

August 23, 1990

Mr. L. A. Tremblay  
Licensing Engineer  
Vermont Yankee Nuclear Power Corporation  
580 Main Street  
Bolton, Massachusetts 01740-1398

Dear Mr. Tremblay:

SUBJECT: ISSUANCE OF AMENDMENT NO. 125 TO FACILITY OPERATING LICENSE  
NO. DPR-28 - VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. 76491)

The Commission has issued the enclosed Amendment No. 125 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. This amendment is in response to your application dated April 8, 1990.

This amendment modifies the Limiting Conditions of Operation and Surveillance Requirements for the battery systems.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register Notice.

This completes action under TAC 76491.

Sincerely,

Original signed by:

Morton B. Fairtile, Project Manager  
Project Directorate I-3  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No.125 to License No. DPR-28
- 2. Safety Evaluation

cc w/enclosures:  
See next page

OFC	:PDI-3/LA(A)	:PDI-3/PM	MBF:OGC	:PDI/D(A)	:	:
NAME	:B.Dayton	:MBFairtile:mw		:V.Nerses	:	:
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AMENDMENT NO. 125 TO DPR-28 VERMONT YANKEE NUCLEAR POWER STATION DATED August 23, 1990

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Wanda Jones - MNBB 7103

J. Calvo - 11 F23

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GPA/PA - 2 G5

OC/LFMB - MNBB

J. Johnson, Region I

00157

Mr. L. A. Tremblay, Senior Licensing Engineer

Vermont Yankee

cc:

Mr. J. Gary Weigand  
President & Chief Executive Officer  
Vermont Yankee Nuclear Power Corp.  
R.D. 5, Box 169  
Ferry Road  
Brattleboro, Vermont 05301

Mr. John DeVincentis, Vice President  
Yankee Atomic Electric Company  
580 Main Street  
Bolton, Massachusetts 01740-1398

Vermont Public Interest Research  
Group, Inc.  
43 State Street  
Montpelier, Vermont 05602

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406

R. K. Gad, III  
Ropes & Gray  
One International Place  
Boston, Massachusetts 02110

Mr. W. P. Murphy, Senior Vice President, Operations  
Vermont Yankee Nuclear Power Corporation  
R.D. 5, Box 169  
Ferry Road  
Brattleboro, Vermont 05301

Mr. George Sterzinger, Commissioner  
Vermont Department of Public Service  
120 State Street, 3rd Floor  
Montpelier, Vermont 05602

Public Service Board  
State of Vermont  
120 State Street  
Montpelier, Vermont 05602

Chairman, Board of Selectmen  
Town of Vernon  
Post Office Box 116  
Vernon, Vermont 05353-0116

Mr. Raymond N. McCandless  
Vermont Division of Occupational  
and Radiological Health  
Administration Building  
Montpelier, Vermont 05602

Honorable John J. Easton  
State of Vermont  
109 State Street  
Montpelier, Vermont 05602

Diane Curran, Esq.  
Harmon, Curran & Tousley  
2001 S Street, N.W., Suite 430  
Washington, D.C. 20009

James Volz, Esq.  
Special Assistant Attorney General  
Vermont Department of Public Service  
120 State Street  
Montpelier, Vermont 05602

G. Dana Bisbee, Esq.  
Office of the Attorney General  
Environmental Protection Bureau  
State House Annex  
25 Capitol Street  
Concord, New Hampshire 03301-6397

Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. James P. Pelletier  
Vice President - Engineering  
Vermont Yankee Nuclear Power Corporation  
P.O. Box 169, Ferry Road  
Brattleboro, Vermont 05301

Mr. L. A. Tremblay

Vermont Yankee

cc:

Mr. Gustave A. Linenberger, Jr.  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Robert M. Lazo, Chairman  
Atomic Safety and Licensing Board  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Resident Inspector  
Vermont Yankee Nuclear Power Station  
U.S. Nuclear Regulatory Commission  
P.O. Box 176  
Vernon, Vermont 05354

