

VERMONT YANKEE NUCLEAR POWER STATION
UNITS 1 AND 2
ENVIRONMENTAL TECHNICAL SPECIFICATIONS
(NONRADIOLOGICAL)

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1.0 Definitions

Blowdown: Blowdown refers to the water continuously removed from the cool side of the cooling tower collection basins to rid the cooling towers of dissolved solids.

Closed Cycle Operation: The circulating water system mode in which water is circulated through the cooling towers to dissipate condenser heat. The only water discharged to the river during closed-cycle operation is the blowdown from the cooling towers.

Delta T (ΔT): The difference between inlet water temperature and discharge temperature.

Free Residual Chlorine: Chlorine that remains in water as molecular chlorine (Cl_2), hypochlorous acid (HOCL), or hypochlorite ion (OCL^-) after treatment with chlorine.

Normal Operation: Operation of either unit at the station at greater than 5% of rated thermal power in other than a safety or power emergency situation.

NPDES Permit: NPDES Permit is the National Pollutant Discharge Elimination System Permit No. VT0000264 issued by the State of Vermont, Department of Conservation, to Vermont Yankee Nuclear Power Corporation (VYNPC). This permit authorizes VYNPC to discharge controlled waste water from Vermont Yankee Nuclear Power Station into the Connecticut River.

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Station: Station refers to Vermont Yankee Nuclear Power Station.

Total Residual Chlorine: The sum of the chlorine present in water as free available chlorine (in the form of hypochlorous acid and/or hypochlorite ion, or elemental chlorine) plus combined available chlorine (such as monochloramine, dichloramine or trichloramine).

2.0 Limiting Conditions for Operation

2.1 Nonradiological Limits

2.1.1 Chlorine

Specification

The free residual chlorine in the plant effluent at the aerating structure shall be maintain at or below 0.1 mg/liter during chlorination by the automatic control system.

Action

If the total residual chlorine level at the aerating structure exceeds 0.5 mg/l 100 ft from the discharge structure, as determined by an analysis of 3 samples, chlorination shall cease until the system is corrected.

Basis

The FES has evaluated the effects of discharge of chlorine at 0.1 mg/l free residual for 40 minutes twice a day and found the environmental impacts to be acceptable. Maintenance of chlorine concentrations at or below this level will insure that impacts due to use of this toxic substance are no greater than have already been evaluated.

2.1.2 River Flow

Specification

A minimum flow of 1,200 cubic feet per second of water shall be provided past the facility at all times during plant operation.

Action

If, due to causes beyond Vermont Yankee's control, the flow of water recorded at the USGS gauge at the dam at Vernon, Vt. is less than 1,200 cfs, the condenser cooling system shall be operated in a closed cycle mode and a report shall be made to the NRC in accordance with Subsection 5.4.2.B of these ETS.

Bases

On July 31, 1970, the Federal Power Commission issued an Order Approving the Use of Project Lands and Reservoir in connection with the cooling water facilities for the Vermont Yankee Nuclear Power Station. The Commission found it appropriate and in the public interest to authorize the licensee to operate the facility providing the licensee maintains a streamflow past the project of not less than 1200 cfs in order to aid the Department of the Interior's Anadromous Fish Restoration Program. This specification will insure that no additional incremental impacts due to plant operation occur during periods of extremely low river flow.

3.0 Environmental Monitoring

3.1 Nonradiological Monitoring

3.1.1 Chlorine and pH

Environmental Monitoring Requirement

Free residual chlorine concentration shall be continuously monitored and recorded at the discharge from the condenser. At least once per month the automatic control system shall be calibrated. During chlorination weekly free chlorine analyses shall be made at the end of the aerating structure by use of analytical methods that are sensitive to chlorine discharge concentration limits to determine the effectiveness of the aerating structure in removing free chlorine.

Action

The results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Subsection 5.4.1 of these ETS. The licensee shall indicate for each parameter the date of the sample, the concentration measured and the method of analysis used.

