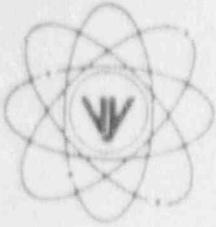


# VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

REPLY TO  
ENGINEERING OFFICE  
580 MAIN STREET  
BOLTON, MA 01740  
(508) 729-8711

February 28, 1991

BVY 91-023

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Reference: (a) License No. DPR-28 (Docket No. 50-271)

Subject: Vermont Yankee 1990 Annual Operating Report

Dear Sir:

Enclosed please find one copy of the Vermont Yankee Nuclear Power Corporation Annual Operating Report submitted in accordance with 10CFR50.59(b). This report describes the facility changes, tests, and experiments conducted without prior NRC approval during the year 1990.

We trust this information is acceptable; however, should you have any questions, please contact this office.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

L. A. Tremblay  
Senior Licensing Engineer

LAT/sv

cc: USNRC, Region I Administrator  
USNRC, Project Manager - VYNPS  
USNRC, Resident Inspector - VYNPS

9103040230 901231  
PDR ADOCK 05000271  
R PDR

IEA?  
||

VERMONT YANKEE  
1990 ANNUAL OPERATING REPORT

OPERATIONS SUMMARY

Between January 1 and December 31 of 1990, Vermont Yankee completed a number of changes. The following report describes those changes which constituted a change in the facility as described in the Final Safety Analysis Report (FSAR). The report includes seven (7) Engineering Design Change Requests (EDCRs), thirteen (13) Plant Design Change Requests (PDCRs), three (3) Plant Alteration Requests (PARs), fourteen (14) Temporary Modifications (TMs), one (1) Setpoint Change, one (1) Safety Relief Valve Challenge, and one (1) core modification. There were no Safety Relief Valve failures during the 1990 calendar year, and there were no Test Procedures or Special Test Procedures performed during the year.

A. Changes in Facility Design

1. During 1990 there were no changes made which required authorization from the Commission.
2. The following changes did not require Commission approval, they were reviewed by the Plant Operations Review Committee (PORC), and approved by the Plant Manager and the Senior Vice-President, Operations. It was determined that these changes did not involve unreviewed safety questions as defined in 10 CFR 50.59(a)(2).

- (a) EDCR 89-402 Seismic Instrumentation Upgrade was completed September 20, 1990

General Summary:

The overall purpose of upgrading the previous level of seismic instrumentation was to provide for more timely evaluation of a seismic event. The upgraded seismic instrumentation system locates a new solid state digital accelerograph on the Reactor Building basemat to record earthquake ground motion. This accelerograph replaced the existing film analog seismic instrument.

The new seismic monitor is directly wired to a personal computer work station in the Control Room. Once a seismic event has been recorded the data is processed using the personal computer. Additional software is being developed to generate a Cumulative Absolute Velocity (CAV) number. Electric Power Research Institute (EPRI) has correlated CAV values for past earthquakes to a level of damage

experienced by affected facilities. A threshold CAV value is to be used to initiate plant walkdowns. The scope of the walkdown will be a function of the CAV value generated from the seismic event. This plant walkdown process will be incorporated into plant procedures. The upgraded seismic instrumentation system allows for data collection, processing, and interpretation for a seismic event in a timely fashion. Applicable procedure revisions have been initiated. The system will be declared operational once these procedures are issued. At that time the old equipment will be removed from service.

#### Safety Evaluation Summary:

The upgraded seismic instrumentation system is classified as Non-Nuclear Safety (NNS), which is the same classification as the previous system. The seismic instrumentation at Vermont Yankee does not perform any nuclear safety function. The evaluation of recorded seismic data is secondary to any actions required by operators to bring the plant to safe and stable conditions in accordance with approved procedures.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (b) EDCR 89-404 "Feedwater Check Valve Replacement" was completed October 8, 1990

#### General Summary:

This design change replaced the two inboard 16-inch feedwater check valves with two new leak-testable 16-inch swing check valves. Also included in this design change was: the addition of two new 3/4-inch test connections on two feedwater lines and an increase in the design temperature for portions of lines in the Reactor Core Isolation Cooling (RCIC), Reactor Water Cleanup (RWCU), and Feedwater (FDW) systems. This is due to a possible condition of high temperature RWCU flow coincident with low or no feedwater flow.

The primary reason for the original design change was that the Walworth Y-lift (plug) Check Valves had difficulty in meeting the 10CFR50 Appendix J leak test criteria under a relatively low test differential pressure of 44 psi. This is due to the valve construction consisting of a "hard" Stellite seat and plug design. The implementation of the EDCR permitted 10CFR50 Appendix J Type C testing of the two check valves. The

implementation of this design change did not alter the manner in which the feedwater system operates.

Safety Evaluation Summary:

The safety evaluation determined that there were no unreviewed safety questions created by the implementation of these changes. It also went on to show that there is no increase in the probability of occurrence or consequences of an accident or malfunction. These conclusions were based on the following points:

The feedwater check valves function to allow flow in one direction only, towards the reactor vessel. When flow reverses, the valves seat themselves and prevent reverse flow. The addition of the new 3/4-inch test connections add the capability to perform 10CFR50 Appendix J, Type C leak testing on these valves, and did not increase the probability or consequences of an accident. Any loss of coolant accident from the new 3/4-inch lines would be enveloped by larger LOCA's as summarized in the FSAR. Because these test connections do not interact with other equipment, their failure does not impact equipment important to safety.

The increase in design temperature from 400F to 450F was based on low-flow or no-flow feedwater condition with the Reactor Water Cleanup System still functioning. The increased temperature is a local condition limited to sections of RWCU, RCIC, and FDW piping. Piping thermal stresses, support loads, and thermal effects on valves from the increased temperature have been evaluated and shown to be well within code limits.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (c) EDCR 89-405 "Human Engineering Discrepancies - Annunciator Panels" was completed October 3, 1990

General Summary:

This EDCR addressed the Human Engineering Discrepancies (HEDs) which could be resolved by modifying the front control panel annunciators. There were three major tasks involved: (1) adding two new annunciator cabinets, (2) rewiring all of the annunciator points via new terminal blocks, and (3) replacing all of the engraved window covers.