Frederick J. Shon  
Administrative Judge  
Atomic Safety and Licensing Board  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

John Traficonte, Esq.  
Chief Safety Unit  
Office of the Attorney General  
One Ashburton Place, 19th Floor  
Boston, Massachusetts 02108

Jerry R. Kline  
Administrative Judge  
Atomic Safety and Licensing Board  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Geoffrey M. Huntington, Esquire  
Office of the Attorney General  
Environmental Protection Bureau  
State House Annex  
25 Capitol Street  
Concord, New Hampshire 03301-6397

Charles Bechhoefer, Esq.  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. James H. Carpenter  
Administrative Judge  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.125  
License No. DPR-28

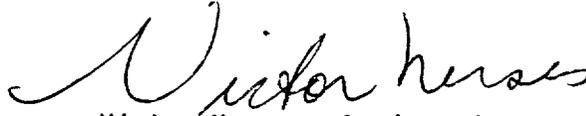
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Vermont Yankee Nuclear Power Corporation (the licensee) dated April 8, 1990 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-28 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.125, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 30 days of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Victor Nerses, Acting Director  
Project Directorate I-3  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: August 23, 1990

ATTACHMENT TO LICENSE AMENDMENT NO.125

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

<u>Remove</u>	<u>Insert</u>
174	174
174a	174a
175	175
----	175a
----	176a
178a	178a
180	180

## 3.10 LIMITING CONDITIONS FOR OPERATION

## 2. Battery Systems

The following battery systems shall be operable:

- a. The four Neutron Monitoring and Process Radiation Batteries, associated chargers, and 24 VDC Distribution Panels.
- b. The two main station battery systems consisting of:
  1. Battery A1, Battery Charger A or Spare Charger AB and Bus DC-1.
  2. Battery B1, Battery Charger B or Spare Charger AB and Bus DC-2.
- c. Two Switchyard Batteries each with one associated charger and its associated DC distribution panel.

## 4.10 SURVEILLANCE REQUIREMENTS

- b. The undervoltage automatic starting circuit of each diesel generator shall be tested once a month.
  - c. Once per operating cycle, the actual conditions under which the diesel generators are required to start automatically will be simulated and a test conducted to demonstrate that they will start within 13 seconds and accept the emergency load and start each load within the specified starting time. The results shall be logged.
2. Battery Systems
- a. Every week the specific gravity, temperature, level, and voltage of the pilot cell and overall battery voltage shall be measured and logged.
  - b. Every three months the voltage, temperature, level, and specific gravity of each cell, and overall battery voltage shall be measured and logged.
  - c. Once per operating cycle each ECCS battery, Alternate Shutdown AS-2 battery, and Main Station battery shall be subjected to a Service (Load Profile) discharge test. The specific gravity and voltage of each cell shall be measured after the recharge at the end of the discharge test and logged.

## 3.10 LIMITING CONDITIONS FOR OPERATION

- d. Both ECCS Instrumentation batteries, associated chargers, and distribution panels.
- e. The Alternate Shutdown AS-2 battery, one of the two associated chargers, and DC Distribution panel DC-2AS.
- f. Both UPS batteries, associated Uninterruptible Power Supplies and MCC 89A and B.

## 4.10 SURVEILLANCE REQUIREMENTS

- d. Once every five years, each ECCS, UPS, AS-2, and Main Station Battery shall be subjected to a Performance (capacity) Discharge Test. This test will be performed in lieu of the Service Test requirements of 4.10.A.2.c above.
- e. Each 480 V Uninterruptible Power System shall be checked daily.
- f. 480 V Motor Control Centers 89A and 89B shall be checked daily.
- g. Once per operating cycle, the actual conditions under which the 480 V Uninterruptible Power Systems are required will be simulated and a test conducted to demonstrate equipment performance.

