

Docket No. 50-271

October 24, 1991

*See Correction letter
of 11/7/91*

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

Dear Mr. Tremblay:

SUBJECT: ISSUANCE OF AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE
NO. DPR-28 - VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. M79442)

The Commission has issued the enclosed Amendment No. 132 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. This amendment is in response to your application dated January 15, 1991, May 16, 1991, and July 12, 1991.

This amendment eliminates the Technical Specification requirements for the Toxic Gas Monitoring System.

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

Sincerely,

Original signed by Morton B. Fairtile

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

Enclosures:

- 1. Amendment No. 132 to License No. DPR-28
- 2. Safety Evaluation

cc w/enclosures:
See next page

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

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Sincerely,

Morton B. Fairtile

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

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1. Amendment No. 132 to License No. DPR-28
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. L. A. Tremblay, Senior Licensing
Engineer

Vermont Yankee

cc:

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AMENDMENT NO. 132 TO DPR-28 VERMONT YANKEE NUCLEAR POWER STATION DATED October 24, 1991

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Docket File 50-271 ←

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Local PDR

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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. 132
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 January 15, May 16 and July 12, 1991, 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. 132, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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PDR ADOCK 05000271
P PDR

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script that reads "Walter R. Butler".

Walter R. Butler, 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: October 24, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 132

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>
34a	34a
49c	49c
60b	60b
66	66
220	220

3.2 LIMITING CONDITIONS FOR OPERATION

3.2 Protective Instrument Systems Specification
(cont'd)I. Recirculation Pump Trip Instrumentation

During reactor power operation, the Recirculation Pump Trip Instrumentation shall be operative in accordance with Table 3.2.1.

J. Deleted

K. Degraded Grid Protective System

During reactor power operation, the emergency bus undervoltage instrumentation shall be operative in accordance with Table 3.2.8.

L. Reactor Core Isolation Cooling System Actuation

When the Reactor Core Isolation Cooling System is required in accordance with Specification 3.5.G, the instrumentation which initiates actuation of this system shall be operable in accordance with Table 3.2.9.

4.2 SURVEILLANCE REQUIREMENTS

4.2 PROTECTIVE INSTRUMENT SYSTEMSSpecification (cont'd)I. Recirculation Pump Trip Instrumentation

The Recirculation Pump Trip Instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.1.

J. Deleted

K. Degraded Grid Protective System

The emergency bus undervoltage instrumentation shall be functionally tested and calibrated in accordance with Table 4.2.8.

L. Reactor Core Isolation Cooling System Actuation

Instrumentation and Logic Systems shall be functionally tested and calibrated as indicated in Table 4.2.9.

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3.2 (Continued)

standby gas treatment system operation so that none of the activity released during the refueling accident leave the Reactor Building via the normal ventilation stack but that all activity is processed by the standby gas treatment system. Trip settings for the monitors in the ventilation duct are based upon initiation of the normal ventilation isolation and standby gas treatment system operation at a radiation level equivalent to the maximum site boundary dose rate of 500 mrem/year as given in Specification 3.8.E.1.a. The monitoring system in the plant stack represents a backup to this system to limit gross radioactivity releases to the environs.

The purpose of isolating the mechanical vacuum pump line is to limit release of radioactivity from the main condenser. During an accident, fission products would be transported from the reactor through the main steam line to the main condenser. The fission product radioactivity would be sensed by the main steam line radiation monitors which initiate isolation.

Post-accident instrumentation parameters for Containment Pressure, Torus Water Level, Containment Hydrogen/Oxygen Monitor, and Containment High-Range Radiation Monitor, are redundant, environmentally and seismically qualified instruments provided to enhance the operators' ability to follow the course of an event. The purpose of each of these instruments is to provide detection and measurement capability during and following an accident as required by NUREG-0737 by ensuring continuous on-scale indication of the following: containment pressure in the 0 to 275 psia range; torus water level in the 0 to 25 foot range (i.e., the bottom to 5 feet above the normal water level of the torus pool); containment hydrogen/oxygen concentrations (0 to 30% hydrogen and 0 to 25% oxygen); and containment radiation in the 1 R/hr to 10^7 R/hr gamma.

The Degraded Grid Protective System has been installed to assure that safety-related electrical equipment will not be subjected to sustained degraded voltage. This system incorporates voltage relays on 4160 Volt Emergency Buses 3 and 4 which are set to actuate at the minimum voltage required to prevent damage of safety-related equipment.

If Degraded Grid conditions exist for 10 seconds, either relay will actuate an alarm to alert operators of this condition. Based upon an assessment of these conditions the operator may choose to manually disconnect the off-site power. In addition, if an ESF signal is initiated in conjunction with low voltage below the relay setpoint for 10 seconds, the off-site power will be automatically disconnected.

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7. An estimate of the exposure to plant operating personnel as a result of the change; and
8. Documentation of the fact that the change was reviewed and found acceptable by PORC.

