. Plant Staffing and Organizational Changes

The licensee announced the following staffing and organizational changes during the inspection period:

- + the position of Assistant to the Plant Manager was created and assigned responsibility for outage planning, emergency drill coordination, and other tasks as directed by the Plant Manager. Mr. S. Jefferson assumed this position as of December 19, 1983.
- + Mr. D. Reid assumed the position of Operations Superintendent as of December 19, 1983. In addition to the Operations and Chemistry and Health Physics Departments, the Administrative Department would also temporarily report to the Operations Superintendent.
- + the position of Technical Services Superintendent was temporarily vacated and during the intervening two week period until the position was filled, the Reactor Engineering Department would report to the Operations Superintendent and the Engineering Support Department would report to the Maintenance Superintendent.
- + the resignation of a shift engineer on October 28, 1983, left 4 full time personnel in the position and created a temporary shortage

of qualified, full time personnel to man the existing shift schedule. Four persons hired for the shift engineer position are attending a 12 week training program that is scheduled to be completed by the middle of February, 1984. A group comprised of 5 of the original Shift Technical Advisors will be integrated into the Shift Engineer schedule as required to provide the necessary coverage until February.

The inspector reviewed the above changes and identified no conflicts with the Technical Specifications. Licensee staffing and personnel qualifications will be reviewed further during a subsequent routine inspection.

No violations were identified.

12. Annual Emergency Medical Drill

The licensee conducted a medical emergency drill on November 3, 1983, which involved the treatment of a simulated contaminated, injured person onsite and then transport of the 'victim' to an offsite medical facility for emergency health care. A local ambulance company, Rescue, Inc., and the Brattleboro Memorial Hospital participated in the drill. Drill observers included several medical consultants and representatives from the licensee's and the Vermont State Health Department staffs. The inspector witnessed drill activities conducted at the Vermont Yankee site. The inspector's review of the drill included consideration of the following items:

- verification that the drill was conducted in accordance with the pre-established scenario and that the licensee demonstrated the capability to identify deficiencies and improvement items through his self-critique of the exercise.
- verification that response activities were in accordance with OP 3508, On-Site Medical Emergency Procedure, and that response personnel were familiar with established procedures and equipment.
- verification that appropriate health physics controls were maintained for the victim and emergency responders; and, verification that appropriate security controls were maintained for responders from the offsite agencies.
- verification of proper control of response activities at the scene of the accident and communication of response actions to the control room.

In general, the licensee demonstrated the capability to render the appropriate immediate first aid to an accident victim, with the proper regard for health physics and security controls. Comments and observations by the controllers stationed in the plant and the control room were reviewed. Several

'improvement items' identified by the inspector were also identified by the licensee controllers. One item in particular concerned the need for emergency responders at the scene of the accident to better communicate the victim's condition, status and location to control room personnel, who in-turn will inform the hospital.

No violations were identified.

13. Unresolved Items

Unresolved items are items for which further information is required to determine whether the items are acceptable or violations. Unresolved items are discussed in paragraph 6 of this report.

14. Management Meetings

During the period of the inspection, licensee management was periodically notified of the preliminary findings by the resident inspector. A summary was also provided at the conclusion of the inspection and prior to report issuance. At no time during this inspection was written material provided to the licensee by the inspector.