

August 2, 1976

Docket No.: 50-271

Yankee Atomic Electric Company  
ATTN: Mr. Robert H. Groce  
Licensing Engineer  
20 Turnpike Road  
Westboro, Massachusetts 01581

Gentlemen:

DISTRIBUTION:  
Docket File Dross  
NRC PDR TBAbernathy  
L PDR JRBuchanan  
ORB#4 Rdg WButler  
KRGoller/TJCarter  
VStello  
RIngram  
~~RXXXXXX~~  
PDiBenedetto  
Attorney, OELD  
OI&E (5)  
BJones (4)  
BScharf (10)  
JMcGough  
ACRS (16)  
OPA, Clare Miles

The Commission has issued the enclosed Amendment No. 26 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The amendment consists of changes to the Technical Specifications in response to your application dated July 15, 1976.

The amendment relates to the installation of a 480 volt Uninterruptible Power Supply for emergency core coolant valves.

Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

Original Signed by

Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors

Enclosures:

- 1. Amendment No. 26
- 2. Safety Evaluation
- 3. Federal Register Notice

cc w/enclosures: See next page

OFFICE →	ORB#4:DOR	ORB#4:DOR	C-PSB-OT:DOR	OELD	C-ORB#4:DOR	
SURNAME →	RIngram	PDiBenedetto	rm WButler		RReid	
DATE →	7/28/76	7/28/76	7/28/76	7/28/76	8/12/76	

Docket



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

August 2, 1976

Docket No.: 50-271

Yankee Atomic Electric Company  
ATTN: Mr. Robert H. Groce  
Licensing Engineer  
20 Turnpike Road  
Westboro, Massachusetts 01581

Gentlemen:

The Commission has issued the enclosed Amendment No. 26 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The amendment consists of changes to the Technical Specifications in response to your application dated July 15, 1976.

The amendment relates to the installation of a 480 volt Uninterruptible Power Supply for emergency core coolant valves.

Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert W. Reid".

Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors

Enclosures:

1. Amendment No. 26
2. Safety Evaluation
3. Federal Register Notice

cc w/enclosures: See next page

Yankee Atomic Electric Company

cc: w/enclosure

Mr. James E. Griffin, President  
Vermont Yankee Nuclear Power Corporation  
77 Grove Street  
Rutland, Vermont 05701

Mr. Donald E. Vandenburg, Vice President  
Vermont Yankee Nuclear Power Corporation  
Turnpike Road, Route 9  
Westboro, Massachusetts 01581

John A. Ritsher, Esquire  
Ropes & Gray  
225 Franklin Street  
Boston, Massachusetts 02110

Gregor I. McGregor, Esquire  
Assistant Attorney General  
Department of the Attorney General  
State House, Room 370  
Boston, Massachusetts 02133

Richard E. Ayres, Esquire  
Natural Resources Defense  
917 - 15th Street, N. W.  
Washington, D. C. 20005

Honorable M. Jerome Diamond  
Attorney General  
State of Vermont  
109 State Street  
Pavilion Office Building  
Montpelier, Vermont 05602

John A. Calhoun  
Assistant Attorney General  
State of Vermont  
109 State Street  
Pavilion Office Building  
Montpelier, Vermont 05602

Anthony Z. Roisman, Esquire  
Berlin, Roisman and Kessler  
1712 N Street, N. W.  
Washington, D. C. 20036

Brooks Memorial Library  
224 Main Street  
Brattleboro, Vermont 05301

Mr. John R. Stanton, Director  
Radiation Control Agency  
Hazen Drive  
Concord, New Hampshire 03301

Mr. John W. Stevens  
Conservation Society of  
Southern Vermont  
P. O. Box 256  
Townshend, Vermont 05353

Mr. David M. Scott  
Radiation Health Engineer  
Agency of Human Services  
Division of Occupational Health  
P. O. Box 607  
Barre, Vermont 05641

New England Coalition on  
Nuclear Pollution  
Hill and Dale Farm  
West Hill - Faraway Road  
Putney, Vermont 05346

Mr. Raymond H. Puffer  
Chairman  
Board of Selectman  
Vernon, Vermont 05354

cc w/enclosures and copy of  
VY's filing dtd. 7/15/76.

Mr. Martin K. Miller, Chairman  
State of Vermont  
Public Service Board  
120 State Street  
Montpelier, Vermont 05602



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. 26  
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Vermont Yankee Nuclear Power Corporation (the licensee) dated July 15, 1976, 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;
  - 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.
3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors

**Attachment:**  
Changes to the Technical  
Specifications

**Date of Issuance:** August 2, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 26

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Revise Appendix A Technical Specifications as follows:

Remove Pages

Insert Pages

175

175

177 - 180

177 - 180

The changed areas on the revised pages are shown by marginal lines.

## 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 step-up 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.

5. 480 V Uninterruptible Power Systems

Both 480 V Uninterruptible Power Systems (UPS-1A, UPS-1B) and their respective Motor Control Centers (89A, 89B) shall be energized and operable.

