

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

Region I

Report No. 81-02  
 Docket No. 50-271  
 License No. DPR - 28 Priority -- Category C  
 Licensee: Yankee Atomic Electric Company  
1671 Worcester Road  
Framingham, Massachusetts 01701

TERA	
50-271/800214	80-03-01
50-271/801121	IEB 80-24
50-271/801114	IEB 80-23
50-271/801106	IEB 80-21
50-271/810126	URI 81-02-02
50-271/801130	LER 80-40
50-271/800908	LER 80-28
50-271/800630	LER 80-21
50-271/800707	LER 80-21
50-271/800107	LER 80-03
50-271/800617	LER 80-20
50-271/800424	LER 80-17
50-271/800307	LER 80-10
50-271/801205	T/I2515/46
50-271/801218	T/I2515/47

Facility Name: Vermont Yankee  
 Inspection at: Vernon, Vermont

Inspection conducted: January 2 - January 30, 1981

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

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Approved by: Robert M. Gallo  
 R. M. Gallo, Chief Reactor Projects  
 Section 1A, Projects Branch #1

3/18/81  
 date signed

Inspection Summary:  
Inspection On January 2 - January 30, 1981 (Report No. 50-271/81-02)  
Areas Inspected: Routine unannounced inspection on regular and backshifts by Resident Inspectors of: action taken on previous inspection findings; IE Bulletin followup; review of shift logs and operating records; plant tours; surveillance testing; operational safety verification; maintenance activities; followup of events; in-office review of licensee event reports; review of periodic and special reports, observation of physical security; and inspector actions based on T/I 2515/47, Inspection Requirements to Review Licensee Actions in Response to IE Bulletin No. 80-24, T/I 2515/46, Survey to Determine Existence of Adequate Emergency Procedures for Coping with ATWS Events at Operating Power Reactors, and IE HQ Request for Licensee Status of TMI-2 Action Plan Item implementation. The inspection involved 98 hours onsite by two resident inspectors.  
Results: Within the areas inspected no items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

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

Mr. R. Branch, Assistant Operations Supervisor  
Mr. P. Donnelly, Instrument and Control Supervisor  
Mr. L. Goldthwaite, Instrument and Control Foreman  
Mr. S. Jefferson, Reactor Engineering Supervisor  
Mr. R. Kenny, Technical Assistant  
Mr. M. Lyster, Operations Supervisor  
\*Mr. W. Murphy, Plant Superintendent  
\*Mr. J. Pelletier, Assistant Plant Superintendent  
Mr. W. Penniman, Security Supervisor  
Mr. D. Reid, Engineering Support Supervisor  
Mr. S. Vekasy, Technical Assistant  
Mr. G. Weyman, Chemistry and Health Physics Supervisor  
Mr. W. Whittmer, Maintenance 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 Contractor and General Office staff.

(\*denotes those present at management meetings held periodically during the inspection)

### 2. Action Taken on Previous Inspection Findings

(Closed) Noncompliance (50-271/80-03-01): Licensee delivered package of LSA radioactive waste to a carrier for transportation with a radiation dose rate from its surface exceeding 200 millirem per hour. In response to the subject item of noncompliance, the licensee stated in letter VY-5675, dated May 27, 1980, that the Vermont Yankee Administrative Procedure AP 0504 covering shipment of radioactive waste had been revised to require surveys of all areas of shipment. In addition, the licensee reported the procedure was revised to clarify the instructions necessary to maintain exclusive use shipment controls. The licensee stated that full compliance was achieved by February 15, 1980.

The inspector reviewed Chem and H.P. Department Instruction (DI) 80-1, dated February 15, 1980. Subject DI incorporated changes to AP 0504, Shipment and Receipt of Radioactive Materials, in that additional surveys underneath the Exclusive use Shipment were required and a Note was added to VYAPF 0504.02, (VYNPS Radioactive Shipment Record, Exclusive Use Radioactive Material Shipment, Truck Survey), requiring that the carrier not permit loading, unloading, or rearranging of the cargo or changing of the tractor or fifth wheel movement without prior permission from the licensee. The inspector had no further questions in this area. This item is considered closed.

3. 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 reviews, 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 that corrective action taken by the licensee was as described in the written response. The following bulletins were reviewed:

- (a) IEB 80-24, Prevention of Damage Due to Water Leakage Inside Containment, dated November 21, 1980

The inspector reviewed licensee response FVY 81-1, dated December 31, 1980, and verified that subject IEB requirements have been addressed. Further followup in this area was conducted in conjunction with performance of T/I 2515/47, see section 13.b. of this report.

No inadequacies were identified.

- (b) IEB 80-23, Failure of Solenoid Valves Manufactured by Valcor Engineering Corporation, dated November 14, 1980

The inspector reviewed licensee response WVY 80-169 dated December 11, 1980. The inspector verified that subject IEB requirements have been completed in that the licensee reported that Vermont Yankee does not utilize Valcor Engineering Corporation solenoid valves having part numbers V709000-21-1 or V90900-21-3 in any safety related systems or for any safety related function.

No inadequacies were identified.

- (c) IEB 80-21, Valve Yokes Supplied by Malcom Foundary Company, Inc., dated November 6, 1980

The inspector reviewed licensee response WVY 80-168, dated December 5, 1980. The inspector verified that subject IEB requirements have been completed in that the licensee reported that Vermont Yankee does not use or plan to use valve parts cast by Malcom Foundary Company, Inc. in any safety related system.