This EDCR replaced the annunciator windows to incorporate

consistent letter sizes, acronyms, and abbreviations. Secondly, it revised the arrangement of the annunciator windows, segregating the alarms by system and prioritizing them in order of importance. Lastly, it included modifications which provided annunciation of certain signals where failed indicating lights might go unnoticed.

Safety Evaluation Summary:

The Annunciator System with its interconnecting cables and terminations is Non-Nuclear Safety (NNS). Four relays were added to the Reactor Building and Containment Airborne Radiation Monitoring System. These relays and associated wires are NNS.

Because the change did not involve an unreviewed safety question, an analysis of these modifications showed that the safety of the general public is not impaired. These modifications improved the arrangement of the annunciator windows as analyzed, and decreased the probability of occurrence of an accident. The arrangement of the annunciator windows have enhanced the man-machine interface. This, along with operator training, ensures that operator responsiveness is improved.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (d) EDCR 89-407 "480 Volt UPS Replacement" was completed October 10, 1990

General Summary:

This EDCR installed new Rotary Uninterruptible Power Supply (RUPS) at Vermont Yankee as replacements for the existing 480 Volt Static Uninterruptible Power Supply (UPS). This change was implemented to improve UPS reliability.

Although the new RUPS uses rotating components (AC motor, AC generator, DC motor/generator) where the existing UPS used only electronic (static) components, it was a direct replacement with respect to function. The RUPS was installed in the same location as the existing UPS, and it uses the existing UPS batteries and cables. The previous control room panel controls are still employed; however, some minor rewiring was required. The UPS coolers were not required for the new UPS and were therefore removed.

#### Safety Evaluation Summary:

The RUPS will perform the same design function as the UPS, and no changes to the way in which the associated ECCS valves operate will result. The RUPS is built around a proven design with many other similar units in service industry-wide, in applications where a high level of reliability is required. The RUPS did not add significantly to the heat load in the area of the Reactor Building where it was installed, and it did not have any environmental impact on other equipment located within the same area.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (e) EDCR 89-409 "Conversion of Core Spray Valves to Self-Locking" was completed October 2, 1990

#### General Summary:

This EDCR provided the design change to make the motor-operators installed on Core Spray (CS) injection valves V14-11A & B and V14-12A & B mechanically self-locking. The need to make these operators a locking-type valve arose from the fact that it became increasingly difficult to obtain environmentally-qualified and/or safety-related brakes for these operators. Because the valves and operator had non-locking gear trains, without motor brakes the valves could potentially reopen from vibration and/or line pressure acting on the valve stem.

The method chosen to make the valves self-locking was to change the internals of the operator to achieve a locking gear ratio. The original manufacturer, Limatorque, recommended making the operator locking by changing the worm and worm gear to a set with a lead angle sufficient to be fully locking. Changing the operators to locking changed the stroke time of the valves. The actual stroke time increased. The review indicated that the change had no adverse impact on the analysis because the Core Spray System still fulfills its original design function.

The only licensing document which will require revision is the FSAR. Section 7.4.3.4.4 needed to indicate that in 8 seconds the system can deliver the required flow at the required system head. The allowable stroke time used for testing needed to be revised since the new actual stroke time increased to 6.8 seconds, which was too close to the previous allowable stroke time of 7 seconds. The new allowable stroke time is 9 seconds minus one second

for stopwatch and timing errors, which equates to a surveillance time of 8 seconds.

Safety Evaluation Summary:

The technical basis for this change was based on more current guidelines which incorporate the latest knowledge concerning motor-operated valves available to the industry. Because the Core Spray System still satisfies its design basis, no new release path for radioactive products produced during a Loss of Coolant Accident (LOCA) was created. The sequence of events that the Core Spray System, or any other Emergency Core Cooling System (ECCS) follows in order to mitigate the consequences of a LOCA were not changed by making these valves self-locking.

The replacement gears were recommended and supplied by the operator manufacturer. The valve was not impacted by the change in stroke time because the torque settings and motor-operator controls were not altered. Therefore, the valve operator can not damage the valve.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (f) EDCR 90-401 "R.G. 1.97 Cable Separation" was completed September 26, 1990

General Summary:

During review of the Vermont Yankee Separation Criteria for Regulatory Guide 1.97, it was determined that the power cables to the redundant Category 1 Post-Accident Monitoring (PAM) display instruments (indicators and/or recorders) of four instrument loops were not adequately separated. The resulting lack of redundancy provided the potential to cause both channels to be unavailable to the Control Room operator in the event of a single failure.

This design change provided new Safety Class Electrical (SCE) power feeds to the SI loop of the affected Category 1 components. New cable and fuses were provided to ensure cable separation and redundancy in compliance with the requirements of Regulatory Guide 1.97. The design change also removes the SI and SII designated cables from the duct system located behind the Control Room Panels. All of the designated cables are associated with Regulatory Guide 1.97 parameters and were removed and/or re-routed to provide adequate separation of divisional SI and SII cables consistent with the Vermont Yankee

separation criteria.

Safety Evaluation Summary:

This modification provided redundant routing of control and instrument cables in the Control Room and Cable Vault to fully satisfy certain Regulatory Guide 1.97 Post-Accident Monitoring (PAM) instrumentation requirements. Requirements for separation and redundancy are thereby fully insured. The PAM instruments are provided in the control room to display essential information during and following an accident so the operator can take pre-planned actions to safely shutdown the plant.

This modification does not affect the operators' ability to take a manual action to safely shut down the plant because the information provided in the Control Room from Regulatory Guide 1.97 display instrumentation did not change. This modification also did not affect any automatic operations of equipment required to perform a safety function.