## 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.

5. 480 V Uninterruptible Power Systems

- a. The requirements of Specification 4.10.A.2(a) and (b) shall be satisfied for each 480 V Uninterruptible Power System battery bank.
- b. Each Uninterruptible Power System battery bank shall be subjected to a performance discharge test every 5 years.
- c. Each 480 V Uninterruptible Power System shall be checked daily.
- d. 480 V Motor Control Centers 89A and 89B shall be checked daily.
- e. Once per operating cycle, the actual condition 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 OPERATION3. Off-Site Power

- a. From and after the date that both startup transformers and one diesel generator or associated buses are made or found to be inoperable for any reason, reactor operation may continue provided the requirements of Specification 3.5.H.1 are satisfied.
- b. From and after the date that both delayed-access offsite power sources become unavailable, reactor operation may continue for seven days provided both emergency diesel generators, associated buses and all low pressure core and containment cooling systems are operable.

4. 480 V Uninterruptible Power Systems

From and after the date that one Uninterruptible Power System or its associated Motor Control Center are made or found to be inoperable for any reason, the requirements of Specification 3.5.A.4 shall be satisfied.

C. Diesel Fuel

There shall be a minimum of 25,000 usable gallons of diesel fuel in the diesel fuel oil storage tank.

4.10 SURVEILLANCE REQUIREMENTS3. Off-Site Power

- a. When it is determined that one of the diesel generators or associated buses is inoperable, the requirements of Specification 4.5.H.1 shall be satisfied.
- b. When it is determined that both delayed-access offsite power sources are unavailable, both diesel-generators, associated buses and all low pressure core and containment cooling systems shall be demonstrated to be operable immediately and daily thereafter.

4. 480 V Uninterruptible Power Systems

When it is determined that one Uninterruptible Power System or its associated Motor Control Center is inoperable, the requirements of Specification 4.5.A.4 shall be satisfied.

C. Diesel Fuel

1. The quantity of diesel generator fuel shall be logged weekly and after each operation of the unit.
2. Once a month a sample of diesel fuel shall be taken and checked for quality. The quality shall be within the applicable limits specified on Table I of ASTM D975-68 and logged.



## AUXILIARY ELECTRICAL POWER SYSTEMS

- A. The objective of this specification is to assure that adequate power will be available to operate the emergency safeguards equipment. Adequate power can be provided by any one of the following sources: either of the startup transformers, backfeed through the main transformer, the 4160 volt line from the Vernon Hydroelectric Station or either of the two diesel generators. The backfeed through the main transformer and the 4160 volt Vernon line are both delayed-access offsite power sources. Backfeeding through the main transformer can be accomplished by disconnecting the main generator from the main transformer and energizing the auxiliary transformer from the 345 kv switchyard through the main transformer. The time required to perform this disconnection is approximately six hours. The 4160 volt line from the Vernon Hydroelectric Station can be connected to either of the two emergency buses within seconds by simple manual switching operation in the main control room.

Two 480 V Uninterruptible Power Systems; each consisting of a battery bank, battery charger, and a solid state inverter, supply power to the LPCIS valves via designated motor control centers. The 480 V Uninterruptible Power Systems are redundant and independent of any onsite power sources.

This Specification assures that at least two offsite, two onsite power sources, and both 480 V Uninterruptible Power Systems will be available before the reactor is taken beyond "just critical" testing. In addition, to assuring power source availability, all of the associated switchgear must be operable as specified to assure that the emergency cooling equipment can be operated, if required, from the power sources.

Station service power is supplied to the station through either the unit auxiliary transformer or the startup transformers. In order to startup the station, at least one startup transformer is required to supply the station auxiliary load. After the unit is synchronized to the system, the unit auxiliary transformer carries the station auxiliary load, except for the station cooling tower loads which are always supplied by one of the startup transformers. The station cooling tower loads are not required to perform an engineered safety feature function in the event of an accident, therefore, an alternate source of power is not essential. Normally one startup transformer supplies 4160 volt buses 1 and 3 and the other supplies buses 2 and 4, however, the two startup transformers are designed with adequate capacity such that, should one become or be made inoperable temporary connections can be made to supply the total station load (less the cooling towers) from the other startup transformer.

A battery charger is supplied with each of the two 125 volt d-c main station batteries. In addition, a spare charger is available and can supply power to either battery system. Since this alternative source is available, one battery charger can be allowed out of service for maintenance and repairs.

- 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 offsite 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 offsite 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.

