



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 77 TO FACILITY OPERATING LICENSE NO. NPF-69

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT 2

DOCKET NO. 50-410

1.0 INTRODUCTION

By application dated May 15, 1996, Niagara Mohawk Power Corporation (the licensee) requested an amendment to the operating license to change the Technical Specifications (TSs) for Nine Mile Point Nuclear Station, Unit 2 (NMP2). The proposed amendment would revise TS 3/4.3.2, "Isolation Actuation Instrumentation," to establish a range of allowable values and trip setpoints for high temperatures in the Main Steam Line Tunnel Lead Enclosure (MSLTLE). The change is intended to prevent unnecessary challenges to the plant and its safety systems due to environmental conditions.

2.0 BACKGROUND

The main steam tunnel high temperature isolation actuation instrumentation is part of the Leak Detection System that is discussed in Section 5.2.5 of the Updated Safety Analysis Report (USAR) and shown on USAR Figure 7.6-1, Sheet 2. The purpose of main steam line tunnel temperature instrumentation is to provide for early detection of a main steam line leak and cause automatic closure of the Main Steam Isolation Valves (MSIVs). The licensee established the current instrumentation temperature setpoints based upon calculations using an initial 80 °F temperature and a 25 gallon per minute (gpm) steam leak. The average winter temperature in the tunnel is 85 °F and the average summer temperature is 110 °F. The isolation instrumentation setpoints assure that a main steam line leak in the MSLTLE would be isolated before a pipe break occurred (the "leak-before-break" concept).

The licensee finds that a change to the TS is needed because, under the existing TSs, the isolation actuation instrumentation temperature setpoints provide insufficient margin to the actual temperatures for the MSLTLE, particularly during hot summer conditions. To provide the necessary sensitivity throughout the year for a single actuation setpoint, the transient analysis for a steam leak in the MSLTLE utilized the winter temperature as an initial condition. However, using a single temperature actuation setpoint of no more than 148.2 °F and an allowable value of no more than 151.6 °F (80 °F MSLTLE ambient temperature and a 25 gpm steam leak) allows the MSLTLE ambient temperature in the summer to approach the isolation actuation setpoint. Although the MSLTLE high temperatures are not the result of steam leaking in the area, a minor disturbance in the turbine building ventilation system could



Small, faint, illegible marks or characters in the top right corner.

Faint, illegible marks or characters at the bottom center of the page.

result in an unwarranted isolation actuation due to high temperature in the MSLTLE at full power, with resulting MSIVs closure and reactor scram.

3.0 EVALUATION

Since the temperature in the MSLTLE resulting from a postulated steam leak depends on the initial ambient temperature in the area, the licensee has calculated the acceptable trip setpoint and allowable temperature for MSLTLE ambient temperatures from 80 °F to 130 °F as shown on TS Figure 3.3.2-1. The methodology utilized to determine the allowable values and setpoints is in accordance with Regulatory Guide 1.105, "Instrument Setpoints for Safety-Related Systems," Revision 2, February 1986, and Instrument Society of America Standard ISA-S67.04, "Setpoints for Nuclear Safety Related Instrumentation Used in Nuclear Power Plants," 1982.

The licensee proposes to change the instrumentation setpoint and allowable value for high temperature based upon the MSLTLE ambient temperatures of TS Figure 3.3.2-1 subject to the following three conditions:

- a. The actual ambient temperature reading for all operable channels in the MSLTLE area are equal to or greater than the ambient temperature used as the basis for the setpoint, and
- b. The absence of steam leaks in the MSLTLE area is verified by visual inspection prior to increasing a channel setpoint, and
- c. A surveillance is implemented as follows: "In addition to the normal shift channel check, if a channel setpoint has been established using Figure 3.3.2-1, then once per shift the actual ambient temperature readings for all operable channels in the MSLTLE shall be verified to be equal to or greater than the ambient temperature used as the basis for the setpoint."

Since the calculated values used in Figure 3.3.2-1 are based upon normal operating conditions, the absence of any steam leaks in the MSLTLE needs to be verified prior to increasing the setpoint of any instrument channel. The NRC staff finds that visual inspection in accordance with item b above is a sufficient requirement to this end. The NRC staff also finds that the surveillance required by item c above will provide adequate verification of the continued validity of a setpoint established using Figure 3.3.2-1.

The surveillance frequency of once per shift is adequate to preclude operation outside the allowable range and permit compensatory action should the actual MSLTLE temperature be trending toward the setpoint basis temperature. The licensee has determined that the MSLTLE temperature responds relatively slowly to even large and sudden environmental changes, such as the rapid reduction in lake water temperature that has been experienced at Nine Mile Point in the past. Available compensatory actions include reducing the trip setpoint consistent with the actual ambient temperature and adjusting ventilation system parameters to maintain an elevated ambient temperature.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

.

.

The licensee has evaluated the increase in MSLTLE ambient temperatures against the Equipment Qualification (EQ) documentation. From this evaluation, the licensee has concluded that all equipment and components in the MSLTLE would remain operable and would perform their intended function under the postulated steam line leakage conditions. The licensee has also evaluated the structural design for an increase in the MSLTLE ambient temperature and found it to be acceptable. The peak temperature as a result of a postulated design basis steam line break will not change, since the dominant effect is the energy released by the break when compared to the postulated steam leakage conditions. Structural impacts are bounded by the steam line break analysis.

In summary, from its review of the licensee's request to establish and use a range of allowable values and trip setpoints for high temperature in the MSLTLE, the NRC staff concludes that the licensee has provided adequate TS requirements to assure that a 25 gpm steam leak will be detected and the MSIVs will be closed as necessary to isolate the leak. This TS change will also provide increased assurance that unwarranted MSIV closures and reactor scrams at full power will not occur due to high normal ambient air conditions in the absence of a steam leak. The NRC staff, therefore, finds the proposed TS changes acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York 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 and changes surveillance requirements. 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. (61 FR 34893). 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.



Small, faint, illegible markings or artifacts in the top right corner.

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.

Principle Contributors: Fredrick Paulitz
Darl Hood

Date: September 17, 1996

