

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 85-29

Docket No. 50-271

License No. CPR-28

Licensee: Vermont Yankee Nuclear Power Corporation

RD 5, Box 169, Ferry Road

Brattleboro, Vermont 05301

Facility Name: Vermont Yankee

Inspection At: Vernon, Vermont

Inspection Conducted: October 7 - 11, 1985

Inspector: Carl H. Woodard
Carl H. Woodard, Reactor Engineer

11/22/85
Date

Approved by: Clifford J. Anderson
C. J. Anderson, Chief
Plant Systems Section

11/25/85
Date

Inspection Summary

Areas Inspected: Announced inspection to review proposed technical specification changes, operating procedures, and supporting hardware for plant operation under degraded grid voltage conditions. Followup on licensee corrective actions on previously identified outstanding open items. This inspection involved 36 hours on site by one region-based inspector.

Results: No violations were identified in the areas inspected.

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DETAILS

1.0 Persons Contacted

1.1 Vermont Yankee

- *Jim Pelletier, Plant Manager
- *David Phillips, Senior Electrical Engineer
- David LaBarge, Senior Engineer
- *Rick Lopriore, Maintenance Supervisor
- *Dan Reid, Operations Supervisor
- *Bob Wanczyk, Technical Services Superintendent
- *Pat Donnelly, Maintenance Superintendent
- *Dennis Girroia, Senior Quality Assurance Engineer
- *Mike Metell, Engineering Support Supervisor
- *Larry Mullens, ISI Coordinator
- Jeff Cox, Licensing Administrator
- Joe Galonka, Maintenance Supervisor

1.2 General Electric Corporation

- *Bill Neal, Technical Services Representative

1.3 NRC

- *Bill Raymond, Senior Resident Inspector
- *Tom Silko, Resident Inspector

*Denotes those present at the exit interview on October 11, 1985.

2.0 Status of Previous Inspection Findings

2.1 (Closed) Unresolved Item 84-18-05: Relating to the unreliability of the reactor protection system (RPS) alternate power supply. This is a Class IE power source that is used as an alternate supply instead of the RPS motor generator sets. The power feed for the alternate supply is through a single phase unregulated 480/120 volt transformer fed from Motor Control Center 8B. This power feed can replace either of the two regulated sources provided by the MG sets. The unregulated characteristics of the alternate feed in conjunction with the undervoltage, overvoltage, and frequency protection provided by the RPS power supply protection panels have caused loss of the alternate supply on several occasions. This type of transient occurs when starting large motor loads or transferring loads between startup and auxiliary transformers. However failure of the power supply are fail-safe in nature in that they can cause or contribute to plant shutdown (scram). A review and safety evaluation of this system was

conducted by NRC and reported June 27, 1984. Based upon the licensee's current corrective action plan to install a regulated feed for the alternate power supply during this outage and the fact that failures of the power supply feed are fail safe in nature; this item is closed.

3.0 Review of Technical Specifications and Operating Procedures Changes Regarding Operations Under Conditions of Degraded Grid Voltage

3.1 Degraded Grid Voltage Technical Specifications

By letter dated November 2, 1984 the licensee proposed changes to the technical specifications to provide for degraded grid voltage protection as a part of the Reactor Protection System (RPS). These changes will be addressed in an upcoming NRC Supplemental Safety Evaluation report. Briefly the changes are the following:

1. Add to Section 3.2 of the technical specifications the limiting conditions of operation, the required instrumentation, trip settings, and required action for two levels of degraded grid voltage 3700 volts and 3600 volts.
2. Add to Section 4.2 of the technical specifications the functional tests and calibration requirements for the degraded grid voltage system.

This inspection was made to assess the adequacy and clarity of the proposed technical specification changes. The changes were reviewed in detail with the licensee and the physical locations of protective equipment, alarms, indications, and circuitry were inspected. The limiting conditions of operation, required operator actions, trip settings, calibration, surveillance and testing requirements were evaluated for clarity. No deficiencies were discovered.

3.2 Degraded Grid Operating Procedures

By letter dated November 2, 1984 the licensee submitted for staff review operating procedure, "OP-3140 Low Grid Voltage Without an Accident Signal, Alarm Annunciator Response Procedure." Prior to this inspection, this procedure was reviewed and recommendations were made by the staff to the licensee for establishing time limitations during which operator action is required for each level of degraded voltage. The licensee concurred with changes recommended and had incorporated them in the procedure.

This inspection was made to determine the adequacy and clarity of licensee Operating Procedure OP-3140. The inspector walked through

each step of the procedure in order to evaluate equipment, operator and plant response actions. No deficiencies were discovered during this inspection. This issue will be addressed by the NRC in an upcoming safety evaluation report.

4.0 Independent Inspection

4.1 Uninterruptable Power Supplies (UPS) IE Exide Batteries

The inspector conducted an inspection of the UPS batteries in follow-up of a 10 CFR Part 21 battery failure report. Vermont Yankee has two redundant UPS systems each powered by 192 "E" size Exide Type EC11 battery cells. These batteries were initially installed during 1979 and were replaced in 1984 because of "nodular corrosion" of the lead battery posts which caused stress and cracking in the plastic components adjacent to the posts, copper contamination of the negative plates, and degraded battery performance. Exide inspected the batteries in March 1984 and reported these battery failures under 10 CFR 50 Part 21. The batteries were replaced with Exide Type EC11 batteries with a new seal design to overcome the problem. Visual inspection by the inspector did not reveal similar corrosion problems. No deficiencies in the new batteries were discovered during this inspection.

4.2 Station Batteries

The inspector made an inspection of the two Class IE 125 volt station batteries to observe reported erosion (mossing) around the battery terminals and on top of the battery plates and to assess the licensee's battery maintenance program for compliance with NRC requirements and licensee commitment. These are C&D batteries which have been in service for approximately 13 years. Inspection, maintenance records were reviewed covering the period since 1974. Battery capacity is periodically determined by Station Battery Discharge Test OP-4211 to assure compliance with Technical Specifications and FSAR requirements. Defective or deficient cells or batteries are replaced. There was no evidence of excessive failure or replacements during this time. Most of the cells showed little evidence of the mossing or corrosion reported except for cell 16 which has heavy mossing on top of the plates and appeared to have a cracked seal around one of the posts. The licensee has planned to replace all of these batteries with the same type and size batteries during this outage. No deficiencies in the licensee's battery maintenance program were discovered.

5.0 Unresolved Item

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, or violations. Unresolved items are discussed in paragraph 2.0.

6.0 Exit Interview

The inspector met with licensee and construction representatives (denoted in Paragraph 1.0) at the conclusion of the inspection on October 11, 1985, at the construction site. The inspector summarized the findings of the inspection and the licensee acknowledged the inspector's comments.

The inspector also confirmed with the licensee that the documents reviewed by the team did not contain any proprietary information. The licensee agreed that the inspection report may be placed in the Public Document Room without prior licensee review for proprietary information (10 CFR 2/790).

At no time during this inspection was written material provided to the licensee by the inspector.