## 3.10 LIMITING CONDITIONS FOR OPERATION

3. Emergency Buses

The emergency 4160 volt Buses 3 and 4, and 480 volt Buses 8 and 9 shall be energized and operable.

4. Off-Site Power

- a. At least one off-site transmission line and at least one start-up transformer in service.
- b. One of the following additional sources of delayed access power:

The main stepup transformer and unit auxiliary transformer available and capable of supplying power to the emergency 4160 volt buses or,

The 4160 volt tie line to Vernon Hydro-Electric Station capable of supplying power to either of the two emergency 4160 volt buses.

## 4.10 SURVEILLANCE REQUIREMENTS

3. Emergency Buses

The emergency 4160 volt buses and 480 volt buses shall be checked daily.

4. Off-Site Power

The status of the off-site power sources shall be checked daily.

## 3.10 LIMITING CONDITIONS FOR OPERATION

## 4.10 SURVEILLANCE REQUIREMENTS

5. Reactor Protection System Power Protection

Two RPS power protection panels for each inservice RPS MG set or alternate power source shall be operable.

5. Reactor Protection System Power Protection

Once per operating cycle, the operability of each overvoltage, undervoltage, and underfrequency protective device shall be demonstrated by the performance of an instrument channel calibration test. Settings shall be verified to be in accordance with Table 4.10.1.

## 3.10 LIMITING CONDITIONS FOR OPERATION

- d. From and after the date that the AS-2 125 Volt battery system is made or found to be inoperable for any reason, continued reactor operation is permissible provided Diesel Generator DG1-1A control power is transferred to Station Battery B1 and a fire watch is established to inspect the cable vault a minimum of every two hours.
- e. From and after the date that one of the two 24 Volt Neutron Monitoring and Process Radiation Monitoring battery systems is found or made to be inoperable for any reason, continued reactor operation is permissible providing the minimum channel requirements of Sections 3.1 and 3.2 for the Neutron Monitoring and Process Radiation Monitoring systems are met.
- f. From and after the date that one of the two 125 volt Switchyard battery systems is found or made to be inoperable for any reason, continued reactor operation is permissible provided that the other 125 volt Switchyard battery system is operable.

## 4.10 SURVEILLANCE REQUIREMENTS

A battery charger is supplied for each battery. In addition, the two 125 volt station batteries have a spare charger available. Since one spare 125 volt station charger is available, one station battery charger can be allowed out of service for maintenance and repairs.

Power for the Reactor Protection System is supplied by 120 V ac motor generators with an alternate supply from MCC-8B. Two redundant, Class 1E, seismically qualified power protection panels are connected in series with each ac power source. These panels provide overvoltage, undervoltage, and underfrequency protection for the system. Setpoints are chosen to be consistent with the input power requirements of the equipment connected to the bus.

- B. Adequate power is available to operate the emergency safeguards equipment from either startup transformer or for minimum engineered safety features from either of the emergency diesel generators. Therefore, reactor operation is permitted for up to seven days with both delayed-access off-site power sources lost.

Each of the diesel generator units is capable of supplying 100 percent of the minimum emergency loads required under postulated design basis accident conditions. Each unit is physically and electrically independent of the other and of any off-site power source. Therefore, one diesel generator can be allowed out of service for a period of seven days without jeopardizing the safety of the station.

## 4.10 (Continued)

Both diesel generators have air compressors and air receiver tanks for starting. It is expected that the air compressors will run only infrequently. During the monthly check of the units, each receiver will be drawn down below the point at which the compressor automatically starts to check operation and the ability of the compressors to recharge the receivers.

Following the tests of the units and at least weekly, the fuel volume remaining will be checked. At the end of the monthly load test of the diesel generators, the fuel oil transfer pump will be operated to refill the day tank and to check the operation of the pump. The day tank level indicator and alarm switches will be checked at this time.