No inadequacies were identified.

#### 4. Shift Logs and Operating Records

- a. The inspector utilized 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, Revision 6, dated September 25, 1979.
- AP 0150, Responsibility and Authority of Operations Department Personnel, Revision 14, dated December 19, 1980.
- AP 0153, Maintenance of Operations Department Logs, Revision 8, dated December 31, 1979.
- AP 0140, VY Local Control Switching Rules, Revision 4, dated December 19, 1980.
- AP 0020, Lifted Lead/Installed Jumper Request Procedure, Revision 4, dated October 16, 1980.
- AP 0021, Maintenance Requests, Revision 9, dated September 25, 1980.
- AP 0154, Control Room Night Order Book, Revision 5, dated January 7, 1980.
- AP 0030, Plant Operations Review Committee, Revision 6, dated January 7, 1980.

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 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.
- 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 prior to installation.
- c. The following plant logs and operating records were reviewed:
- Shift Supervisor's Control Room Log: January 2-January 30, 1981.
  - Night Order Book Entries: January 2-January 30, 1981.
  - Control Room Operator Round Sheet: Periodic reviews during inspection period.
  - Manager of Operations Directives: 80-01, Policy on Material Purchase Requests for Calibration Services (Revision 1), dated February 29, 1980. 80-02, Change in RPS Delay Time, dated March 12, 1980.
  - Plant Information Reports: 79-01, Repeated Wiping of #5 and #6 Main Turbine Bearings, dated May 9, 1979. 80-01, Hydrogen Recombination before AOG recombiners, dated June 25, 1980.

No items of noncompliance were identified.

## 5. Plant Tour

The inspector conducted a tour of accessible areas of the plant including the Control Room Building, Turbine Building, Reactor Building, Diesel Rooms, Intake Structure, Security Gate Houses 1, 2 and Alarm Stations, and Control Point Areas.

### a. Monitoring Control Room Panels

Routinely during the inspection period, the inspectors conducted reviews of the control room panels. The following items were reviewed to determine the licensee's adherence to Licensee Technical Specification - Limiting Conditions for Operation and to verify the licensee's adherence to approved procedures.

- Switch and valve positions required to satisfy LCO's, where applicable.

- Alarms or absence of alarms. Acknowledged alarms were reviewed with on shift licensed personnel as to cause and corrective actions being taken where applicable.
- Review of "pulled alarm cards" with on shift personnel.
- Meter indications and recorder values.
- Status lights and power available lights.
- Front panel bypasses.
- Computer printouts.
- Comparison of redundant readings.

No items of noncompliance 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 AP 0503, Establishing and Posting Controlled Areas, OP 4530, Dose Rate Radiation Surveys and OP 4531, Radioactive Contamination Surveys.

Confirmatory surveys were conducted in the following areas to verify licensee posted results:

- HPCI Room, Floor Elevation 213'.

The inspector noted a High Radiation Area setup in the Northeast corner of the HPCI room. Posting indicated the area was utilized for storage during the refueling outage; at the time of the inspection the area was empty. The observation was noted to Control Point Health Physics personnel who indicated that the area would be surveyed and removed.

The following Radiation Work Permits were reviewed by the inspector to verify conformance with licensee procedure AP 0502, Radiation Work Permits:

- 31 No. 00093, A0'S Rounds, dated January 23, 1981
- 81 No. 00092, General Entry to Cask Room, dated January 23, 1981

- 81 No. 00091, Compact Trash, dated January 23, 1981
- 81 No. 00072, AO Access to NRHX Room, dated January 19, 1981
- 81 No. 00073, AO Access to RCU Demin. Piping, dated January 19, 1981
- 81 No. 00071, AO Access to RCU A and B Pump Rooms, dated January 19, 1981
- 81 No. 00140, Repair RCU Pump, dated January 28, 1981
- 81 No. 00103, Remove Blade Guides from SFP, dated January 28, 1981
- 81 No. 00106, Insp. FP Heat Exch. Room for RCU Pipe, dated January 28, 1981
- 81 No. 00105, Decon. Pump Parts (RCU), dated January 28, 1981

Except as noted below, the inspector had no further questions in this area.

During the inspector review of the above RWP's, it was noted that Radiation Work Permits Nos. 00072, 00073, and 00071 contained the names of two Auxiliary Operators who had signed in on the subject RWP's but had not recorded the time or dosimeter readings in and out of the work area. Since the subject RWP's required signing both in and out, this did not appear consistent with AP 0502 requirements. The inspector noted his finding to Health Physics control point personnel who indicated they would contact the Auxiliary Operators to determine if they had in fact performed work in accordance with the subject RWP's. Following discussions with Health Physics personnel, it was determined that the individuals had inadvertently signed in on the subject RWP's when reviewing the weekly posted RWP's which authorize routine A.O. actions and require initial signing only. The licensee determined that the individuals had not entered the work areas authorized by RWP's Nos. 00072, 00073 and 00071, their names were deleted from the subject RWP's and they have been reinstructed in the requirements of AP 0502.

c. Plant Housekeeping and Fire Prevention

Plant housekeeping conditions, including general clearliness 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 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

During routine tours of the plant, pipe hangers and restraints installed on various piping systems were observed for proper installation, tension, and condition.