This modification ensures that electrical separation to redundant PAM instrumentation is maintained such that at least one redundant loop is available to provide the operator with information to take the required manual actions.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (g) EDCR 90-402 "Control Rod Blade Storage Rack Replacement" was completed August 31, 1990

General Summary:

The scope of this design change was to remove the existing Control Rod Blade (CRB)/Fuel Storage Rack assembly from the fuel pool and to design, fabricate, and install two-thirty (30) cell CRB/Fuel Storage Racks. The new racks were installed in the same location as the removed ten (10) earlier existing cell blade racks. The new racks are free standing in the spent fuel storage pool. They are compatible with the fuel pool environment and are designed to withstand the design basis seismic event.

The new racks installed in the spent fuel pool are passive components. They occupy the final two open areas in the fuel pool north and south of the cask pad.

Safety Evaluation Summary:

Each CRB/Fuel rack assembly is made from 3 GE Rod/Fuel Racks, original plant equipment. Therefore, reinstalling the GE Rod/Fuel Racks in the pool alone did not change the probability or consequences of an accident or malfunction. Also, the racks are the original licensed racks from GE with additional seismic support.

No additional heat load is put on the system, and adequate cooling flow was maintained.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (h) PDCR 89-02 "Containment Component Improvements" was completed October 3, 1990

General Summary:

The following changes were provided by this PDCR to further enhance the reliability and availability of Safety Relief and Main Steam Isolation Valves:

- a). Replace the existing Safety Relief Valve/Automatic Depressurization System (SRV/ADS) accumulators with larger accumulators,
- b). Install filters upstream of the automatic Depressurization System (ADS) accumulator check valves,
- c). Replace the Main Steam Isolation Valve (MSIV) accumulator check valves with soft seated check valves, and
- d). Install test connections on the air supply lines to the ADS and MSIV accumulators.

Safety Evaluation Summary:

For the SRV Supply line alteration -

The function of the SRVs did not change when the accumulator was replaced with a larger accumulator. The SRVs automatically relieve reactor vessel pressure spikes because they are pilot operated relief valves. The air supply to the valve is not necessary for the SRVs to self actuate. The new connections and the replacement accumulators and piping maintain the original design. The new filters were added to eliminate potential rust

particles, which in turn assures that the soft seated check valves will maintain their seating integrity. The new test connections will be valved out and plugged during normal operation.

For the MSIV Supply Line Alteration -

The changes made by this PDCR did not affect any automatic protection functions of the MSIVs. Because the MSIVs act as an accident mitigator, they do not increase the probability that an accident will occur. The new test connections will be closed and capped during normal operation. The new check valves are a one-for-one replacement for the existing check valves and are similar in design to those installed in the SRV air supply. These replacement check valves have proven to be highly reliable for maintaining accumulator pressure in the SRV supply lines.

There is no increase in the probability of occurrence, or consequences of, an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (i) PDCR 89-03 "Fire Protection Improvements" was completed August 31, 1990

General Summary:

This PDCR provided modifications to the Plant Fire Protection System to resolve several concerns:

a). Panels outputs were connected to the Control Room 45 amp-hr battery bank to provide adequate power supply capacity to the Cable Vault, Switchgear Rooms, and Control Room Fire Protection Outputs.

b). To minimize the potential pressurization of the Cable Vault Room upon initiation of its CO-2 system, a Pyrotronics Time delay module was installed in the panel which allows the fan and dampers to remain operable for a preset time following a system initiation.

c). Spare relays were utilized to provide supervision for the Cable Vault, Switchgear Rooms, Reactor Building, and Control Room supplementary output power supplies.

d). A micro switch connected to a time delay module was installed to monitor both doors between the East and West switchgear rooms.

e). A single "maintained contact" switch was installed to replace three existing pushbutton switches used to

isolate the Control Room ventilation inlet and outlet dampers.

f). Three way isolation valves were installed in the pressure switch sensing lines of the sprinkler systems to provide a simplified means of calibrating six deluge valve pressure switches.

#### Safety Evaluation Summary:

The implementation of this design change did not change the way in which any existing plant fire detection or suppression system operates. The modifications described in this design change are provided to enhance the existing fire detection and suppression systems.

The installation of one "maintained contact" control switch simplified operator action when ventilation isolation is required. The installation of the time delay module for the Cable Vault room outlet damper and fan ensures that over-pressurization does not occur when that room's CO-2 system initiates. The addition of three-way valves to the deluge valve pressure switch allows for easier calibration of the pressure switches and will not require the systems to be removed from service during the performance of calibration.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

(j) PDCR 89-04 "RHR Interlocks" was completed October 5, 1990

#### General Summary:

This PDCR was written to add interlocks to specific valves in each Residual Heat Removal (RHR) system loop. This eliminated potential draindown paths from the reactor vessel to the torus and drywell while RHR is operating in the shutdown cooling mode. The interlock circuit functions to prevent these valves from being opened during shutdown cooling operation. The design scope for the interlock circuit included the following:

a). An interlock was added to each RHR loop between the shutdown cooling suction valves and existing RHR logic to shut the major reactor vessel drain path valves in each RHR loop while shutdown cooling is running.

b). The previous RHR Pump Trip Interlock with MOV10-17 and MOV10-18 was reconfigured to provide a pump trip if either valve leaves the full open position during

shutdown cooling.

c). The previous min-flow valve 4kV Interlock circuit was reconfigured to keep the min-flow valve closed when an RHR pump breaker is removed from service (racked out).

Safety Evaluation:

The RHR system operation as previously configured for normal and post-accident operation remained unchanged. Additionally, RHR operation in the shutdown cooling mode will reduce the probability of a reactor vessel draindown by automatically realigning certain valves for shutdown cooling operation which are essential in maintaining reactor vessel water level.

Failure of the interlock circuit to energize while RHR shutdown cooling is in service will not initiate any actions. Only the valve open inhibit will be lost for certain RHR drainage path valves. Loss of the interlock circuit permits these valves to be opened manually from the Control Room as previously designed.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (k) PDCR 89-06 "Recirc Pump Shaft Monitors" was completed October 4, 1990

General Summary:

In recent years significant attention has been focused on Thermal Cycling Fatigue Cracking in BWR Recirculation Pumps. General Electric recommended that affected plants install some method of continuously monitoring pump shaft vibration. To avoid the consequences of a catastrophic shaft failure, a monitoring system was installed on each of the two recirculation pumps. The pump vibration monitoring system increases the ability to detect developing pump problems such that proper preplanned maintenance activities can be performed. The six sensors on each pump transmit to the Data Analysis and Acquisition Cabinet (DAAC). The cabinet processes the signals, provides local readout of all parameters, houses a process computer, and alerts the Control Room when set points are exceeded.