The test of the diesels and Uninterruptible Power Systems during each refueling interval will be more comprehensive in that it will functionally test the system; i.e., it will check starting and closure of breakers and sequencing of loads. The units will be started by simulation of a loss of coolant accident. In addition, a loss of normal power condition will be imposed to simulate a loss of offsite power. The timing sequence will be checked to assure proper loading in the time required. Periodic tests between refueling intervals check the capability of the diesels to start in the required time and to deliver the expected emergency load requirements. Periodic testing of the various components plus a functional test at a refueling interval are sufficient to maintain adequate reliability.

- B. Although the Main Station, ECCS, AS-2, and UPS batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification is that which has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

The Performance Discharge test provides adequate indication and assurance that the batteries have the specified ampere hour capacity. The rate of discharge during this test shall be in accordance with the manufacturer's discharge characteristic curves for the associated batteries. The results of these tests will be logged and compared with the manufacturer's recommendation of acceptability.

The Service Discharge test provides a test of the batteries ability to satisfy the design requirements (battery duty cycle) of the associated DC system. This test will be performed using simulated or actual loads at the rates and for the durations specified in the design load profile.

- C. Logging the diesel fuel supply weekly and after each operation assures that the minimum fuel supply requirements will be maintained. During the monthly test for quality of the diesel fuel oil, a viscosity test and water and sediment test will be performed as described in ASTM D975-68. The quality of the diesel fuel oil will be acceptable if the results of the tests are within the limiting requirements for diesel fuel oils shown on Table 1 of ASTM D975-68.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 125 TO FACILITY OPERATING LICENSE NO. DPR-28

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

INTRODUCTION

By letter dated April 8, 1990, the Vermont Yankee Nuclear Power Corporation (the licensee) proposed changes to the Technical Specifications (TS) for Vermont Yankee. The proposed change modifies the Limiting Conditions of Operation (3.10) and Surveillance Requirements (4.10) of the Battery Systems in the TS. The change involves conditions of normal operation and of operation with inoperable components.

EVALUATION

We have reviewed and discussed each of the proposed TS changes separately:

1. Surveillance Requirements (SRs) 4.10.A.2.c and 4.10.A.2.d

The current SR 4.10.A.2.c requires the licensee to perform a "rated load test" on their safety related station batteries every operating cycle. The proposed SR 4.10.A.2.c modifies the requirement to perform a Service Discharge Test instead of the above rated load test once per operating cycle and a new SR 4.10.A.2.d has been added to require a Performance Discharge Test once every 5 years. The batteries included in these proposed SR changes are: instrumentation batteries for ECCS, safety related station batteries, and 10 CFR Part 50, Appendix R alternate shutdown (AS-2) batteries. The Service Discharge Test, as defined in IEEE Std. 450-1975, is intended to determine whether the battery is capable of meeting the design requirements of the dc system while the Performance Discharge Test confirms the battery capacity. The licensee has interpreted the "rated load test" to include only the Performance Discharge Test and not the Service Discharge Test. The licensee proposes to perform the Service Discharge Test once per operating cycle. However, we noticed that the proposed SR 4.10.A.2.d does not include a provision for battery replacement and degradation criteria as prescribed by the IEEE Std. 450-1975. In a telephone conversation on May 21, 1990, with the licensee, VY assured us that the above criteria will be implemented in their revised operating procedures, this is consistent with the Standard Technical Specifications.

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We reviewed the licensee's proposed battery test provisions and find that they represent an improvement because the probability of detecting a potentially degraded cell or battery would be increased. We also find that the proposed SRs are consistent with the Standard TS. Therefore, we conclude that the proposed SRs 4.10.A.2.c and 4.10.A.2.d of the TS are acceptable.

2. Surveillance Requirements (SRs) 4.10.A.2.a and 4.10.A.2.b.

The proposed SR 4.10.A.2.a adds a requirement to measure and record pilot cell (every sixth cell) electrolyte level weekly. It also requires measurement of the temperature of the pilot cell itself weekly. The proposed SR 4.10.A.2.b adds a requirement to measure and record electrolyte level and temperature for all the cells during quarterly battery surveillance.