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), Technical Specifications, AP 0152, Shift Turnover, AP 0150, Responsibility and Authority of Operations Department Personnel and AP 0036, Shift Staffing. The inspector verified, 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 items of noncompliance were identified.

6. Surveillance Testing

The inspector reviewed the following surveillance test 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, that any deficiencies identified during the testing were properly reviewed and resolved by management personnel, and that activities were in compliance with AP 4000, Surveillance Testing Control.

OP 4386, Liquid Process Radiation Monitor System Calibration, Revision 7, dated April 16, 1980. The inspector reviewed instrument No. 17-350, Radwaste Water Effluent, calibration data as recorded on VYOPF 4386.01 for the following dates: April 7-8, 1980, July 8, 1980, October 7, 1980 and January 6, 1981. The inspector noted that the calibration attempt of January 6 resulted in replacement of the effluent monitor detector and crystal, and recalibration of the instrument. The inspector verified



by review of OP 2610, (Liquid Waste Disposal, Revision 7, dated November 13, 1980), discharge permits for the period of October 7, 1980 to January 7, 1981, that the licensee had not performed an effluent discharge to the Connecticut River utilizing instrument No. 17-350. The inspector also noted that OP 2610 requires sampling of the effluent prior to discharge and resetting of the effluent monitor setpoint utilizing the most recent calibration data and known background activity. The inspector determined that licensee compliance with T.S. Section 4.B.A which states in part, Radioactive effluents shall be continuously monitored and alarmed, was adequate. The inspector further determined that the last licensee discharge to the Connecticut River utilizing Radwaste Effluent Water was on September 11, 1979, utilizing discharge permit No. 79-686.

No items of noncompliance were identified. The inspector had no further questions in this area.

#### 7. Operational Safety Verification

A detailed review of the High Pressure Coolant Injection System (HPCI) was conducted during the period of January 26-27, 1981, to verify that the system was properly aligned and fully operational in the standby mode. 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. Plant procedure OP 2120, Revision 12, dated November 24, 1980, and drawing G-191169, Revision 19, was used to verify proper HPCI system lineup.
- verification that accessible 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 in the selected system 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 and/or within calibration requirements.

No items of noncompliance were identified.

## 8. Maintenance Activities

The inspector reviewed portions of the following maintenance activity to verify compliance with LCO requirements where applicable, that redundant components were operable, administrative approvals and tagouts were proper, approved procedures were utilized, activities were controlled by qualified personnel, equipment certification, proper equipment return to service, and compliance with AP 0021, Maintenance Requests, and AP 0200, Maintenance Program. The following activities were reviewed by the inspector:

- MR 80-249, Replacement of MSIV 80A guide pins and installation of new spring plate, dated February 27, 1980.

No items of noncompliance were identified.

## 9. Inspector Followup of Events

The inspector responded to events that occurred during the inspection period 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 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 proper manual actions by plant personnel;
- verification of adherence to approved plant procedures;
- verification of conformance to Technical Specification LCO requirements; and,
- compliance with AP 0010, Occurrence Reports, when applicable.

Operational events reviewed during this inspection are discussed below.

a. Power Reduction for Turbine Generator Unit Maintenance

During the week of January 12, 1981, the licensee noted higher than normal vibration readings on #9 bearing of the plant's turbine generator unit. Investigation by the licensee concluded that the vibration was originating from the flexible coupling which connects the shaft from the Main Turbine Generator to the direct-driven Alternator-Exciter. The #9 bearing indicated vibration ranged from 11 to 13 mils as compared to previous readings in the 5 to 9 mil range, the turbine generator vibration setpoint for #9 bearing is 15 mils.

On January 17, 1981, the licensee reduced power and removed the turbine generator from the grid to support disassembly of the suspect flexible coupling. The inspectors observed disassembly of the coupling and discussed its repair with cognizant plant personnel.

The inspectors had no further questions in this area.

b. Drywell Entry

On January 17, 1981, reactor power was reduced to approximately 15% to facilitate licensee investigation and repair of indicated turbine generator bearing vibration originating in the generator exciter flexible coupling. During the repair period, the licensee performed a routine primary containment entry to inspect the drywell area. The purpose of the drywell entry was an attempt to locate sources of unidentified drywell leakage. Reactor coolant system unidentified leakage for the period of January 7 to January 15, 1981, ranged from .33 to .16 GPM; the limit for unidentified leakage is 5 GPM per T.S. Section 3.6.C. Inspection of the drywell by licensee personnel revealed three possible sources of unidentified leakage:

- (1) RWCU Valve 99 packing leakage (steady drip)
- (2) 'B' Recirc. Motor air cooler condensation from unlagged line
- (3) RPR system lower spray ring leakage

Corrective action by the licensee was taken in that CU-99 packing was tightened and motor air cooler condensation and lower spray ring leakage was identified.

The inspectors monitored the initial drywell entry for compliance with licensee procedure VYAP 0507, Primary Containment Entry, Revision 3, dated September 25, 1980. Vermont Yankee Radiation

Work Permit (RWP) No. 00064, Drywell Inspection, dated January 17, 1981, was reviewed for compliance with licensee procedure VYAP 0502, Radiation Work Permits, Revision 9, dated June 30, 1980.