### 3.10 (continued)

In the event that both startup transformers are lost, adequate power is available to operate the emergency safeguards equipment from either of the emergency diesel generators or from either of the delayed-access offsite power sources. Also, in the event that both emergency diesel generators are lost, adequate power is available immediately to operate the emergency safeguards equipment from at least one of the startup transformers or from either of the delayed-access offsite power sources within six hours. The plant is designed to accept one hundred percent load rejection without adverse effects to the plant or the transmission system. Network stability analysis studies indicate that the loss of Vermont Yankee unit will not cause instability and consequent tripping of the connecting 345 kv and 115 kv lines. The Vernon feed is an independent source. Thus, the availability of the delayed-access offsite power sources is assured in the event of a turbine trip. Therefore, reactor operation is permitted with the startup transformers out of service and with one diesel generator out of service provided the NRC is notified immediately of the event and restoration plans.

Either of the two station batteries has enough capacity to energize the vital buses and supply d-c power to the other emergency equipment for 8 hours without being recharged. Due to the high reliability of battery systems, one of the two batteries may be out of service for up to three days. This minimizes the probability of unwarranted shutdown by providing adequate time for reasonable repairs. A station battery or an Uninterruptible Power System battery is considered inoperable if more than one cell is out of service. A cell will be considered out of service if its float voltage is below 2.13 volts and the specific gravity is below 1.190 at 77°F.

The battery room is ventilated to prevent accumulation of hydrogen gas. With a complete loss of the ventilation system, the accumulation of hydrogen would not exceed 4 percent concentration in 16 days. Therefore, on loss of battery room ventilation, the use of portable ventilation equipment and daily sampling provide assurance that potentially hazardous quantities of hydrogen gas will not accumulate.

- C. The minimum diesel fuel supply of 25,000 gallons will supply one diesel generator for a minimum of seven days of operation satisfying the load requirements for the operation of the safeguards equipment. Additional fuel can be obtained and delivered to the site from nearby sources within the seven day period.

### 4.10 AUXILIARY ELECTRICAL POWER SYSTEMS

#### Bases:

- A. The monthly tests of the diesel generators are conducted to check for equipment failures and deterioration. The test of the undervoltage automatic starting circuits will prove that each diesel will receive a start signal if a loss of voltage should occur on its emergency bus. The loading of each diesel generator is conducted to demonstrate proper operation at less than the continuous rating and at equilibrium operating conditions. Generator experience at other generator stations indicates that the testing frequency is adequate to assure a high reliability of operation should the system be required.

#### 4.10.A (continued)

Both diesel generators have air compressors and air receivers 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 this 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 station and Uninterruptible Power System 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 rated load 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 125 volt station and the 432 volt Uninterruptible Power System batteries. The results of these tests will be logged and compared with the manufacturer's recommendations of acceptability.

- 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. 26 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 July 15, 1976, Vermont Yankee Nuclear Power Corporation (VYNPC) requested a Technical Specification change to Appendix A of the Technical Specifications for the Vermont Yankee Nuclear Power Station (VYNPS).

BACKGROUND

In our Safety Evaluation Report (SER) dated December 11, 1975, we found the modification proposed by VYNPC to install a 480V Uninterruptible Power Supply (UPS) for emergency core coolant valves an acceptable way of providing the required redundancy provided that installation complied with the proper codes and standards and that appropriate technical specifications including surveillance requirements be submitted for review and approval prior to operation of the reactor as modified.

EVALUATION

The proposed 480 volt UPS system has been installed as described and evaluated in the SER dated December 11, 1975. One modification to the original design was made. The change was the installation of two transformers in place of the one previously described. We find this change acceptable.

The proposed technical specifications reflect a testing and surveillance program along with Limiting Conditions for Operation that will ensure that the system will perform its function as intended. Furthermore, the surveillance program depicted will assure the reliability of the system.

Based on our review of the modification, Technical Specifications, and bases proposed we conclude that operation of the 480 volt UPS system in the intended manner is acceptable. We also conclude that the Technical Specification and bases changes are acceptable and consistent with those of other facilities operating with similar type modifications and found acceptable to the staff.

#### ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §1.5(d)(4) that an environmental statement, negative declaration, or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

#### CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the changes do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the changes do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: August 2, 1976

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER CORPORATION

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 26 to Facility Operating License No. DPR-28, issued to Vermont Yankee Nuclear Power Corporation (the licensee), which revised Technical Specifications for operation of the Vermont Yankee Nuclear Power Station (the facility), located near Vernon, Vermont. The amendment is effective as of its date of issuance.

The amendment establishes Technical Specifications for the operation and surveillance of the facility's recently installed 480 volt Uninterruptible Power Supply for emergency core coolant valves. The installation of this power supply was evaluated in the Commission's Safety Evaluation dated December 11, 1975, and found acceptable with the condition that appropriate Technical Specifications be approved prior to operation of the reactor as modified.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, negative declaration or environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated July 15, 1976, (2) Amendment No. 26 to License No. DPR-28, (3) the Commission's related Safety Evaluation, and (4) the Commission's Safety Evaluation dated December 11, 1975. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Brooks Memorial Library, 224 Main Street, Brattleboro, Vermont. A copy of items (2), (3), and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 2nd day of August 1976..

FOR THE NUCLEAR REGULATORY COMMISSION



Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors