



Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
Vermont Yankee
185 Old Ferry Rd.
P.O. Box 500
Brattleboro, VT 05302
Tel 802-257-5271

October 7, 2004

Vermont Yankee
Docket No. 50-271

BVY 04-112

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Vermont Yankee Cycle 23 10 CFR 50.59 Report

References: (1) Letter, USNRC to VYNPC, "TMI Action Plan Item II.K.3.3, Reporting of Relief Valve and Safety Valve Failures and Challenges," NVCY 82-44, dated March 30, 1982

In accordance with 10 CFR 50.59, attached is a copy of the Vermont Yankee (VY) Cycle 23 10 CFR 50.59 Report. This report contains a brief description of the 50.59 evaluations that supported changes, tests and experiments between October 27, 2002 and May 4, 2004.

Additionally, in accordance with Reference 1, VY reports that there were no Relief Valve or Safety Valve failures or challenges during this period.

We trust that the information provided is adequate; however, should you have any questions or require additional information, please contact Mitch McCluskie at (802) 258-4187.

There are no new commitments being made in this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read "J. DeVincentis", written over a horizontal line.

James M. DeVincentis
Manager, Licensing
Entergy Nuclear Operations, Inc
Vermont Yankee Nuclear Power Station

Attachments:

1. Vermont Yankee Cycle 23 10 CFR 50.59 Report

IE47

cc: Mr. Richard B. Ennis, Project Manager
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
Mail Stop O 8 B1
Washington, DC 20555

Mr. Samuel J. Collins
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

USNRC Resident Inspector
Entergy Nuclear Vermont Yankee, LLC
320 Governor Hunt Road (*for package delivery*)
P.O. Box 157 (*for mail delivery*)
Vernon, Vermont 05354

Mr. David O'Brien, Commissioner
VT Department of Public Service
112 State Street – Drawer 20
Montpelier, Vermont 05620-2601

ATTACHMENT 1 TO BVY 04-112

VERMONT YANKEE CYCLE 23 10CFR50.59 REPORT

ENTERGY NUCLEAR OPERATIONS, INC.
VERMONT YANKEE NUCLEAR POWER STATION
DOCKET NO. 50-271

Vermont Yankee Cycle 23 10 CFR 50.59 Report

Between October 27, 2002 and May 4, 2004, Vermont Yankee (VY) implemented a number of changes requiring evaluation in accordance with 10 CFR 50.59. This report includes the 10 CFR 50.59 Evaluation summaries for Vermont Yankee Design Changes (VYDCs), Minor Modifications (MMs), procedure changes, and Special Test Procedures (STPs).

The following changes did not require prior Nuclear Regulatory Commission approval. They were reviewed by the Plant Operations Review Committee and approved by the General Manager.

10 CFR 50.59 Evaluation Number: 2001-037 Revision Number: 0

Vermont Yankee Design Change (VYDC) 2000-006, "Installation of the Hydrogen Water Chemistry System"

This design change involved the installation of a bulk hydrogen storage and supply/distribution system. This system introduces hydrogen into the feedwater system to provide intergranular stress corrosion cracking (IGSCC) protection for the reactor vessel and vessel components.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident or malfunction because an increase in hydrogen concentration in reactor coolant either mitigates or has no impact on accident and malfunction initiators. This change did not increase the consequences of any previously analyzed accident or malfunction for the following reasons. Increased radiation levels from hydrogen injection due to an increase in Nitrogen-16 are very short-lived and would not result in increased post-accident doses. Increased containment hydrogen concentration during a LOCA could not result in a detonation since the containment is inerted. The relatively small increase in main steam line radiation levels will not prevent the main steam line radiation monitors from detecting fuel failure during the postulated control rod drop accident. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced. This change did not impact any safety limit or margin of safety because instrumentation controlling limiting safety systems settings and fuel cladding integrity safety limits are unaffected, and hydrogen injection benefits the reactor coolant pressure boundary.