Safety Evaluation Summary:

The monitoring system is a self contained passive unit

whose presence and operation has no degrading affect on primary or secondary containment, accident mitigation processes, or preventative actions assumed in accident analysis. The monitoring system does not provide any signal or indication used in a safety function.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (1) PDCP 89-07 "Standby Gas Treatment Loop Seal Improvements" was completed March 14, 1990

General Summary:

The purpose of this PDCR was to replace the previously existing Standby Gas Treatment (SBGT) train loop seal extension. The purpose of the loop seal drain is to provide a drain path from the SBGT demister while ensuring that the SBGT fan does not lose suction. The original loop seal was designed correctly but did not allow operators the ability to verify loop seal level.

The new loop seal extension consists of 1-inch piping and a sight glass. The new loop seal extension allows for accurate water level indication as well as for replacement of the sight glass during maintenance. The open-ended sight glass allows drainage of the moisture separator during operation. In addition the open-ended sight glass automatically drains excess water if the loop seal is inadvertently overfilled.

Safety Evaluation Summary:

The SBGT system is designed to mitigate/recover from a design basis accident. This system does not act as an initiator for any of the design basis accidents as analyzed in the FSAR. The sight glass does not affect the ability of the moisture separator drain piping to seal/drain the SBGT train. The SBGT train operates as originally designed and intended. The loss of the sight glass will not impact the ability of the SBGT train to operate properly. The addition of the loop seal extension provides extra assurance that the loop seal will provide its sealing function without affecting the original intent/design of the SBGT system.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance

that the health and safety of the public was not endangered.

- (m) PDCR 89-09 "Control Room Emergency Lighting" was complete: July 26, 1990

General Summary:

In 1986 a Human Engineering Discrepancy (HED) report determined that the control room's emergency lighting was below the recommended minimum. As a result of this report, the system was evaluated. It was recommended that additional battery powered lights above the luminous grid over the main control board and back panels be installed.

This PDCR installed four (4) new self-contained battery powered light units in the control room. Each new battery unit supplies four (4) 12-watt halogen spotlights mounted in the control room ceiling. Because of the addition of these new lights, the two existing self-contained battery units previously in place on the north and west walls of the control room were removed.

Safety Evaluation Summary:

All plant lighting systems are classified as Non-Nuclear Safety (NNS), including the self-contained emergency lighting installed by this PDCR. All equipment added by this PDCR was installed such that its failure can not affect any safety class systems or components. There is no interface with any plant system which could increase the probability of an accident. The new lights have improved the operators' view of the required control panels, allowing better observation of plant parameters during emergency conditions. Also, the new lights are supplied by their own sealed battery units and do not interface with the station battery emergency lights. The previously existing 125 VDC station battery emergency lighting system remained unchanged.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (n) PDCR 89-10 "Condensate Demineralizer Conductivity Instrumentation Replacement" was completed April 25, 1990

General Summary:

This change upgraded the Condensate Demineralizer Conductivity Monitoring System. This upgrade was performed because of aging that resulted in decreasing

accuracy and excessive maintenance requirements of the equipment. The specific changes made were:

- a). Replacement of the seven existing conductivity cells,
- b). Replacement of the multipoint recorder on the Condensate Demineralizer Control Panel, and
- c). Removal of miscellaneous equipment (the temperature compensator is not required, and the microohms-to-millivolt transducer located on the conductivity demineralizer control panel was removed).

Safety Evaluation Summary:

All equipment affected by this PDCR is classified as Non-Nuclear Safety (NNS). There are no electrical or mechanical connections to any safety system. All system functions remained the same. The only effective change was the addition of separate analyzers for each cell.

The probability of occurrence or consequences of a malfunction or accident were not increased. The basic function of the monitoring system remained unchanged. The functioning of this system is not assumed in any accident analysis. All conductivity monitoring functions were maintained by this PDCR. Finally, all equipment is an upgraded version of the previous equipment and provides all original monitoring functions.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (o) PDCR 89-11 "Feedwater Flow Integrator Removal" was completed September 5, 1990

General Summary:

On June 18, 1988 a reactor SCRAM occurred due to a turbine trip on high reactor water level. The high reactor level was found to have been caused by a failure of a feedwater integrator. A Lifted Lead and Jumper Request (LL/JR) was issued to remove the integrator from the feedwater control circuitry. In accordance with plant procedures, this LL/JR was then converted to a Temporary Modification.

This PDCR was initiated to convert the Temporary Modification to a permanent modification. This PDCR removed the feedwater integrator from the control circuit of the Feedwater Control System. It also removed the 120V

AC power feed to the integrator from the control room panel and installed a blank plate over the opening.

Safety Evaluation Summary:

This component did not perform any active function in the Feedwater Control System, so its removal did not affect any accident analysis nor increase the probability of occurrence of an accident. The removal enhanced the operation of the system by removing equipment whose failure has resulted in undesirable plant transients.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (p) PDCR 89-12 "Shutdown Iodine Filter Drains" was completed March 20, 1990

General Summary:

During maintenance of the Shutdown Iodine Filter it was noted that a significant amount of water had collected in the bottom of the filter. A Mechanical Bypass Request was generated to install three drains on the filter to facilitate draining.

The Shutdown Iodine Filter is comprised of five compartments. Each compartment has a drain fitting. When the filter was installed only one drain on the moisture separator was installed. This allowed water to build up in the other four compartments. Installation of the Mechanical Bypass allowed for draining of three of the remaining four compartments to support maintenance activities.

The scope of this design change was to install four permanent drains on the Shutdown Iodine Filter.

