

# NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY  
THE HARTFORD ELECTRIC LIGHT COMPANY  
WESTERN MASSACHUSETTS ELECTRIC COMPANY  
HOLYOKE WATER POWER COMPANY  
NORTHEAST UTILITIES SERVICE COMPANY  
NORTHEAST NUCLEAR ENERGY COMPANY

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Mr. Boyce H. Grier  
Director, Region I  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

July 26, 1979  
MP-1-1267

Reference: Provisional License DPR-21  
Docket Number 50-245  
Reportable Occurrence RO-79-18/1T

Dear Mr. Grier:

This letter forwards the Licensee Event Report for Reportable Occurrence RO-79-18/1T required to be submitted within 14 days pursuant to the requirements of the Millstone Unit 1 Technical Specifications, Section 6.9.1.8.f. An additional three copies of the report are enclosed.

Yours truly,

J. F. Opeka  
Station Superintendent  
Millstone Nuclear Power Station

JFO:RHY:clp

Attachment: (LER RO-79-18/1T)

cc: Director, Office of Inspection & Enforcement (40 copies)  
Director, Office Management Information & Program Control (3 copies)

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ATTACHMENT TO LER 79-18/1T  
NORTHEAST NUCLEAR ENERGY COMPANY  
MILLSTONE NUCLEAR POWER STATION - UNIT 1  
PROVISIONAL LICENSE NUMBER DPR-21  
DOCKET NUMBER 50-245

IDENTIFICATION OF OCCURRENCE

A procedural inadequacy was identified which could have prevented the fulfillment of the functional requirements of a system required to cope with an accident analyzed in the Safety Analysis Report.

CONDITIONS PRIOR TO OCCURRENCE

At the time of discovery, the unit was operating in a full power, steady-state condition at rated temperature and pressure.

DESCRIPTION OF OCCURRENCE

On July 13, 1979, at 1130 hours, during routine chemical sample analysis, it was discovered that the actual concentration of sodium pentaborate in the Standby Liquid Control System storage tank was less than the minimum concentration allowed by Technical Specifications. As a result of further analysis and laboratory quality assurance techniques, it was also discovered that the original procedure, used to calculate the sodium pentaborate concentration, was in error by 9.0 percent. Initially, in the prompt report, the error was estimated at 15 percent; however, subsequent analysis verified the error to be 9.0 percent.

APPARENT CAUSE OF OCCURRENCE

The reagent that was used in the original sodium pentaborate analysis indicated a higher concentration than actually existed. This was apparently due to degradation of the reagent which resulted from absorption of carbon dioxide. A new bottle of reagent was used in subsequent analyses which verified an actual sodium pentaborate concentration less than the minimum allowed by Technical Specifications.

The procedural inadequacy, identified as a result of the above out of specifications concentration, stemmed from an undetected error of approximately 9.0 percent that existed in the original chemistry procedure. It is believed that this error originated in the initial titrant standardization.

ANALYSIS OF OCCURRENCE

The design objective of the Standby Liquid Control System is to provide the capability of bringing the reactor from full power to a cold, xenon-free shutdown, assuming that none of the withdrawn control rods can be inserted. A minimum quantity of 2720 net gallons of solution having a 13.4 percent sodium pentaborate concentration is required to bring the reactor from full power to a 3 percent delta K subcritical condition considering the hot and cold reactivity swing, xenon poisoning, and imperfect mixing of the chemical solution in the reactor coolant.

A review of all Standby Liquid Control sodium pentaborate concentration surveillances revealed the fact that, on several occasions, the actual corrected concentration had been less than the Technical Specification requirement. These corrected concentrations were arrived at using the percent differential between the original procedure and the revised and verified procedure.

Although it is not certain that the 3 percent delta K shutdown margin would have been met on those occasions when the sodium pentaborate concentration was less than required, it is felt that the reactor could have been chemically shutdown with no credit taken for control rod reactivity.

#### CORRECTIVE ACTION

Initially, upon verification of results, in accordance with Technical Specifications, an orderly unit shutdown was begun. At the same time 600 pounds of sodium pentaborate was added to the Standby Liquid Control storage tank. Following verified chemical analysis, which indicated that the sodium pentaborate concentration was within specification, the unit shutdown was terminated. The unit was subsequently returned to full power.

Supplementary corrective action consisted of a three step program:

- . A new, revised analytical procedure was established, derived from Chemical Standard Methods.
- . Procedural control was established in both preparation and standardization of analytical chemicals used in the titration analysis.
- . A semi-annual, independent analysis by another laboratory will be used to check the analytical results of the unit chemical analysis.

It is felt that the aforementioned corrective actions are sufficient to preclude the possibility of a recurrence event.