A nonroutine report shall be submitted in accordance with Subsection 5.4.2.b of these ETS if the parameter concentrations of the discharges from the plant falls outside the range specified in Subsection 2.1.1.

Bases

The purpose of these monitoring and reporting requirements is to assure that the chlorine and pH levels discharged from the Vermont Yankee Nuclear Power Station into the waters of the Connecticut River are environmentally acceptable.

The FES-OL for Vermont Yankee Nuclear Power Station and subsequent Environmental Impact Appraisals (EIAs) provide the analysis of potential chemical effects of the condenser cooling system discharge on the water quality and aquatic biota of the receiving water. The above information will provide the staff the basis for determining whether the station is operating in an environmentally acceptable manner.

3.1.2 River FlowEnvironmental Monitoring Requirement

During normal operation of the station, river flow at Vernon shall be gauged as described in NPDES Permit No. VT0000264 and condenser cooling system mode of operation shall be recorded.

Action

The results of the monitoring conducted under this program shall be summarized, analyzed, interpreted and reported in accordance with Subsection 5.4.1 of these ETS.

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A nonroutine report shall be submitted in accordance with Subsection 5.4.2.b of these ETS if the provisions of Specification 2.1.2 or the Environmental Monitoring Requirement of this subsection are violated.

Bases

The results of this monitoring and reporting requirement will provide the staff with information necessary to assure that the station is operating in an environmentally acceptable manner as analyzed in the FES-OL and subsequent Environmental Impact Appraisals. Previous analyses of the size of the thermal plume were dependent upon a minimum river flow of 1200 cfs (FES-OL and Environmental Impact Appraisal dated September 6, 1976).

3.1.3 Thermal Characteristics of Cooling Water Discharge

Environmental Monitoring Requirement

During normal operation of the station, temperatures of the ambient intake water and the discharge from the cooling system to the river shall be measured as described in NPDES Permit No. VT0000264, outfall serial number 001.

Action

The results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Subsection 5.4.1 of these ETS.

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The licensee shall record the temperature of intake water, temperature of discharge water, delta T, discharge flow rate, date and time of measurements, date of instrument calibration, accuracy and sensitivity of the temperature sensors, and occurrence and duration of periods when the sensor system is not functioning or is out of calibration.

A nonroutine report, as specified in Subsection 5.4.2.b, shall be made if thermal characteristics of the discharge from outfall serial number 001 fail to comply with the relevant effluent limitations prescribed by the State of Vermont and the U.S. Environmental Protection Agency in the certificates and permits issued to the licensee pursuant to the provisions of Sections 401 and 402 of P.L. 92-500.

Bases

The purpose of these monitoring and reporting requirements is to assure that the thermal characteristics of cooling water discharge from the Vermont Yankee Nuclear Power Station into the waters of the Connecticut River are environmentally acceptable. The test of acceptability is consistency with Vermont Yankee NPDES Permit dated October 12, 1978.

The FES-OL for Vermont Yankee Nuclear Power Station and subsequent Environmental Impact Appraisals (EIA) provide the analysis of potential thermal effects of the condenser cooling system discharge on the water quality and aquatic biota of the receiving water.

The licensee has demonstrated that the controlled discharge of selected amounts of heated water directly to the Connecticut River at Vernon under certain conditions of ambient river flow and temperature has resulted in no measurable adverse impact on the water quality and biotic communities of that ecosystem. The NRC staff reviewed the five-phase programs demonstrating this and has concluded that the impact during each program was insignificant (Environmental Impact Appraisals (EIAs) dated September 6, 1976, September 30, 1977, and October 13, 1978). The limits set by the NPDES Permit are those evaluated in the October 13, 1978 EIA and were found to not result in significant damage to the biota or water quality of the discharge water. Occasional temperature excursions of brief duration similarly are not expected to exert significant biological effects on Connecticut River populations.

The above monitoring program will assure that the station is operating according to the requirements of the NPDES permit.