Safety Evaluation Summary:

The probability of occurrence of an accident is not increased because the shutdown iodine filter and drains do not interface, directly or indirectly, with any of the systems or components that can increase the occurrence or consequences of an accident. Also, the shutdown iodine filter and drains are not relied upon to mitigate the consequences of a design basis accident.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present

significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (g) PDCR 89-15 "Service Air to Radwaste" was completed May 18, 1990

General Summary:

It was identified that the original Backwash Air Supply Valves, V20-210 and V20-121 to the Floor Drain Filter and the Waste Collector Filter did not completely isolate the filters upon valve closure because of excessive body erosion. To prevent contamination of the air system with radwaste water, operators had to shut the air supply valve by using a ladder and an extension handle. This caused a concern for personnel safety regarding the repetitive use of the ladder and awkward working position. To resolve this safety issue and provide a better method to isolate the air supply line, an isolation valve was added downstream of V72-14B. The new valve is readily accessible without use of a ladder and provides positive isolation with minimal effort.

To minimize backflow contamination in the air supply line, a check valve was installed upstream of the new isolation valve. Check valves were also added before the Waste Collector Filter and before the Floor Drain Filter. These two valves permit independent filter operation without the potential for backflow contamination.

Safety Evaluation Summary:

Radwaste equipment is utilized to minimize liquid waste release and minimize personnel exposure. This design change added in-line air system check valves to substantially reduce the liquid radwaste backflow into the filter backwash air supply lines. The resulting cross contamination isolation reduces the possibility of an unexpected liquid release hazard.

The additional components and resulting added pressure connections are materially equivalent to that used previously. The analysis of design concluded that neither the service air nor the filter system performance was compromised by this design change.

The inter-system cross contamination isolation valve reduces the consequences of either a service air or a filter malfunction. The added check valves ensure the liquid/air barrier remains as designed, and the new isolation valve is controlled via plant procedure to ensure appropriate position for proper filter operation.

There is no increase in the probability of occurrence or

consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (r) PDCR 89-16 "Circulation Water Bypass Gate" was completed May 29, 1990

General Summary:

This PDCR replaced the Limitorque motor-operators installed on the two Circulation Water System bypass gates with hydraulic operators. The new operators are equipped with pre-installed position indicators. The design change was written to implement the following:

- a). Replace the two motor-operators for the Circ Water Bypass Gates with hydraulic operators.
- b). Change the previous three-position indications for each gate to two-position indications.
- c). Change the four position control switch to a three-position control switch.
- d). Delete the signal provided from the Circulation Water booster pump start circuitry that automatically repositions the gates when all three pumps are running.

The installation was implemented to improve gate reliability, reduce overall maintenance costs and allow the plant to optimize performance.

Safety Evaluation Summary:

The probability or consequences of an accident or malfunction have not increased due to the implementation of this PDCR. The Circulation Water Gates do not interface, directly or indirectly, with any of the systems or components that can increase the occurrence of any accident described in the Vermont Yankee FSAR. The gates are not relied upon to mitigate the consequences of an accident, nor do they support any design basis malfunction. The failure of the Circulation Water gates will not affect any safety systems and the gates are located such that their failure can not initiate any subsequent actions effecting systems important to safety.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance

that the health and safety of the public was not endangered.

- (s) PDCR 90-02 "Installation of Drain Lines on RHR Service Water" was completed October 4, 1990

General Summary:

This PDCR provided the basis and necessary details for the installation of 3/4-inch drain and vent lines on the 12-inch service water line 7A, which discharges from RHR Heat Exchanger E-14-1A. These drains and vent lines are utilized to support work on the RHRSW-89A valve. Previously, this valve could not be drained without first unbolting the bonnet. In support of repairs to the RHRSW-89A valve, the drain and vent line will be used to perform the necessary testing.

Safety Evaluation Summary:

The drains that were installed facilitate maintenance on valve 89A by providing a drainage capability. The design involves a manual valve plus a threaded cap on the vent and drain lines, which provides a highly reliable tapping system. Because these drains are part of the RHR Service Water system and have the potential to affect the Core Standby Cooling Systems, the assembly is Safety Class 3 and seismically qualified.

The probability or consequences of an accident or malfunction have not been increased by the implementation of this design change. There was no active component added, and the change did not adversely affect any equipment important to safety. Also, the drains are not relied upon to mitigate the consequences of any design basis malfunction nor did they affect the performance of any other such equipment.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (t) PDCR 90-03 "RHR Heat Exchanger Sample Line Modification" was completed September 10, 1990

General Summary:

This design change installed two additional sample valves on each of the RHR Heat Exchanger Service Water outlet sample lines. With the previous configuration it was necessary to climb to the top of the heat exchangers to perform the necessary sampling. This modification allows

a sample to be taken from a remote sample sink and improve both radiological and physical worker safety.

Safety Evaluation Summary:

This modification was designed to satisfy RHR SW system design requirements, which ensure that system integrity is maintained and the probability for the occurrence of a design basis accident is unchanged. The additional valves do not impact the RHR or the RHR Service Water systems' capabilities to perform their safety functions in support of the mitigation of the consequences of an accident.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (u) Vermont Yankee Cycle 15 Core - power operation commercial on October 6, 1990

General Summary:

There were three major changes made to the Vermont Yankee Cycle 15 core. These changes included the insertion of:

- 1) 124 General Electric GE-9B bundles,
- 2) 4 Advanced Nuclear Fuels (ANF) Qualification Fuel Assemblies (QFAs), and
- 3) 8 GE Marathon Control Rods.

The Cycle 15 core retained 240 irradiated (GE) fuel bundles, 60 irradiated control rods, and 21 new control rods of the same design as inserted in the previous cycle.

Safety Evaluation Summary:

The safety evaluation determined that there were no unreviewed safety questions created by these changes to the Vermont Yankee core. It also showed that there is no increase in the probability of occurrence or consequences of an accident or malfunction.