Upon completion of the drywell entry, VYAPF 0507.01, Containment Entry Checklist was reviewed for completeness and RWP No. 00064 was reviewed for proper termination. The inspector noted that VYAP 0507 requires that when the reactor is operating, a team of two personnel will be stationed at the drywell entrance to provide assistance as required. Discussion with licensee personnel indicated that this requirement was necessary only when personnel entering the containment utilized self-contained breathing apparatus. The licensee indicated he would look into the basis of the two-man assistance team requirement and clarify AP 0507, Section 8 if deemed necessary (IFI 50-271/81-02-01).

The inspector had no further questions in this area. No items of noncompliance were identified.

c. RADWASTE Transportation, Shipment No. 81-07

On January 28, 1981, the licensee informed the inspectors that an apparent discrepancy had been found in a shipment of dry compacted LSA waste to Beatty, Nevada disposal site. Review by the inspectors revealed the following:

- VY LSA Shipment 81-07 consisted of 153 55-gallon drums of dry compacted waste contracted to Hittman/Tristate for transportation to the Beatty, Nevada disposal site.
- The shipment left the site at 10:00 A.M. on January 21, 1981, and arrived at Beatty, Nevada on January 26, 1981.
- Waste disposal site inspectors discovered a pencil size hole approximately one inch from the top of one 55-gallon drum. The hole was initially covered with a piece of tape.
- The hole was discovered on January 26, 1981, by Nevada state inspectors and reported to the licensee on January 27, 1981. The disposal site suspended VY disposal Permit Number 264 as a result of the occurrence.
- The subject drum contained a plastic liner which was not punctured. Surveys of the barrel and shipment vehicle revealed no spread of contamination as a result of the container breach.

- The licensee held a conference on January 28, 1981, with the State of Nevada and VY Permit No. 264 was reinstated by the State of Nevada based on commitments made by the licensee.

Pending further clarification of the commitments made to the State of Nevada, and pending completion of USNRC Region V investigation into this occurrence, this item will remain unresolved. (URI 50-271/81-02-02).

d. Leak Test of Explosion Detector Sources

On January 21, 1981, the inspectors received notification from the Region of a possible contamination source in certain models of Explosion Detectors manufactured by Ion Track Instruments, Inc. The inspectors verified that Vermont Yankee utilizes two (2) of the Ion Track Instruments, Model 75, Entry Scan Explosion Detectors.

The inspectors requested that the licensee perform a leak check test of the sources contained in these devices. The instruments contain the active isotope "Electro" (Nickel-63) which is deposited on an inert nickel foil and is classified as an unsealed source, which is exempt from NRC licensing.

On January 23, 1981, the licensee reported that a swipe survey of the source contained in each explosion detector resulted in no detectable contamination. These results were forwarded to USNRC Region I personnel as requested.

The inspector had no further questions in this area.

10. In-Office Review of Licensee Event Reports

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; the report satisfied requirements with respect to information provided and timeliness of submittal per NUREG 0161 and T. S. Section 6.7 criteria. 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.

a. Continuous Environmental Air Sample Not Taken:

- . LER 80-40, Event Date November 30, 1980
- . LER 80-28, Event Date, September 8, 1980

- . LER 80-21, Event Dates June 30, 1980 and July 7, 1980
- . LER 80-03, Event Date January 7, 1980. The inspectors noted that TS Table 3.9.1 requires that continuous air sampling be performed. As a result of LER 80-04 the licensee is committed to install surge suppressors on the supply to the monitoring stations. LER 80-28 previously reported that "If feasible, lightning surge suppressors will be installed in all nine Environmental Sample Stations." LER 80-21 reports that due to apparent pump bearing failure modifications of the pump and ventilation are being evaluated. LER 80-03 reports that due to instances of disconnected tubing, stainless steel hose clamps were installed to prevent future recurrence.

The licensee is currently evaluating Air Sample Station performance. The inspectors will follow system evaluation and implementation of corrective actions. (IFI 50-271/81-02-03).

- b. PCIS Valve Failure to Close Due to Accumulation of Dirt on Plunger:
  - \*. LER 80-20, Event Date June 17, 1980 (See Inspector Report 271/80-17)
  - . LER 80-17, Event Date April 24, 1980

LER 80-20 reports that a preventive maintenance program is being evaluated to preclude potential future events. The inspectors will follow program evaluation and implementation of corrective actions. (IFI 50-271/81-02-04)

- c. Change in RPS Delay Time.

- . LER 80-10, Event Date March 7, 1980

No items of noncompliance were identified.

#### 11. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee pursuant to Technical Specification 6.7 and Environmental Technical Specification 5.4 were reviewed by the inspector to verify that applicable reporting requirements had been met.

- VYV-5937, Monthly Statistical Report, Month of December 1980, dated January 14, 1981
- VYV-5906, Monthly Statistical Report, Month of November 1980, dated December 9, 1980

No unacceptable conditions were identified.

## 12. Observations of Physical Security

The inspector made observations, witnessed and/or verified during regular and offshift hours that selected aspects of plant physical security were in accordance with regulatory requirements, the physical security plan and approved procedures.

### a. Physical Protection Security Organization

- observations indicated that a full time member of the security organization with authority to direct physical security actions was present as required.
- manning of all shifts on various days was observed to be as required.