If the electrolyte level falls below the minimum level, the top of the cell plates could be exposed. This would result in a battery capacity loss.

The performance and life of the battery is significantly degraded due to overcompensation of the battery charger if the temperature of a battery is not maintained properly. The proposed requirement to measure pilot cell electrolyte level and temperature during a weekly battery surveillance interval, and to monitor those parameters for all the cells during quarterly battery surveillance is consistent with recommendations provided by both the battery manufacturer and IEE Std. 450-1975.

Therefore, we conclude the proposed modifications to SR 4.10.A.2.a and 4.10.A.2.b are acceptable.

3. Limiting Conditions for Operations (LCOs) 3.10.A.2.a, b, c and d.

For normal plant operation, the current LCOs 3.10.A.2.a, b, c, and d in the Battery Section of the TS require only battery chargers for neutron monitoring, station, switchyard and ECCS instrument batteries to be operable, rather than the entire dc system (i.e., dc buses, batteries and their associated battery chargers). The proposed change requires that each dc system, consisting of buses, batteries, and associated battery chargers, should be operable. We agree that each dc system including the batteries and their associated buses in addition to the chargers should be operable. We, therefore, conclude that the proposed change is acceptable.

4. Limiting Conditions for Operations (LCOs) 3.10.A.2.e and f.

The licensee proposed an LCO 3.10.A.2.e for the Appendix R alternate shut-down AS-2 battery to be added in the Battery Systems of the TS and also proposed to relocate their current LCO 3.10.A.5 for "480V Uninterruptible Power Systems" into 3.10.A.2 Battery System sub-section as a provision 3.10.A.2.f. As a result, the current LCO 3.10.A.5 provision from the current TS will be removed because all the information in it has been relocated.

We conclude that the proposed new LCOs 3.10.A.2.e and 3.10.A.2.f are acceptable.

5. Limiting Conditions for Operation (LCO) 3.10.A.2.d.

The licensee proposed to delete LCO 3.10.A.2.d which requires the standby ECCS battery charger be available for use as a spare. The safety function of the ECCS chargers require them to be available in an accident. The licensee has determined that the spare (standby) charger is in a location which may become harsh after an accident. Since the standby ECCS battery charger is not environmentally qualified, the licensee acknowledges that credit should not be taken for the spare charger.

The licensee has stated that availability of spare parts will permit any repair associated with battery chargers to be completed within the required 3 day LCO period and that there is no need for the spare charger.

We agree with the licensee. Therefore, we conclude that the deletion of the standby ECCS charger from the LCO 3.10.A.2.d is acceptable.

6. Limiting Conditions for Operations (LCOs) 3.10.B.2.d, e, and f.

The licensee proposed to add LCOs 3.10.B.2.d, e, and f regarding an inoperable alternate shutdown AS-2 battery system, the neutron monitoring and process radiation monitoring battery system, and the switchyard battery system.

We reviewed the proposed LCO provisions for the above batteries and find that the proposed LCOs ensure that a proper and timely action will be taken should an inoperable condition exist. Therefore, we conclude that the proposed LCO provisions 3.10.B.2.d, e, and f are acceptable.

7. Basis Section

The licensee provided a basis for including the Performance Discharge Test and Service Discharge Test for all the safety related batteries in the TS and identified all the dc system batteries that should be in the TS.

ENVIRONMENTAL CONSIDERATION

The amendment involves changes with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20 and surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types, of any effluents that may be released off-site, and that there is no significant increase in individual or cumulative occupational exposure. The staff has determined that the amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (55 FR 18415) on May 2, 1990. The Commission consulted with the State of Vermont. No public comments were received and the State of Vermont did not have any comments.

On the basis of the considerations discussed above, the staff has concluded that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Peter Kang

Dated: August 23, 1990