The Vermont Yankee Cycle 15 Core performance Analysis Report (CPAR), Vermont Yankee 9x9-IX Qualification Fuel Assembly Safety Analysis Report, and General Electric (GE) Marathon Control Rod Assembly Report provide the basis for the Vermont Yankee Nuclear Power Station (VYNPS) Cycle 15 licensing analysis. They present

mechanical, thermal-hydraulic, physics, and safety analysis pertinent to the operation of Cycle 15. These analyses demonstrated that there were no changes to the Core Performance Analysis Report or to the operating or safety limits as a result of either replacing 4 GE-9B bundles with 4 ANF QFAs or replacing 8 standard control rods with 8 Marathon control rods.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. These core changes did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (v) PAR 88-05 "Condensate Phase Separator Decant Filter System" was completed January 3, 1990

General Summary:

This PAR was written to make permanent a Temporary Modification that provided an existing Temporary Condensate Phase Separator Decant Filter System. It added a series of pipes, valves, and pumps to the existing Radwaste System to facilitate the transfer of radwaste solutions. These solutions go from the Condensate Phase Separator Tanks through a replaceable filter canister and then either back to the Condensate Phase Separator Tanks or to the Waste Collection Tank for further processing in accordance with normal radwaste procedures.

Safety Evaluation Summary:

This modification is neither attached to nor has any affect on any safety-related systems or equipment. Furthermore, this system is entirely located within an area of the plant which, if a failure occurred (i.e. leakage), no safety-related systems or equipment would be affected.

This modification is essentially an extension of the original system within the confines of the Radwaste Building. The area is bounded by concrete walls, curbs, and drains which will contain and control leakage or spills from an accident in the same manner as originally designed.

The materials and fluids obtained by the new method are of the same composition, and they are subsequently processed in the same manner as that of the original system. This modification simply decreases the time required to remove the suspended solids from the liquid radwaste solutions prior to transfer to the waste collector tank by the use of a free flow filter instead of the settling tanks.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (w) PAR 88-011 "Make-Up Water Treatment System Improvements (MUWT)" was completed May 5, 1990

General Summary:

Because Vermont Yankee is a zero water discharge plant (processing and reusing waste water as make-up), the daily make-up requirements are fairly small. The existing Make Up Water Treatment (MUWT) System is designed to automatically handle large make-up requirements using the Service Water System as feed. Service Water water quality is not of sufficient quality to use as station make-up water without significant pre-treatment. Based on available, higher quality well water and the small make-up requirements, the MUWT System was converted to a manual, straight-through, non-regenerative, single train system.

Safety Evaluation Summary:

In order to improve the reliability and availability of the MUWT System, this design change simplified the system. The PAR removed unnecessary components to make the remaining MUWT skid "A" into a manually-operated skid and installed two new recirculation lines. This change allows the system to produce 75 gpm of water at a quality level equivalent to the original design. This 75 gpm capacity enables the system to make up to 800,000 gallons of water per month. It was previously calculated that the plant requires approximately 182,500 gallons of water per year (during a non-outage year).

The FSAR states that "the power generation objective of the Station Make-Up Water System is to maintain a supply of treated water that may be used for the station and reactor cycles". The FSAR also states, "the station makeup water system shall be designed:

1. To continuously produce water at a rate of 162 gpm for station operation.
2. To provide water of a quality required for operation and maintenance of a boiling water reactor."

Because the plant only requires approximately 182,500 gallons per year, it is apparent that the simplified system can easily supply the plant's needs. Therefore,

the Power Generation Objective and the second Design Objective for the MUWT System as stated in the FSAR remained unchanged as a result of this design change. The first design objective in Section 10.13.2 of the Vermont Yankee FSAR was revised in Revision 8 to the FSAR to state:

"1. To produce water at a rate up to 75 gpm, as needed for station operation."

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (x) PAR 88-15 "345 kV Scobie Line Modifications" was completed September 12, 1990

General Summary:

This PAR was written to document changes to the microwave Telemetry System in the Relay House of the 345 kV yard. These changes were necessary because of a new Amherst Substation installed between Vermont Yankee and the existing Scobie Pond Substation. Because of the Scobie line modification, Public Service of New Hampshire provided a new audio frequency shift cabinet to be installed in the Relay House. This new electronic cabinet allows the 379 breaker to communicate with circuit breaker at Scobie Substation and the Amherst Substation circuit switcher.

Safety Evaluation Summary:

The addition of the primary microwave transfer trip cabinet to the Relay House did not change the transfer trip or line protective relaying scheme. This change simply altered the communication method of the protective relays from radio frequency carrier to audio frequency via microwave. The new audio equipment utilizes redundant transmitters, receivers, and modems for increased reliability in the event of a component failure. In addition the transfer trip and line relays will remain on the radio frequency line carrier for additional backup capability.

The REMVEC/VELCO alterations utilized the existing metering potential and current transformers and did not tie into the relaying current transformers. This alteration did not change any metering in the Relay House and is used only for load management of the 345 kV grid by REMVEC. This alteration also did not affect any protective relay functions for the 345 kV Switch Yard.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This design change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (y) Temporary Modification 89-004 was installed May 5, 1989

General Summary:

This Temporary Modification installed drain valves on the Shutdown Iodine Filter. The drains were installed to ensure that water did not collect in the undrained portions of the Startup Iodine Filter, which would affect the ability of the carbon to remove the iodine. This modification was converted to a permanent change on March 19, 1990 per PDCR 89-12.

Safety Evaluation Summary:

The installation provides further assurance that the Startup Iodine filter carbon is kept dry and functional. With the exception of aligning 3 manual ball valves (as directed by the system's operating procedure) plant operations were not affected. The three valves added by the Temporary Modification are shut when the filter is operating.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (z) Temporary Modification 89-005 was installed May 5, 1989

General Summary:

This Temporary Modification installed a "tee" and manual isolation valve in an instrument air branch line located in the Radwaste Building. The modification was initiated to provide instrument air to the actuator of an air-operated valve in the temporary decant system. This decant system supports Radwaste Condensate Phase Separator operations. This modification was converted to a permanent change on January 2, 1990 per PAR 88-05.