### b. Access Control

Observations of the following items were made:

- identification, authorization and badging.
- access control searches, including, when applicable, the use of compensatory measures during periods when equipment was inoperable.
- escorting.

### c. Physical Barriers

- selected barriers in the protected area and vital area were observed and random monitoring of isolation zones was performed. Observation of vehicle searches were made.
- inspector tours of gate house 1 and 2, the Central and Secondary Alarm Stations were conducted at random periods.

No items of noncompliance were identified.

## 13. Inspector Actions Based on Performance of Temporary Instruction (T/I) Requirements

### a. Inspector Actions Based on Performance of T/I 2515/46, Survey to Determine Existence of Adequate Emergency Procedures for Coping with ATWS Events at Operating Reactors, dated December 5, 1980

The objective of T/I 2515/46 is to verify that licensees have emergency operating procedures adequate to respond to ATWS events.

A survey was initiated by IE Bulletin 80-17, dated July 3, 1980, following the Brown's Ferry failure to completely scram event. This T/I formalizes the actions needed to complete the survey. The results of T/I 2515/46 inspection are summarized below and have been transmitted to IE Headquarters by memorandum to Mr. W. R. Mills, HQ, I.E., dated January 19, 1981.

References:

- (a) IE Bulletin 80-17, Failure of 76 of 185 Control Rods to Fully Insert During a Scram at a BWR, dated July 3, 1980
- (b) Vermont Yankee Letter to B. H. Grier, WVY-100, dated July 13, 1980
- (c) T/I 2515/46, Survey to Determine Existence of Adequate Emergency Procedures for Coping with ATWAS Events at Operating Power Reactors, dated December 5, 1980
- (d) T/I 2515/39, Inspection Requirements to Review BWR Licensee Actions Taken in Response to IE Bulletin No. 80-17, dated July 3, 1980
- (e) Vermont Yankee Inspection Report 50-271/80-10, dated October 16, 1980
- (f) VY OP 2111, Revision 10, Control Rod Drive System, dated November 13, 1980
- (g) VY OP 2114, Revision 9, Operation of the Standby Liquid Control System, dated November 24, 1980
- (h) VY OP 3100, Revision 9, Reactor Scram Emergency Procedure, dated July 11, 1980
- (i) VY OP 3109, Revision 1, Anticipated Transient Without Scram Emergency Procedure, dated November 26, 1980
- (j) VY AP 0150, Revision 14, Responsibilities and Authorities of Operations Department Personnel, dated December 19, 1980

Vermont Yankee is a BWR, therefore reference (c) section IV Acceptance Criteria 1. and 3. apply as noted below:

. Acceptance Criterion 1.:

For BWR's, IE Bulletin 80-17, Action No. 4 of "Actions to be taken by Licensees" and Guidance contained in T/I 2515/39.



"NOTE: To be effective, if recirculation pumps do not automatically trip, the procedure must require the operator to do this quickly following an ATWS condition."

Bulletin 80-17, reference (a) Section 4, requires a review of emergency operating procedures to assure that for a scram, operator actions include: (the following paragraph numbers correspond to reference (a) Section 4.)

"4.a. Place the reactor mode switch in a position other than RUN."

-- The inspectors determined that this requirement is contained in reference (h), "subsequent action", to be performed after verification that steam flow has decreased below .64M#/hr in each steam line.

"4.b. Determine whether either of the two conditions below exist:

- (1) Five (5) or more adjacent rods not inserted below the 06 position.
- (2) Thirty (30) or more rods not inserted below the 06 position."

-- The inspectors concluded that the determination of rods not inserted is contained in reference (h), "immediate actions". Vermont Yankee's determination is conservative, in that section 1.b. of reference (h) requires action "if any scram condition exist for greater than 10 seconds with failure of two or more control rods to fully insert in response to a full scram..."

"4.c. If either condition 4.b. (1) or 4.b. (2) exists:

- (1) Trip the recirculation pumps.
- (2) Insert rods manually. If rods cannot be inserted manually, alternately reset the RPS and scram the reactor until all rods are fully inserted.
- (3) Vent the scram air header.
- (4) Manually open or bypass the scram instrument volume drain and vent valves, if possible."

- The inspectors determined that reference (h) requires the following operator actions based on rods not inserted:
- (1) If the conditions of 4.b. above exist, the operator is required to "Trip the recirc pumps by placing their control switches to pull-to-lock on CRP 9-4 (reference (h) Step 1.b. (1)).
  - (2) Reference (h) Step 1.b. (1) requires: "manually rescrum the reactor by depressing both manual scram pushbuttons on CRP 9-5". Step 1.b. (2) requires additional actions if indication exists that the scram signals have failed to open the scram valves, these actions include: Step 1.b. (2) (a) and (b), manually opening circuit breakers or manually securing RPS MG sets provide alternate methods of scrambling the plant.
  - (3) Reference (h) Step 1.b. (3) requires the following actions, "until all control rods are fully inserted, monitor nuclear instrumentation for decreasing neutron flux and indication of local areas of high neutron flux while performing the following:
    - a) Clear the cause of the scram, bypass the SDV and verify open or manually open the Vent and Drain valves, place mode switch in shutdown, reset both RPS channels.
    - b) Individually scram those control rods not fully inserted from CRP 9-16 starting with those in local areas of indicated high neutron flux. Reset each control rod after it fully inserts and continue to scram rods until all control rods are fully inserted."
    - c) If 3.b. is unsuccessful in scrambling control rods, manually scram the reactor, reset and repeat if insert rod motion is observed until all control rods are fully inserted.
    - d) If 3.c. is unsuccessful in scrambling control rods, bypass the RWM and attempt to manually insert control rods with the reactor manual control system, starting with those in local areas of indicated high neutron flux.
- "4.d. If, at any time, either condition 4.b. (1) or 4.b. (2) exists and either RPV water level cannot be maintained or suppression pool water temperature cannot be maintained below the suppression pool water temperature scram limit, initiate the SLCS."

