

**Annual Environmental Protection Plan Operating Report
January 1 - December 31, 1989**

Millstone Unit 3 Environmental Protection Plan

prepared by
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1. Introduction

This report covers the period January 1 - December 31, 1989. During 1989, Unit 3 finished its second operational cycle in May, and completed a 12 week refueling outage in July. The Unit was shut down for 2 weeks in mid February to repair a hotleg loop isolation valve leak, and for 2 weeks in late November-early December to replace a pressurizer code safety valve. For most of the remainder of 1989, Unit 3 was at nominal full power of about 1150 MWe, operating at an annual capacity factor of 69.9% (overall third-cycle capacity factor from July through December 1989 was 88.2%).

As required by Millstone Unit 3 EPP, this Annual Environmental Protection Plan Operating Report (AEPPOR) includes:

- 1) summaries and analyses of the results of environmental protection activities,
- 2) a list of EPP noncompliances,
- 3) a list of all changes in station design or operation which involved a potentially significant unreviewed environmental question, and
- 4) a list of non-routine reports, describing events that could result in significant environmental impact.

2. Environmental Protection Activities

2.1 Annual NPDES Report of Ecological Monitoring (EPP Section 4.2)

Paragraph 5 of the referenced NPDES permit requires continuation of biological studies of MNPS supplying and receiving waters, entrainment studies, and intake impingement monitoring. These studies include analyses of intertidal and subtidal benthic communities, finfish communities, entrained plankton, lobster populations, and winter flounder populations. Paragraph 13 of the permit requires an annual report of these studies to the Commissioner of Environmental Protection. The report that fulfills these requirements for 1989, Monitoring the Marine Environment of Long Island Sound at Millstone Nuclear Power Station, Waterford, Connecticut - Annual Report, 1989, presents results from studies performed during 3-unit operation, and compares them to those from 2-unit operation. The added cooling water flow for Unit 3 affects impingement and entrainment, causes sediment scouring near the MNPS discharges, and alters the characteristics of thermal effluent plume. The biological effects of these changes are discussed in the above-named report (Attachment 1).

2.2 Effluent Water Quality Monitoring

Paragraph 6 of the referenced NPDES permit requires monitoring and recording of many water quality parameters at MNPS intakes and at 37 discharge points within the plant, including outfalls of each unit to the effluent quarry, and outfall of the quarry to Long Island Sound. Paragraph 11 of the permit requires a monthly report of this monitoring to the Commissioner of Environmental Protection. The report that fulfills these requirements, Monthly Discharge Monitoring Report, includes data from all three Millstone units. Those data that pertain to Unit 3 are summarized in Table 1a.

During 1989, only one NPDES exception was reported from a discharge associated with Unit 3 (Table 1b). In June, the monthly oil and grease sample required at 001C-6 (Unit 3 Condensate Polisher Regeneration Wastewater Neutralization Tank Including System Floor Drains and Hot Water Heating System Drainage) was not taken. This discharge normally comprises two batch releases per day, but as the Unit was shut down, no flow occurred at the time of month when sampling was to have been performed. Based on measured oil and grease values in May and July (<0.5 mg/l; maximum permitted concentration 20.0 mg/l), there is no reason to expect that the June discharges contained excessive levels of oil and grease.

Sampling for hydrazine (N_2H_4), biological oxygen demand (BOD), and chemical oxygen demand (COD) is required only when discharging wastewater containing hydrazine. The major hydrazine discharges at Unit 3 are releases following wet lay-up of steam generators; during 1989, these releases occurred in February, May, and late June-early July. Hydrazine concentrations, determined while draining the four steam generators, ranged from <0.1-3.1 mg/l (ppm) in February, from 0.2-1.0 mg/l in May, and from 72-110 mg/l in late June-early July. All concentrations were below the NU administrative target of 125 mg/l, as well as the NPDES permit level of 200 mg/l. During the same discharges, BOD ranged from 18-32 mg/l and COD ranged from 70-97 mg/l. Hydrazine sampling at the Unit 3 discharge to the effluent quarry was required during these releases; values ranged from <1-26 μ g/l (ppb), well below the NPDES permit limit of 0.10 mg/l (100 ppb).

Smaller volumes of hydrazine are released from auxiliary boiler blowdowns; during 1989, these occurred only in July. Hydrazine concentrations of these releases ranged from 0.4-53.7 mg/l (NPDES permit limit of 75 mg/l); concurrent concentrations in the effluent quarry were <1 ppb.

During 1989, some additional hydrazine was released from a leak in the 'A' CCP heat exchanger. This release was sampled for hydrazine, BOD, and COD until it was repaired; hydrazine concentrations ranged from 7-41 mg/l,

BOD from 9-57 mg/l, and COD from 41-600 mg/l. Concurrent concentrations in the effluent quarry ranged from <1-15 ppb.

Also included in environmental protection activities related to NPDES permitting during 1989 were two submittals to the Connecticut Department of Environmental Protection. The first, on March 14, was a request to modify the NPDES permit by adding two discharge points at Unit 1 to accommodate a Long-Term Distillation Unit. The second was the permit renewal application for Millstone (NPDES Permit CT0003263; EPA ID No. CT000845198), submitted to the CT-DEP on December 1. Approval of the application and issuance of the renewed permit are expected in 1990.