3.1.4 Chemical Release Inventory

Environmental Monitoring Requirement

1. The chemicals used at the station and discharged to the aquatic environment, excluding chemicals used in station laboratories, shall be tabulated from station inventory and operating records. The tabulation shall indicate the chemical name, the system from which the chemical is released, and the amount of chemical used during the report period.

2. The licensee shall document the types, amount, date, duration and location of any chemical discharges from the station to the receiving waters whenever such discharge is not in accordance with respective descriptions of operation presented and evaluated in the FES or subsequent Environmental Impact Appraisals.

Action

1. The results of the Environmental Monitoring Program under paragraph 1, above, shall be reported in accordance with Subsection 5.4.1. If the discharge of a chemical is greater than that addressed in the FES or subsequent Environmental Impact Appraisals, an evaluation of the environmental impact of the discharge shall be included in the annual report.
2. Maintain the information documented by the Environmental Monitoring Program under paragraph 2, above, in station records, and report with evaluations provided in the annual report as required by item 1, above.

Bases

Documentation of the chemical releases from the station will enable the NRC to determine whether the facility is being operated, with respect to chemical use and discharge, in the manner evaluated in the Environmental Statement and subsequent Environmental Impact Appraisals. This program also is required by the NRC for evaluation of unusual occurrences revealed by other programs

conducted under these ETS. Examples of discharges controlled under EMR 2, above, are those due to acid cleaning of heat exchangers, primary containment dumps, and accidental spills.

Spent chemical reagents from the chemical laboratories are not to be included in the reporting requirement because of their small quantities and insignificant concentrations in the liquids released.

3.1.5 Impingement

Environmental Monitoring Requirement

No monitoring is required by NRC under this specification. This specification relies on monitoring performed to satisfy the requirements of the NPDES permit.

Action

The licensee shall submit to NRC results of impingement monitoring required by the NPDES permit. This information shall be reported in accordance with subsection 5.4.1 of these ETS.

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Bases

Daily impingement monitoring has been conducted at Vermont Yankee from 1972 through June 1979 and the results submitted to NRC. Analyses of these data indicate that daily losses averaging about 25 fish with a total weight of 0.5 lb may be expected. These losses have been evaluated in an EIA dated _____ and have been found to be acceptable.

To avoid conflict or unnecessary duplication between the NRC monitoring program and the monitoring program required by the NPDES permit, this ETS requirement relies on the permit program. Submittal of NPDES monitoring program results will be used for assessment of impingement impacts of Vermont Yankee.

4.0 Special Studies and Requirements

4.1. Unusual or Important Environmental Events

Requirements

The licensee shall record the occurrence of unusual or important events. Unusual or important events are those that cause or could cause potentially significant environmental impact causally related with station operation. The following are examples: excessive impingement of anadromous fishes; onsite plant or animal disease outbreaks; unusual mortality of any species protected by the Endangered Species Act of 1973; fish kills near or downstream of the site; unanticipated or emergency discharges of industrial or other waste water.

Action

Should an unusual or important event occur, the licensee shall make a prompt report to the NRC in accordance with the provisions of Subsections 5.4.2.a and 5.4.2.c.

Bases

Prompt reporting to the NRC of unusual or important events as described above is necessary for responsible and orderly regulation of the nation's system of nuclear power reactors. Prompt knowledge and action may serve to alleviate the magnitude of the environmental impact or to place it into a perspective

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broader than that available to the licensee. The information thus provided may be useful or necessary to others concerned with the same environmental resources.

4.2 Exceeding Limits of Other Relevant Permits

Requirements

The licensee shall notify the NRC of occurrences of exceeding the limits specified in relevant permits and certificates issued by other Federal, State and local agencies which are reportable to the agency which issued the permit. This requirement shall apply only to topics of NEPA concern within the NRC area of responsibility as identified in these Environmental Technical Specifications.

Action

The licensee shall make a report to the NRC in accordance with the provisions of Subsections 5.4.2.b. and 5.4.2.c. in the event of a reportable occurrence of exceeding a limit specified in a relevant permit or certificate issued by another Federal, State or local agency.