- The inspectors determined that reference (g) states that the control room operator will initiate the SLCS, with shift supervisor approval, should any of the following conditions exist:
- (1) A gross failure of control rods such that they cannot be scrammed or manually inserted into the core.
  - (2) Normal rod exercise indicates a rod is stuck such that shutdown margin requirements cannot be met.
  - (3) The reactor engineer determines that shutdown margin requirements of the T.S. cannot be met.
  - (4) R.V. water level cannot be maintained and the CRD system is unable to maintain the reactor subcritical as indicated by the neutron monitors.

The shift supervisor is normally stationed in the control room and thus readily available to acknowledge initiation of SLCS operation without undue administrative delay. Further, per reference (j) the control room command function is transferred to the senior control room operator during shift supervisor temporary absences. Reference (h) Step 1.b. (4) requires that "initiate injection of SLC solution into the reactor vessel at any time reactor water level cannot be maintained or torus water temperature cannot be maintained below the torus scram limit (110°F) if simultaneously the control rod drive system is unable to maintain the reactor subcritical at existing conditions as indicated by neutron monitors."

Reference (i) notes the concerns associated with an ATWS event, and details symptoms and actions to be taken. Vermont Yankee has installed a recirc. pump trip (RPT) circuit to quickly add negative reactivity to the core to mitigate the consequences of an ATWS event. If RV water level remains at the low-low setpoint, (-44.5) for > 10 seconds or RV pressure increases to 1150 psia, both recirc. field breakers will automatically open. This can also be accomplished manually, using pushbuttons on CRP 9-4.

#### Acceptance Criterion 3.:

The operator should have complete authority to activate the Standby Liquid Control System (BWR) or commence emergency boration (PWR), and he should be responsible for doing this when the situation requires it. If the Standby Liquid Control System (SLCS) is key operated, the key must be readily available to the operator. Criteria for the use of SLCS and emergency boration relative to inability to insert negative reactivity by other means should be included in emergency procedures.

- The inspectors determined that at Vermont Yankee the SLCS is key operated, reference (g) step B.2 requires the key to the SLC switch be kept in the switch itself.

Reference (h) requires initiation of SLCS any time RV level cannot be maintained or torus water temperature cannot be maintained below the torus scram limit (110°F) if simultaneously the CRD system is unable to maintain the reactor subcritical at existing conditions as indicated by neutron monitors.

Reference (i) requires initiation of SLC system into the RV if the control rods cannot be scrammed.

Based on the above information, the licensee has addressed IE Bulletin 80-17 concerns in his procedures for coping with ATWS. Within the scope of T/I 2515/46 the inspector identified no exceptions from the acceptance criteria.

b. Inspector Actions Based on Performance of T/I 2515/47, TI For IE Bulletin 80-24, Prevention of Damage Due to Water Leakage Inside Containment

The objective of T/I 2515/47 is to verify that actions required by IE Bulletin 80-24, dated November 21, 1980, have been satisfactorily completed, that suitably detailed descriptions of open cooling systems within containment are provided as required, and that acceptable documentation is provided by the licensee. The results of T/I 2515/47 inspection are summarized below and have been transmitted to IE Headquarters by memorandum to Mr. R. Woods, HQ, I.E., dated January 7, 1981.

References:

- (a) Preliminary T/I 2515/47, dated December 18, 1980, TI for IE Bulletin 80-24, Prevention of Damage Due to Water Leakage Inside Containment.
- (b) IE Bulletin 80-24, dated November 21, 1980, Prevention of Damage Due to Water Leakage Inside Containment (October 17, 1980, Indian Point 2 Event).

- (c) Letter, L. H. Heider to B. H. Grier, dated December 31, 1980, Response to IE Bulletin 80-24

The following tables are provided in response to IE Bulletin 80-24 "Actions to be taken by Licensees." The numbered items correspond to the numbered action in the subject bulletin:

TABLE I, LEAKAGE HISTORY, OPEN SYSTEMS  
IE BULLETIN 80-24, ITEMS 1. (a.-f.)

<u>OPEN SYSTEM</u>	<u>N P</u>	<u>S F</u>	<u>LEAK LOCATION</u>	<u>WET SPOTS</u>	<u>DRIPS</u>	<u>STREAMS</u>	<u>DELUGES</u>	<u>REPAIR METHOD</u>
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NONE

KEY: N = Normally used  
P = Post - LOCA  
S = System uses salt or brackish water  
F = System uses fresh water

TABLE II, LEAKAGE DETECTION SYSTEMS  
IE BULLETIN 80-24, ITEMS 2. (a.), (b.)

<u>LOCATION OF POTENTIAL WATER ACCUMULATION</u>	<u>MEANS OF DETECTING WATER</u>	<u>INDICATION (I) OR ALARM (A) IN CONTROL ROOM</u>	<u>TYPE OF FLOW MEAS. INST.</u>	<u>FLOW MEAS. READOUT IN CONTROL RM.</u>
500 GAL. EQUIP. DRAIN SUMP, EQUIPPED WITH TWO 50 GPM PUMPS (ALTERNATING)	FLOAT SWITCH	I, (HIGH LEVEL) I, A (HIGH-HIGH LEVEL)	TOTALIZER IN SUMP DISCH. LINE	YES, CHART FLOW RECORDER AND TOTALIZER READOUT
	TEMP. SENSOR	I, A		
	SUMP LEVEL SWITCHES, TIMES SUMP FILL RATE AND PUMP RUN TIME	A (< PRESET FILL RATE) I (FILL TIME) A (> PRESET RUN TIME) I (PUMP OUT TIME)		
	PUMP RUN INDICATION	I		

500 GAL. DRYWELL FLOOR DRAIN SUMP EQUIPPED WITH TWO 50 GPM PUMPS (ALTERNATING)

SAME AS ABOVE WITH EXCEPTION OF TEMP. INDICATION

- Item 2. (c) Review of the licensee's surveillance procedure, OP 4152, Revision 8, July 11, 1980, Drywell Equipment and Floor Drains Surveillance revealed no unacceptable conditions.
- Item 2. (d) Within the scope of the inspectors review, no unacceptable areas were noted. Reference (c) does not address periodic containment entry. The inspector discussed periodic entry into containment with the licensee. Vermont Yankee noted that the requirements to consider periodic entry into the containment to inspect for leakage is contained in IEB 80-24, section 2.d. which applies to plants with OPEN cooling systems; VY does not have these systems.

TABLE III, LEAKAGE HISTORY, CLOSED SYSTEMS  
IE BULLETIN 80-24, ITEM 3

<u>CLOSED SYSTEM</u>	<u>DATE</u>	<u>SUMMARY OF EXPERIENCE</u>
CLOSED COOLING WATER	4/ 2/74	DRYWELL COOLING UNIT RRU-1, SMALL COOLING COIL LEAK, SUBSEQUENTLY REPAIRED.
	11/12/74	SMALL COOLING COIL LEAK, 1 GPM, REPLACED
	3/24/78	SMALL COOLER LEAK, RECIRC. PUMP MOTOR "B" LOWER BEARING COOLER. DETECTED BY MOTOR COOLER LEAK DETECTION SYSTEM. LEAK REPAIRED.
	8/12/79	RRU-1 DEVELOPED 2 TUBE LEAKS IN THE COOLER. BOTH ENDS OF THE TUBES WERE CAPPED.

The inspector had no further questions concerning the licensee's response to IE Bulletin 80-24. No items of noncompliance were identified.

c. Status of TMI-2 Action Plan Items with Implementation of January 1, 1981

Per IE:HQ request transmitted in a January 2, 1981, letter from J. Sniezek to Regional Directors, the inspectors provided a tabulation, based on licensee/NRC correspondence, of the actions taken and completion status of TMI-2 Action Plan Items - January 1, 1981 implementation at Vermont Yankee. As requested, the information was forwarded to IE:HQ, E. Blackwood, DROI by memorandum dated January 9, 1981. Post-implementation review of selected licensee commitments will be conducted. Accordingly, where that review results in the identification of additional or modified commitments by the licensee, a reinspection will be conducted. A summary of the inspector findings is provided below:

The following references are utilized:

- (a) NUREG 0737, Clarification of TMI Action Plan Requirements, published November 1980.
- (b) Vermont Yankee letter WY-170, dated December 15, 1980, Post-TMI Requirements-Implementation Date Commitments.
- (c) Vermont Yankee letter WY 79-130, dated November 20, 1979, Followup Actions Resulting from the NRC Staff Review Regarding the Three Mile Island Unit 2 Accident.
- (d) Vermont Yankee letter WY 80-135, dated September 29, 1980, STA Implementation Schedule

The item numbers below pertain to reference (a), enclosure 1 clarification items.

-- Item

+ 1.A.1.1.

Shortened Title

+ Shift Technical Advisor

Action

+...training program implemented

Status

+ Committed Completion Date - January 1, 1981

+ Completed - Yes (See Note 1)

+ Scheduled Completion Date - June 1, 1981

+ Reason Not Completed - (See Note 1)

-- Item

+ 1.A.1.1.

Shortened Title

+ Shift Technical Advisor

Action

+...degreed engineers on shift

Status

- + Committed Completion Date - January 1, 1981
- + Completed - Yes (See Note 2)
- + Scheduled Completion Date - June 1, 1981
- + Reason Not Completed - (See Note 1)

-- Item

- + I.A.1.3.

Shortened Title

- + Shift Manning

Action

- + ...overtime limits implemented

Status

- + Committed Completion Date - January 1, 1981
- + Completed - Yes (See Note 5)
- + Scheduled Completion Date - NA
- + Reason Not Completed - NA

-- Item

- + I.A.2.1. (4)

Shortened Title

- + RO & SRO Training Program

Action

- +...implementation

Status

- + Committed Completion Date - January 1, 1981
- + Completed - Yes (See reference (b))
- + Scheduled Completion Date - NA
- + Reason Not Completed - NA

-- Item

- + I.C.5.