B. Shall become effective upon review and acceptance by PORC and approval by the Plant Manager.

6.15 BULK CHLORINE RAIL SHIPMENTS

Every three years, starting in October 1994, the licensee shall submit to the NRC, for review, the annual frequency of railroad shipments of bulk chlorine within five miles of the plant site in order to verify that the probability of loss of control room habitability meets the acceptance criteria of Section 2.2.3, "Evaluation of Potential Accidents" of the NRC Standard Review Plan (NUREG - 0800 July 1981). The report will also consider any changes in the quantity of chlorine in each shipment. The report shall reference License Amendment No. 132 dated October 24, 1991.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE NO. DPR-28
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
DOCKET NO. 50-271

1.0 INTRODUCTION

By letter dated January 15, 1991, as supplemented May 16 and July 12, 1991, the Vermont Yankee Nuclear Power Corporation (the licensee) submitted a request for changes to the Vermont Yankee Nuclear Power Station (VY or plant) Technical Specifications (TS). The requested changes would eliminate the Technical Specification (TS) requirements for the Toxic Gas Monitoring System. The May 16 and July 12, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The toxic gas monitoring system at the Vermont Yankee Nuclear Power Station was installed to meet the control room habitability requirements of item III.D.3.4 in NUREG-0737, "TMI Action Plan," November 1980. Technical Specification Section 3.2J and 4.2J specify, respectively, the limiting conditions for operation and surveillance requirements for the monitoring system.

Since the installation of the toxic gas monitoring system, the licensee, Vermont Yankee Nuclear Power Corporation, has encountered several false alarms and spurious trips per operating cycle. The licensee has spent considerable amounts of resources on calibration, preventive maintenance, and corrective efforts to address these operating difficulties.

By letters dated January 15 and July 12, 1991, the licensee proposed to eliminate the toxic gas monitoring requirements and to delete Sections 3.2J and 4.2J from the Technical Specifications. The licensee provided a probabilistic analysis to support the proposed change.

3.0 EVALUATION

The licensee has identified chlorine as a potential hazard to control room habitability following a postulated accidental spill from a railroad shipment. The concentration of chlorine gas from an accidental release would not meet the acceptance criteria of Section 6.4, Control Room Habitability, in the NRC Standard Review Plan (NUREG-0800, July, 1981). Other toxic chemicals that are transported near the plant site would not have significant impacts on control room habitability.

In the probabilistic analysis, the licensee assumes that the annual probability of chlorine gas reaching the air intake of the control room following an accidental release is the product of the annual train accident rate per mile, conditional probability that a significant release will occur (given an accident), annual number of railroad shipments within a five-mile radius of the plant, the length of railroad track within the five-mile radius of the plant, and the annual distribution of wind speeds and meteorological stability of the plant site that could disperse the chlorine plume to the control room air intake. The analysis is performed over 17 discrete segments along the railroad track, and the results of these 17 segments are summed to give the overall probability.

Using the railroad shipment data and the site meteorological data, the licensee estimates that the annual probability of a postulated accidental spill of chlorine that results in exceeding the toxicity level in the control room is $4E-7$ (that is, four times ten raised to the minus seventh power). This is the estimated probability of loss of control room habitability at the Vermont Yankee plant as a result of an offsite accidental release of chlorine gas.

The licensee also provides an estimate of the reactor core damage frequency following such a loss of control room habitability. In this estimate, the reactor core damage frequency is calculated from an annual frequency of plant trips, the probability of reactor core cooling failure, and the probability of containment heat removal failure. Combined with the probability of loss of control room habitability, the frequency of reactor core damage following an accidental release of chlorine is estimated to be $1E-11$ per year.

In the analysis of control room habitability, the licensee used the average accident rate for all railroads during the period of 1984 to 1988 from the Federal Railroad Administration, Office of Safety, U. S. Department of Transportation, dated June 1989. The annual shipment data of chlorine gas was based on a 1990 survey of the Central Vermont Railroad and Springfield Track which are within five miles of the plant site. The probability of a release, given an accident, was estimated from the accident data involving all hazardous materials from the Federal Railroad Administration, Office of Safety. The probability of a significant release, given a release, was determined from the actual chlorine incident data from the U. S. Department of Transportation for the years 1971 through 1989. Known plant site meteorological data were used.

The licensee has provided a discussion of the uncertainties of the parameters used in the analysis.

The staff has determined that the methodology in the licensee's analysis of control room habitability is appropriate. The assumptions are reasonable and conservative as the accident rate includes all accidents (that is, derailments, fires, chemical spills, etc.). The data used in the analysis are reasonable, current, and based on reliable sources. The staff has also determined that the probability of loss of control room habitability is small and meets the acceptance criteria of Section 2.2.3 of the NRC Standard Review Plan.

However, the staff notes that the estimated frequency of loss of control room habitability, though small, is nevertheless close to the acceptance criteria of Section 2.2.3 in the Standard Review Plan. Therefore, since chlorine shipments via railroads may change from time to time, and since the quantity of chlorine in each cargo may vary from shipment to shipment, the staff and licensee agreed to a reporting requirement as follows:

Every three years, starting in 1984, the licensee shall submit, a report providing the annual frequency of railroad shipments of bulk chlorine within five miles of the plant site in order to verify that the probability of loss of control room habitability meets the acceptance criteria of Section 2.2.3, of the NRC Standard Review Plan (NUREG-0800, July 1981). The report will also consider any changes in the quantity of chlorine in each shipment. The report shall reference the number and date of this license amendment.

On the basis of the above evaluation, the staff concludes that the proposed deletion of Sections 3.2J and 4.2J from the Technical Specifications of the Vermont Yankee Nuclear Power Station is acceptable, subject to the reporting requirement stated above.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Vermont State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 4873). 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 the amendment.

6.0 CONCLUSION

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

Principal Contributor: J. Wing

Date: October 24, 1991