Safety Evaluation Summary:

This Temporary Modification was located in a Non-Nuclear Safety (NNS) branch of the Instrument Air System and consisted of a 3/8-inch diameter copper tee and valve

connected by Swagelock fittings.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (aa) Temporary Modification 89-006 was installed May 5, 1989

General Summary:

This Temporary Modification provided separate filtered decant of radwaste solutions utilizing a temporary, stand-alone filter system in the Cask Room. Service air was used to operate two air-operated transfer pumps. Water could be returned to either the Condensate Phase Separators or the Waste Collector Tank. This modification was converted to a permanent change on January 2, 1990 per PAR 88-05.

Safety Evaluation Summary:

This bypass did not tie into a safety-class system. Its mechanical failure (leakage) could not have affected a safety class system. During the 1983 outage, its use had previously improved water quality with no apparent negative effects. Effluents from the filter were monitored from the filter canister and by sampling the waste collector tank.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (bb) Temporary Modification 89-021 was installed August 16, 1989

General Summary:

This Temporary Modification removed the Total Feedwater Flow Integrator from the Feedwater Control System. This was done to eliminate the possibility of a plant trip because of a failure of this component, as previously experienced. This modification was converted to a permanent change on September 4, 1990 per PDCR 89-11.

Safety Evaluation Summary:

The Total Feedwater Flow Integrator was Non-Nuclear Safety (NNS), as is the entire Feedwater Control System.

The removal of the integrator had no affect on the operation of the Feedwater Control System. The removal enhanced the operation of the system by removing equipment whose failure had resulted in undesirable plant transients.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

(cc) Temporary Modification 89-022 was installed May 5, 1989

General Summary:

This Temporary Modification shifted the power supply for the Fire Damper Electro-Thermal Links (ETLs) from the supplementary 24 VDC supply on the Control Room Pyrotronics Panel to the backup battery supply. The transfer of the ETL power source to the backup battery was in response to concerns that the supplementary 24 VDC power supply had insufficient capacity. The fire panel backup batteries were verified to have a significantly higher capacity. This modification was performed to insure that adequate power is available for all required functions. This modification was converted to a permanent change on August 31, 1990 per PDCR 89-03.

Safety Evaluation Summary:

The function and method of operation of the system remained unchanged as a result of this modification. The change provided the required power for the system's operation and did not impact any safety-related systems. Also, all fire protection systems remained fully operable while this modification was in place.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

(dd) Temporary Modification 89-023 was installed August 16, 1989

General Summary:

This Temporary Modification shifted the power supply for the Fire Damper Electro-Thermal Links (ETLs) and the CO2 firing heads from the auxiliary 24VDC supply to the

battery backup supply. This was done in the Cable Vault Pyrotechnics Fire Protection Panels. The transfer of the ETL power source to the backup battery was in response to concerns that the supplementary 24 VDC power supply had insufficient capacity. The fire panel backup batteries were verified to have a significantly higher capacity. This modification was converted to a permanent change on August 31, 1990 per PDCR 89-03.

Safety Evaluation Summary:

The function and method of operation of the system remained unchanged. The change provided the required power for the system's operation and did not impact any safety related system. All fire protection systems remained fully operable with this temporary modification in place.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (ee) Temporary Modification 89-024 was installed August 16, 1989

General Summary:

This Temporary Modification shifted the power supply for the Fire Damper Electro-Thermal Links (ETLs) and the CO2 firing heads from the auxiliary 24V DC supply to the backup battery supply. This was done in the West Switchgear Room. The transfer of the ETL power source to the backup battery was in response to concerns that the supplementary 24 VDC power supply had insufficient capacity. The fire panel backup batteries were verified to have a significantly higher capacity. This modification was converted to a permanent change on August 31, 1990 per PDCR 89-03.

Safety Evaluation Summary:

The function and method of operation of the system remained unchanged. This modification provided the required power for the system's operation and did not impact any safety related system. All fire protection systems remained fully operable with this modification installed.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the

Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (ff) Temporary Modification 89-025 was installed August 16, 1989

General Summary:

This Temporary Modification shifted the power supply for the Fire Damper Electro-Thermal Links (ETLs) and the CO2 firing heads from the auxiliary 24V DC supply to the backup battery supply. This was done in the East Switchgear Room. The transfer of the ETL power source to the backup battery was in response to concerns that the supplementary 24 VDC power supply had insufficient capacity. The fire panel backup batteries were verified to have a significantly higher capacity. This modification was converted to a permanent change on August 31, 1990 per PDCR 89-03.

Safety Evaluation Summary:

The function and method of operation of the system remained unchanged. This change provided the required power for the system's operation and did not impact any safety related systems. All fire protection systems remained fully operable with this modification in place.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (gg) Temporary Modification 89-053 was installed November 1, 1989

General Summary:

This Temporary Modification provided a time delay for the shutdown of the Cable Vault Exhaust Damper. A module was installed to provide an automatic time delay and control. This modification was made in the Cable Vault Pyrotronics Fire Control Panel and was converted to a permanent change per PDCR 89-03 on September 27, 1990.

The modification provided a controlled ventilation of the Cable Vault during Cardox System discharge. This aided in the evaluation of pressure buildup effects, provided overpressurization protection, and aided in the proper distribution of Carbon Dioxide.

Safety Evaluation Summary:

The modification of the electrical circuit for the exhaust damper provided an increased measure of certainty that a CO2 discharge would not impact the structural integrity of the Cable Vault. This modification assists in providing an adequate distribution of CO2 within the Cable Vault and provides assurance that the door, wall, and fire barrier seal integrity is maintained during a CO2 discharge in the Cable Vault. Exhaust venting is maintained until the discharge of CO2 is underway.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

(hh) Temporary Modification 90-003 was installed February 2, 1990

General Summary:

The belt that drives the tachometer generator on the Vital AC MG Set failed, thereby disabling the DC motor speed control. This Temporary Modification was written to open the DC motor input breaker to protect the MG set from overspeed because of a loss of feedback signal from the tachometer generator. With the DC motor breaker open the transfer to DC drive was blocked, and the unit would automatically shutdown and transfer vital AC panel power to the alternate AC source. This modification was removed on March 19, 1990 following replacement of the belt on the tachometer generator.