10 CFR 50.59 Evaluation Number: 2003-01 Revision Number: 0

Vermont Yankee Design Change (VYDC) 2002-007, "Feedwater Control System Replacement – Phase 2"

This design change involved the removal, replacement and addition of instrumentation for the feedwater control system for the purpose upgrading the system. Some of these changes were considered to be analog-to-digital upgrades, and were addressed using the guidance of Generic Letter (GL) 95-02, Use of NUMARC/EPRI Report TR-102348, "Guideline on Licensing Digital

Upgrades," in Determining the Acceptability of Performing Analog-to-Digital Replacements Under 10 CFR 50.59.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident because the feedwater control system has no impact on any analyzed accident. This change did not increase the probability of occurrence of any previously analyzed malfunction because the controls established to ensure the reliability of the new digital components satisfy the guidance contained in GL 95-02. This change did not increase the consequences of any previously analyzed accident or malfunction because no equipment that could physically alter the operation of the feedwater regulating valves is being altered, and therefore the current Updated Final Safety Analysis Report (UFSAR) analysis remains bounding. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because the overall performance of the feedwater system is not affected, and thus the new components cannot create any new failure modes. This change did not result in a design basis limit being exceeded or altered because it does not involve structures, systems or components (SSC) with the potential to affect fission product barriers, and there will be no adverse impact on any other systems. This change did not result in a departure from any method of evaluation because the replacement of these components does not involve any method of evaluation described in the UFSAR.

10 CFR 50.59 Evaluation Number: 2003-03 Revision Number: 0

Vermont Yankee Design Change (VYDC) 2003-001, "Turbine/Generator Bearing Vibration and Thrust Bearing Position Instrumentation Upgrade"

This design change upgraded the existing turbine vibration monitoring system installed at VY. This upgrade was required due to component obsolescence and age of the system. The new system will provide the ability to configure the vibration probes such that no single probe in an alarm or failure condition can initiate a turbine trip. This feature will ensure that inadvertent turbine trips will be minimized following installation of the new system.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident because the turbine vibration monitoring system is not an initiator of any analyzed accident and cannot cause the failure of any other SSC. This change did not increase the probability of occurrence of any previously analyzed malfunction because the controls established to ensure the reliability of the new digital components satisfy the guidance contained in GL 95-02. This change did not increase the consequences of any previously analyzed accident or malfunction because the current UFSAR analyses for events involving a turbine trip remain bounding. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced and the guidance contained in GL 95-02 is satisfied. This change did not result in a design basis limit being exceeded or altered because the overall response of the system is unchanged. This change did

not result in a departure from any method of evaluation because the replacement of these components does not involve any method of evaluation described in the UFSAR.

10 CFR 50.59 Evaluation Number: 2003-02 **Revision Number: 0**

Vermont Yankee Design Change (VYDC) 2003-004, "Feedwater Heater Level Control System Upgrade"

This design change upgraded the existing feedwater heater level control system, which is a dual system comprised of analog and pneumatic components and individual level switches for alarms and protection functions, with a new control system that also utilizes a combination of analog and pneumatic level transmitters. However, the analog and pneumatic controllers and a number of the level switches were replaced with a digital control system.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident because the feedwater heater level control system is not an initiator of any analyzed accident and cannot cause the failure of any other SSC. This change did not increase the probability of occurrence of any previously analyzed malfunction because the controls established to ensure the reliability of the new digital components satisfy the guidance contained in GL 95-02. This change did not increase the consequences of any previously analyzed accident or malfunction because the current UFSAR analyses for events involving a loss of feedwater heating remain bounding. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced and the guidance contained in GL 95-02 is satisfied. This change did not result in a design basis limit being exceeded or altered because the overall response of the system is unchanged. This change did not result in a departure from any method of evaluation because the replacement of these components does not involve any method of evaluation described in the UFSAR.

10 CFR 50.59 Evaluation Number: 2003-005 **Revision Number: 0**

Minor Modification (MM) 2003-039, "NSSS/BOP Instrumentation Upgrades for Extended Power Uprate (EPU)"