Bases

NRC is required under NEPA to maintain an awareness of environmental impacts causally related with the construction and operation of facilities licensed

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under its authority. Further, some of the ETS requirements rely on compliance with relevant permits (such as the NPDES) issued by other licensing authorities. The reports of exceeding limits of relevant permits also alerts the staff to environmental problems that might require mitigative action.

5.0 Administrative Controls

5.1 Responsibility

A. Plant

The station superintendent has responsibility for operating the plant in compliance with these technical specifications.

B. Corporate

The _____ has responsibility for assuring implementation of the environmental technical specifications and assuring that plant operational procedures provide continued protection of the environment.

C. Coordination

The _____ has the responsibility for ensuring the coordination of environmental technical specifications with the safety technical specifications.

5.2 Review and Audit

Independent review and audit for environmental matters will be performed by the Environmental Review Board (ERB).

The above mentioned review and audit shall encompass the following:

- A. Coordination of Environmental Technical Specifications development with the Safety Technical Specifications to avoid conflicts and maintain consistency.
- B. Proposed changes to the Environmental Technical Specifications and evaluated impact of the change.
- C. Proposed changes or modifications to station or unit equipment, or systems which might have an environmental impact, in order to determine the environmental impact of the change.
- D. Results of the Environmental Monitoring Programs prior to their submittal in each Environmental Monitoring Report (described in Subsection 5.4.1).
- E. All nonroutine reports prior to their submittal (described in Subsection 5.4.2).
- F. Investigations of all reported instances of noncompliance with Environmental Technical Specifications, associated corrective action, and measures taken to prevent recurrence.
- G. Implementation of the Environmental Technical Specifications by the station and Scientific Services Section.

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- H. Any other area of environmental protection considered appropriate by the ERB.

5.3. Changes in Procedures, Station Design or Operation

Changes in procedures, station design or operation may be made subject to conditions described below, provided such changes are approved by the ERB.

- A. The licensee may (1) make changes in the station design and operation, (2) make changes in procedures, and (3) conduct tests and experiments without prior Commission approval, unless the proposed change, test or experiment involves a change in the objectives of the ETS, or an unreviewed environmental question of significant impact.
- B. A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns (1) a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the final environmental impact statement as modified by staff's testimony to the Atomic Safety and Licensing Board, supplements thereto, environmental impact appraisals, or in initial or final adjudicatory decisions; or (2) a significant change in effluents or power level as specified in §§ 51.5(b) (2) of 10 CFR 51; or (3) a matter not previously reviewed and evaluated in the documents specified in (1) of this section which may have a significant adverse environmental impact.

- C. The licensee shall maintain records of changes in procedures and in facility design or operation made pursuant to this subsection. The licensee shall also maintain records of tests and experiments carried out pursuant to paragraph "A" of this subsection. These records shall include a written evaluation which provides the bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question of substantive impact or constitute a change in the objectives of these ETS. The licensee shall furnish to the Commission, annually or at such shorter intervals as may be specified in the license, a report containing descriptions, analyses, interpretations, and evaluations of such changes, tests and experiments.

5.4 Station Reporting Requirements

5.4.1 Routine Reports

A. Annual Environmental Operating Report

A report on the environmental monitoring programs for the previous year shall be submitted to the NRC as a separate document within 90 days following each anniversary of issuance of this amendment (date, ____). The report shall include summaries, analyses, interpretations, and statistical evaluation of the results of the environmental monitoring required by the nonradiological environmental monitoring activities (Section 3.0), and the special studies and requirements (Section 4.0) for the report period, including a comparison with preoperational studies, operational controls (as appropriate),

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and previous environmental monitoring reports, and an assessment of the observed impacts of the station operation on the environment. For those programs concerned with water quality or protection of aquatic biota, this requirement shall be satisfied by submitting to the NRC copies of the reports to the USEPA required by the NPDES permit. In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing data shall be submitted as soon as possible in a supplementary report. If harmful effects or evidence of irreversible damage are suggested by the monitoring programs, the licensee shall provide a more detailed analysis of the data and a proposed course of action to alleviate the problem.

