NUCLEAR ENERGY BUSINESS GROUP • GENERAL ELECTRIC COMPANY
SAN JOSE, CALIFORNIA 95125

GENERAL ELECTRIC

50-245

APPLICABLE TO:

PUBLICATION NO. NEDO-24085-1

T. I. E. NO.

TITLE LOSS-OF-COOLANT ACCIDENT ANALYSIS REPORT FOR MILLSTONE UNIT 1 NUCLEAR POWER STATION

ISSUE DATE JULY 1980

ERRATA And ADDENDA SHEET

NO. 1

DATE JUNE 1982

NOTE: Correct all copies of the applicable publication as specified below.

ITEM	REFERENCES (SECTION, PAGE PARAGRAPH, LINE)	INSTRUCTIONS (CORRECTIONS AND ADDITIONS)
1	Page v/vi	Replace with new page v/vi
2	Page 2-1/2-2	Replace with new page 2-1/2-2
3	Page 3-3	Replace with new page 3-3
4	Page 3-10	Replace with new page 3-10
		Changes are indicated by vertical bars in the right-hand margin.

8211020642 821015
PDR ADOCK 05000245
P PDR

TABLES

2. INPUT TO ANALYSIS

A list of the significant plant input parameters to the LOCA analysis is presented in Table 1.

Table 1

SIGNIFICANT INPUT PARAMETERS TO THE LOSS-OF-COOLANT ACCIDENT ANALYSIS

Plant Parameters:

Core Thermal Power	2051 MWt, which corresponds to 102% of rated core power
Vessel Steam Output	8.15×10^6 lbm/h, which corresponds to 102% of rated core power
Vessel Steam Dome Pressure	1050 psia
Recirculation Line Break Area for Large Breaks - Suction	4.34 ft^2 (DBA)
Number of Drilled Bundles	316

Fuel Parameters:

	Fuel Type	Fuel Bundle Geometry	Peak Technical Specification Linear Heat Generation Rate (kW/ft)	Design Axial Peaking Factor	Initial Minimum Critical Power Ratio*
A.	P8DRB282	8x8	13.4	1.57	1.24
B.	P8DRB265H	8x8	13.4	1.57	1.24
C.	8DRB265H	8x8	13.4	1.57	1.24
D.	8DRB265L	8x8	13.4	1.57	1.24
E.	8DB262	8x8	13.4	1.57	1.24
F.	8DB274H	8x8	13.4	1.57	1.24
G.	8DB274L	8x8	13.4	1.57	1.24
H.	P8DRB283H	8x8	13.4	1.57	1.24

*To account for the 2% uncertainty in bundle power required by Appendix K, the SCAT calculation is performed with an MCPR of 1.22 (i.e., 1.24 divided by 1.02) for a bundle with an initial MCPR of 1.24.

3.5 RESULTS OF THE CHASTE ANALYSIS

This code is used, with suitable inputs from the other codes, to calculate the fuel cladding heatup rate, peak cladding temperature, peak local cladding oxidation, and core-wide metal-water reaction for large breaks. The detailed fuel model in CHASTE considers transient gap conductance, clad swelling and rupture, and metal-water reaction. The empirical core spray heat transfer and channel wetting correlations are built into CHASTE, which solves the transient heat transfer equations for the entire LOCA transient at a single axial plane in a single fuel assembly. Iterative applications of CHASTE determine the maximum permissible planar power where required to satisfy the requirements of 10CFR50.46 acceptance criteria.

The CHASTE results presented are:

- Peak Cladding Temperature versus time
- Peak Cladding Temperature versus Break Area
- Peak Cladding Temperature and Peak Local Oxidation versus Planar Average Exposure for the most limiting break size
- **Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) versus Planar Average Exposure for the most limiting break size**

A summary of the analytical results is given in Table 2. Table 3 lists the figures provided for this analysis. The MAPLHGR values for each fuel type for Millstone-1 are presented in Tables 4A through 4H.

3.6 METHODS

In the following sections, it will be useful to refer to the methods used to analyze DBA, large breaks, and small breaks. For jet-pump reactors, these are defined as follows:

a. DBA Methods. LAMB/SCAT/SAFE/DBA-REFLOOD/CHASTE. Break size: DBA.

Table 4G

MAPLHGR VERSUS AVERAGE PLANAR EXPOSURE

PLANT: Millstone-1 FUEL TYPE: 8DB262

Average Planar Exposure (MWd/st)	MAPLHGR (KW/ft)	PCT (°F)	Oxidation Fraction
200	10.9	2200	0.033
1000	11.0	2198	0.032
5000	11.3	2199	0.032
10000	11.5	2196	0.030
15000	11.5	2199	0.031
20000	11.3	2198	0.031
25000	11.2	2199	0.031
30000	10.7	2128	0.025
35000	9.8	1988	0.016
40000	9.2	1895	0.011

Table 4H

MAPLHGR VERSUS AVERAGE PLANAR EXPOSURE

PLANT: Millstone-1 FUEL TYPE: P8DRB283H

Average Planar Exposure (MWd/st)	MAPLHGR (KW/ft)	PCT (°F)	Oxidation Fraction
200	10.7	2198	0.036
1000	10.8	2198	0.035
5000	11.1	2200	0.034
10000	11.3	2200	0.033
15000	11.3	2199	0.033
20000	11.2	2199	0.033
25000	11.0	2200	0.077
30000	11.0	2199	0.085
35000	10.9	2185	0.079
40000	10.4	2096	0.060
45000	10.0	2015	0.046

A multiplier of 0.95 is to be applied to the values in Tables 4A through 4H when operating at less than 90% of rated core flow.

Docket No. 50-245

Attachment No. 3

"Extended Load Line Limit Analysis

Millstone Point Nuclear Power Station, Unit 1"

NEDO-24366, dated September 1981

October 1982