3. Environmental Protection Plan Noncompliances

During 1989, no EPP noncompliances were identified for Unit 3.

4. Environmentally Significant Changes to Station Design or Operation

During 1989, no Unit 3 Plant Design Change Records (PDCRs) met the acceptance criteria for inclusion in this report, i.e., required an environmental review and received Plant Operation Review Committee (PORC) approval for implementation in 1989. Of the 24 PDCRs initiated during 1989, 16 received PORC approval; none of these involved unreviewed environmental issues. An additional 6 PDCRs, that had been initiated in past years, received PORC approval in 1989; none of these involved unreviewed environmental issues either.

Unit 3 has 133 System Operating Procedures; of these, 65 were added or revised during 1989. In addition, many procedures were modified to reflect small changes, of insufficient magnitude to require the issuance of a new revision. However, each of these changes, as part of the review/approval process, included an environmental evaluation; none were determined to involve an unreviewed environmental impact.

5. Non-Routine Reports of Environmentally Significant Events

During 1989, no events occurred at Unit 3 that met the acceptance criteria for inclusion in this report, i.e., required submittal of a Licensee Event Report (LER) from Unit 3, and involved a situation that could result in a significant environmental impact. Of the 35 events that constituted reportable occurrences in 1989, none were determined to cause a significant environmental impact.

Although not of sufficient magnitude to require issuance of an LER, three environmentally related incidents occurred during 1989. Two events (on Feb 22 and May 6) involved auxiliary boiler fuel oil spills during tank filling. In both cases, the spills were minor (<15 gal.), and were contained and cleaned up with on-site material before they reached the yard drainage system. Applicable procedures are

being reviewed to prevent recurrence of this problem. The third event (Jun 25) involved the accidental release of approximately 83 gal. of 12.5% sodium hypochlorite solution (used for biofouling control). A contractor stepped on, and broke, some piping used for hypochlorite injection to the service water system. The leak was stopped by closing the hypochlorite tank outlet valve, but the spill reached Long Island Sound via floor/storm drains. About 25 dead fish were observed near the drain outfall immediately after the spill, and presumably caused by it. Follow-up sampling by NU Environmental Lab personnel found no additional fish mortality. The storm drain outfall is near the Unit 3 Intake Structure, and the spill was entrained with, and diluted by, the approximately 334,000 gpm cooling water flow. All appropriate state and federal agencies were notified, as per 10 CFR 50.72 (b)(2)(vi); no significant environmental impact was determined.

Table 1. Millstone Unit 3 NPDES Data Summary, Jan. 1 - Dec. 31, 1989.

a). Selected water quality parameters for Unit 3¹.

	discharge flow range (10 ³ gpm)	discharge pH range	discharge temp. range (°F)	discharge temp. (avg) (°F)	avg ΔT (°F)	max FAC (ppm)	max TRC (ppm)	settle. solids (mg/l)	SWS FAC (ppm)
Jan.	790-942	6.9-8.4	48.7-63.7	58.1	17.8	0.08	<0.05	<0.1	0.15
Feb.	486-948	8.1-8.6	36.3-63.1	49.0	10.0	0.05	0.08	<0.1	0.21
Mar.	638-954	8.0-8.4	44.8-63.0	56.6	18.1	0.05	<0.05	<0.1	0.18
Apr.	486-948	8.1-8.5	41.2-65.3	57.7	14.8	0.05	<0.05	<0.1	0.19
May	167-942	8.0-8.4	46.8-73.2	57.4	6.3	0.07	<0.05	<0.1	0.17
June	319-790	8.1-8.4	53.4-64.2	59.0	0.1	<0.05	0.12	<0.1	0.15
July	319-948	8.0-8.3	52.1-87.3	75.7	9.4	0.09	<0.05	<0.1	0.15
Aug.	790-948	7.6-8.2	77.4-92.8	86.6	19.0	0.08	0.05	<0.1	0.17
Sep.	790-942	7.4-7.7	79.0-90.9	85.2	17.9	0.08	<0.05	<0.1	0.09
Oct.	790-942	7.5-7.7	74.8-85.8	79.1	19.1	<0.05	<0.05	<0.1	0.15
Nov.	638-942	7.5-7.9	47.1-82.2	71.2	17.4	<0.05	<0.05	<0.1	0.20
Dec.	638-942	7.4-7.9	39.6-69.3	55.2	15.0	<0.05	<0.05	<0.1	0.20

b). Number of NPDES exceptions during year².

pH	temp.	FAC	TRC	Set. Sol.	Susp. Sol.	BOD ³	COD ³	hydrazine ³	Boric acid	conduct.	lithium	oil & grease	metals
0	0	0	0	0	0	0	0	0	0	0	0	1	0

¹Parameters are measures at Unit 3 discharge (DSN 001C), except for TRC and settleable solids, which are measured at MNPS discharge (quarry cuts; DSN 001) and SWS FAC (service water system; DSN 001c-5).

²Some parameters are measured at more than one point within Unit 3 or only under certain operating conditions. Values represent number of NDPEs exceptions for all discharge points.

³Sampling for BOD, COD, and hydrazine is required only when discharging wastewater containing hydrazine; data for these events are presented in the text.