MM 2003-039 replaced or modified nuclear steam supply system/balance of plant instrumentation as needed to support the Extended Power Uprate (EPU) for VY. Modifications and re-scaling calibrations that could not be achieved on-line were contained in the scope of this modification. Part of the modification was considered an analog-to-digital upgrade and was addressed under the guidance of GL 95-02.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident because the affected instrumentation is not an initiator of any analyzed accident and cannot cause the failure of any other SSC. This change did not increase the probability of occurrence

of any previously analyzed malfunction because the controls established to ensure the reliability of the new digital components satisfies the guidance contained in GL 95-02. The only involved instrumentation that could affect accidents or malfunctions are the main steam line (MSL) flow transmitters that provide the high flow "not-in-run" isolation signal. This change did not increase the consequences of any previously analyzed accident or malfunction because the current UFSAR analyses for events involving a failure of the MSL high flow instruments remain bounding. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced and the guidance contained in GL 95-02 is satisfied. This change did not result in a design basis limit being exceeded or altered because the overall response of the system is unchanged. This change did not result in a departure from any method of evaluation because the replacement of these components does not involve any method of evaluation described in the UFSAR.

10 CFR 50.59 Evaluation Number: 2004-001 **Revision Number: 0**

Minor Modification (MM) 2004-009, "Removal of Remote Position Indication for Standby Liquid Control (SLC) Manual Isolation Valve V11-18"

MM 2004-009 removed the remote position indication for standby liquid control (SLC) manual isolation valve, V11-18, on the SLC injection line in the drywell. This indicating circuit was not required to meet the station design or licensing basis. This change also required a revision to UFSAR Section 3.8.5 to delete the reference to position indication for the local valve.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident or malfunction because the SLC system is not an initiator of any analyzed accident or malfunction and cannot cause the failure of any other SSC. This change did not increase the consequences of any previously analyzed accident or malfunction because the controls for maintaining proper valve position ensure that there is no decrease in reliability of the injection path. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced. This change did not result in a design basis limit being exceeded or altered because the overall response of the system is unchanged. This change did not result in a departure from any method of evaluation because the removal of this position indication does not involve any method of evaluation described in the UFSAR.

10 CFR 50.59 Evaluation Number: 2001-039 **Revision Number: 0**

Special Test Procedure (STP) 2000-006.01, "Hydrogen Water Chemistry (HWC) System Startup and Tuning Procedure"

This STP provided instructions for the startup and tuning of the HWC system and its hydrogen and air flow controllers. The test was performed prior to and in conjunction with the GE Hydrogen Benchmark Test Procedure which tested the effectiveness of and determined the recommended operating point for long-term hydrogen injection at VY.

50.59 Evaluation Summary

This evaluation concluded that analyzed accident and transient frequencies as well as the likelihood of occurrence of analyzed malfunctions remain unaffected because hydrogen injection benchmark testing introduces no new failure modes and is not a transient/accident or malfunction initiator. In addition, because any possible occurrence resulting from benchmark testing is conservatively bounded by the control rod drop transient analyzed in UFSAR Section 14.6.2, transient and malfunction consequences are also unaffected and new transients or malfunctions with different results are not created. Furthermore, it is concluded that this testing did not involve the revision or replacement of any UFSAR evaluation methodology. Thus, there can be no adverse affect on any Design Basis Limit for a Fission Product Barrier or departure from any analysis methodology contained in the UFSAR.

10 CFR 50.59 Evaluation Number: 2003-04 Revision Number: 0

OT 3121, Revision 13, "Inadvertent Opening of a Relief Valve"

This revision incorporated the use of the Automatic Depressurization System (ADS) Bypass switch to promptly close a stuck open Safety Relief Valve (SRV) caused by an electrical fault. The procedure then isolates the SRV circuit by pulling fuses and restores the Bypass switch to normal. Use of the ADS Bypass switch prevents electrical operation of the SRVs, however the mechanical pressure relief function is still operable. The switch is only placed in the bypass position for approximately 10-15 minutes.

50.59 Evaluation Summary

This change did not increase the probability of occurrence of any previously analyzed accident or malfunction because the ADS Bypass switch is not an initiator of any analyzed accident or malfunction and cannot cause the failure of any other SSC. This change will not result in more than a minimal increase in the consequences of any previously analyzed accident or malfunction because SRV electrical function will be lost for only 10-15 minutes, and full function can be restored by the operator at any time by placing the switch back to the normal position. This change did not create the possibility for an accident or malfunction of a different type than previously analyzed because no new failure modes are being introduced. This change did not result in a design basis limit being exceeded or altered because the overall response of the system is unchanged. This change did not result in a departure from any method of evaluation because use of this switch does not involve any method of evaluation described in the UFSAR.