The Annual Report shall also include a summary of:

- 1) All ETS noncompliances and the corrective actions taken to remedy them.
- 2) Changes made to applicable State and Federal permits and certifications.
- 3) Changes in station design which could involve an environmental impact or change the findings of the FES-OL, or subsequent Environmental Impact Appraisals.

- 4) All nonroutine reports submitted per ETS Section 4.1.
- 5) Changes in ETS.

5.4.2 Nonroutine Reports

A report shall be submitted in the event that a "Limiting Condition for Operation" (Section 2), if applicable, is exceeded, a report level as specified in Section 3, "Environmental Monitoring," is reached (if applicable), an "Unusual or Important Environmental Event," as specified in Section 4.1 occurs, or if another relevant permit is violated as specified in Section 4.1.2. Reports shall be submitted under one of the report schedules described below.

5.4.2.a Prompt Report

Those events specified as required prompt reporting shall be reported within 24 hours by telephone, telegraph, or facsimile transmission to the NRC followed by a written report to the NRC within 30 days.

5.4.2.b Thirty Day Report

Nonroutine events not requiring a prompt report as described in Subsection 5.5.2.a, shall be reported to NRC either within 30 days of their occurrence or within the time limit specified by the reporting requirement of the corresponding certification or permit issued pursuant to Sections 401 or 402 of "The Clean Water Act," whichever time duration following the nonroutine event shall result in the earlier submittal.

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5.4.2.c Content of Nonroutine Reports

Written 30-day reports and, to the extent possible, the preliminary telephone, telegraph, or facsimile reports shall (a) describe, analyze, and evaluate the occurrence, including extent and magnitude of the impact, (b) describe the cause of the occurrence, (c) indicate the action taken to correct the reported occurrence, and (d) indicate the corrective action taken (including any significant changes made in procedures) to preclude repetition of the occurrence and to prevent similar occurrences involving similar components or systems.

5.5 Changes in Environmental Technical Specifications and Permits

5.5.1 Changes in Environmental Technical Specifications

Requests for changes in environmental technical specifications shall be submitted to the NRC for review and authorization per 10 CFR 50.90. The request shall include an evaluation of the environmental impact of the proposed change and a supporting justification. Implementation of such requested changes in ETS shall not commence prior to incorporation by the NRC of the new specifications in the license.

5.5.2 Changes in Permits and Certifications

Changes and additions to required Federal (other than NRC), State, local, and regional authority permits and certificates for the protection of the environment that pertain to the requirements of these ETS shall be reported to the NRC

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within 30 days. In the event that the licensee initiates or becomes aware of a request for changes to any of the water quality requirements, limits or values stipulated in any certification or permit issued pursuant to Section 401 or 402 of the Clean Water Act which is also the subject of an ETS reporting requirement, NRC shall be notified within 30 days. If the proposed change is initiated by the licensee, the notification to the NRC shall include an evaluation of the environmental impact of the revised requirement, limit or value being sought.

If a permit or certification, in part or in its entirety, is appealed and stayed, and if this causes water quality requirements of Sections 401 or 402 of the Clean Water Act to become nonapplicable, NRC shall be notified as described above. If, as a result of the appeal process, the 401 and 402 requirements are changed, the change shall be dealt with as described in the previous paragraph of this section.

5.6 Records Retention

Records and logs relative to station operation shall be made and retained in a manner convenient for review and inspection. These records and logs shall be made available to NRC on request.

5.6.1 The following records shall be retained for the life of the station:

- a. Records of changes to the ETS including, when applicable, records of NRC approval of such changes.

- b. Records of modifications to station structures, systems and components determined to potentially affect the continued protection of the environment.
- c. Records of changes to permits and certification required by federal (other than NRC), state, local and regional authorities for the protection of the environment.
- d. Routine reports submitted to the NRC.

5.6.2 The following records shall be retained for a minimum of six years:

- a. Records of review and audit activities.
- b. Events, and the reports thereon, which are the subjects of nonroutine reports to the NRC.