Safety Evaluation Summary:

The probability of occurrence or consequences of an accident or malfunction was not increased. The loss of the DC motor for the vital AC could only result in a plant trip because of locked-up components resulting from the transfer of the vital AC to the alternate AC source. Also, following the transfer, all vital AC functions were available. No equipment protective functions were lost, and the loss of the DC motor did not affect any other equipment important to safety.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (ii) Temporary Modification 90-025 was installed August 17, 1990

General Summary:

This Temporary Modification was generated to install a temporary filtration system for the Reactor Building Closed Cooling Water (RBCCW) System. This system consisted of a series of filters that were specifically designed to remove filterable solids and excessive Drewgard 100 that existed in the system. This modification was removed on November 27, 1990.

Safety Evaluation Summary:

The installation of the temporary system did not impact the RBCCW System's ability to provide containment integrity and alternate cooling. The temporary system did not interfere with either the normal operation of the RBCCW system or the ability of the RBCCW system to support the safety design basis. Additionally, this temporary modification had no direct or indirect affect on other safety equipment as previously analyzed by the Final Safety Analysis Report.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (jj) Temporary Modification 90-031 was installed August 24, 1990

General Summary:

This Temporary Modification eliminated the audible and visual annunciator alarms for the failure of the "A" recirculation pump's inner and outer seal, motor oil problems, and high vibrations. The modification was initiated to correct a problem with spurious alarms caused by potential cable grounding/penetration problems. This modification was removed on October 11, 1990.

Safety Evaluation Summary:

The disabled alarm functions are classified Non-Nuclear Safety (NNS) and are not specifically addressed or relied upon in any FSAR-analyzed accident. The probability of an accident or malfunction was not increased because other indications and parameters of the "A" pump were closely monitored while the modification was in place.

There is no increase in the probability of occurrence or

consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (kk) Temporary Modification 90-035 was installed September 26, 1990

General Summary:

This Temporary Modification provided for rerouting the Reactor Water Cleanup System to the RHR system to support the Feedwater Check Valve replacement effort [see EDCR 89-404, Item (b)] during plant shutdown. This configuration had previously been successfully utilized during the 1987 and 1989 refueling outages. This modification was removed on October 10, 1990.

Safety Evaluation Summary:

Because the plant was in shutdown mode, some of the systems that result in or mitigate the consequences of design basis accidents were not required to be operable. There was no direct interface by this temporary modification with those systems that were required to be operable and were relied upon to mitigate the consequences of the design basis accidents. In addition this temporary modification did not increase the probability of their occurrence.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

- (ll) Temporary Modification 90-047 was installed September 1, 1990

General Summary:

This Temporary Modification was written to allow for the installation of two (2) oil-free air compressors to supplement the Service Air System. The installation of the external air compressors allowed the Service Air System to provide compressed air while the Service Water System was being serviced during the outage. One compressor was used at a time. This modification was removed on October 8, 1990.

Safety Evaluation Summary:

This modification allowed a sufficient quantity of air to be supplied at the correct pressure to the Service and Instrument Air Systems when the Station Air Compressors were made inoperable. The Service Air system is Non-Nuclear Safety (NNS) and Seismic Class II, and it is not relied upon to mitigate any accident. The safety equipment supplied by the Instrument Air System is designed to fail safe on a loss of air pressure.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This modification did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

(mm) Core Spray Minimum Flow Setpoint Change 90-82 was completed March 21, 1990

General Summary:

This setpoint change increased the setpoint of the Core Spray System minimum flow instrumentation from 300 gpm to 600 gpm. During the preparation of an instrument accuracy study, it was determined that the accuracy of this flow element was not included in the accuracy calculation specified in the FSAR. When this accuracy was included in the calculation, a condition existed where the minimum flow valve could close with flow less than the 300 gpm required for pump protection. Increasing the setpoint to 600 gpm insured that system flow is greater than 300 gpm before closing the minimum flow valve.

Safety Evaluation Summary:

This change allows the minimum flow valve to remain open at a higher flow, but it does not affect the actual bypass flow. This flow is limited by a restricting orifice in the line. This change did not affect the system operation under accident conditions. The change insures that the Core Spray pump minimum flow requirements are satisfied, providing better pump protection.

There is no increase in the probability of occurrence or consequences of an accident or malfunction as previously evaluated in the FSAR. This Setpoint Change did not present significant hazards not described or implicit in the Vermont Yankee FSAR, and there is reasonable assurance that the health and safety of the public was not endangered.

B. Tests and Experiments

1. None

C. Safety and Relief Valve Challenges and/or Failures

1. June 1, 1990 Reactor Scram

At 1353 hours on June 1, 1990, a plant scram occurred because of personnel error with the reactor at 100% power. Following the reactor scram, the reactor steam generation rate and, consequently, the main steam line pressure began to drop. Because of the response time of the Mechanical Pressure Regulator and Turbine Control Valves, main steam line pressure decreased to below the PCIS Group I trip limit and resulted in a PCIS Group I isolation. The increase in reactor pressure which was due to the Group I isolation subsequently caused reactor water level to decrease resulting in Group 2, 3, and 5 PCIS isolations.

At 1358 hours the Reactor Core Isolation Cooling (RCIC) System was started in order to control pressure, and outboard Main Steam Isolation Valves (MSIV) were manually opened.

At 1359 hours the "A" Safety Relief Valve was manually opened to reduce reactor pressure. Reactor water level increased because of the reduction in pressure and caused RCIC and the "B" Reactor feedwater pump to trip. The "A" Safety Relief Valve was manually closed at 990 psig. Following other corrective actions performed by operators, the plant was safely returned to critical at 1905 hours on June 2, 1990.

The decision to manually open the "A" Safety Relief Valve was made to satisfy the requirements of maintaining the reactor pressure between 950 and 1000 psig. The opening of the "A" Safety Relief Valve successfully reduced the pressure in the reactor and had no adverse effects. The relief valve operated as designed.

The opening of the "A" Safety Relief Valve did not present any significant hazard to the public, and there is reasonable assurance that the health and safety of the public was not endangered.

D. Special Test Procedures

1. None.