Shortened Title

+ Feedback of Operation Experience

Action

+... Procedure implemented

Status

+ Committed Completion Date - January 1, 1981  
 + Completed - Yes \_\_\_\_\_  
 + Scheduled Completion Date - NA  
 + Reason Not Completed - NA

-- Item

+ I.C.6. \_\_\_\_\_

Shortened Title

+ Verify Performance of Operating Activities

Action

+...revise performance procedures and implement

Status

+ Committed Completion - January 1, 1981  
 + Completed - Yes (See Note 3)  
 + Scheduled Completion Date - NA  
 + Reason Not Completed - NA

-- Item

+ II.E.4.2. (5)

Shortened Title

+ Containment Isolation Dependability

Action

+...Containment pressure setpoint adjusted

Status

- + Committed Completion Date - January 1, 1981
- + Completed - Yes (See reference (b))
- + Scheduled Completion Date - NA
- + Reason Not Completed - NA

-- Item

- + II.E.4.2. (6)

Shortened Title

- + Containment Isolation Dependability

Action

- +...containment purge valves closed and surveillance implemented

Status

- + Committed Completion Date - January 1, 1981
- + Completed - Yes (See reference (b))
- + Scheduled Completion Date - NA
- + Reason Not Completed - NA

-- Item

- + II.K.3.9.

Shortened Title

- + Proportional Integral Derivative Controller Modification

Action

- +...Mod Accomplished on Westinghouse Plants

Status

- + Committed Completion Date - NA (See Note 6)
- + Completed - NA
- + Scheduled Completion Date - NA
- + Reason Not Completed - NA

-- Item

- + II.K.3.22a.

Shortened Title

RCIC Suction Switchover from CST to suppression pool

Action

+...procedure implemented for manual method of switchover

Status

+ Committed Completion Date - January 1, 1981  
 + Completed - Yes (See reference (b))  
 + Scheduled Completion Date - NA  
 + Reason Not Completed - NA

-- Item

+ III.D.3.3.

Shortened Title

+ Inplant Radiation Monitoring

Action

+...improved inplant iodine instrumentation under accident conditions

Status

+ Committed Completion Date - January 1, 1981  
 + Completed - Yes (See reference (b) and Note 4)  
 + Scheduled Completion Date - NA  
 + Reason Not Completed - NA

- NOTES: (1) By reference (c), VY committed to provide STAs on shift by January 1, 1980, initiate STA training in 1980, and have fully trained STAs in place by January 1, 1981. As of January 1, 1980, an interim group of STAs were on shift. The group was formed from existing plant and engineering staff members and consisted of 13 degreed individuals with plant experience and specific STA training provided by GE and VY training staffs. Concurrent with implementation of the interim STA group, a program was initiated to hire and extensively train a new group of degreed engineers to ultimately fill the STA role as a full time permanent job function. The training program for the permanent STA group was designed to meet INPO standards published in May 1980. Completion of training

and start of shift assignment for the permanent group was scheduled to occur by January 1, 1981. However, by reference (d), VY reported that final implementation for the permanent STA group could not be completed until June 1, 1981. Delays in the implementation date were attributed to:

(1) difficulties in finding degreed engineers with previous nuclear and industry experience, and (2) scheduling and initiating the full STA training program. The last of seven individuals forming the permanent STA group was hired in November 1980 and the STA training program was begun in October 1980. Reference (d) specifies the permanent STA group will assume shift duties at the completion of the training program by June 1, 1981.

- (2) Operating shifts are now staffed with the interim group of STAs, all of whom are degreed. However, as reported above the permanent, fully trained group of STAs will not assume shift duties until June 1, 1981.
- (3) By reference (b), VY stated that management control systems already in effect meet the intent of the five clarification items identified in Item I.C.6. of reference (a). The addition of independent verification to the management control system had been previously considered by VY and rejected as being less desirable and less effective than existing controls. VY thus refused to commit to independent verification, but will do so whenever existing controls are found to not provide assurance of system operability.
- (4) By reference (b), VY stated that adequate portable sample and analysis capabilities for iodine exist without the use of iodine collection media such as silver zeolite.
- (5) Administrative procedure AP 0036, Shift Staffing, issued on January 8, 1981, instituted limits on overtime hours in accordance with the reference (a) requirements, with the exception of the following: (1) the limit on the number of hours that an individual could work in any seven consecutive days was set at 84 hours, instead of 72; (2) an individual is limited to working no more than 18 consecutive days (instead of 14) without having 2 consecutive days off.
- (6) The purpose of this controller modification is to prevent inadvertent opening of the power-operated relief valve (PORV). This modification applies only to Westinghouse plants and is therefore not applicable to Vermont Yankee.

No items of noncompliance were identified.

14. Unresolved Items

Unresolved items are items about which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items are discussed in Detail 9.c of this inspection report.

15. Management Meetings

During the period of the inspection, licensee management was periodically notified of the preliminary findings by the resident inspectors. A summary was also provided at the conclusion of the inspection and prior to report issuance.