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SUBJECT: Forwards plant response to NRC 950504 RAI re util proposed license amend to revise TSs 2.1.2 & 3.6.2/4.6.2 & associated bases.

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B. Ralph Sylvia
Executive Vice President
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May 31, 1995
NMP1L 0950

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Subject: ***Response to Request for Additional Information - Nine Mile Point Nuclear Station Unit No. 1 (TAC NO. M91221)***

Gentlemen:

By letter dated December 23, 1994 (NMP1L 0889), Niagara Mohawk proposed a license amendment to revise Technical Specification 2.1.2 and 3.6.2/4.6.2 and associated Bases to allow extending the calibration frequency of the recirculation flow comparator instrumentation. By letter dated May 4, 1995, the Staff requested that Niagara Mohawk submit additional information in order to complete the review of Niagara Mohawk's submittal. Attached is Niagara Mohawk's response to the request for additional information.

Niagara Mohawk has provided a copy of this response to the appropriate state representative.

Very truly yours,

B Ralph Sylvia

B. Ralph Sylvia
Executive Vice President - Nuclear

BRS/MGM/kab
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NINE MILE POINT UNIT 1
DOCKET NO. 50-220
DPR-63

<u>Response to Request for Additional Information - Nine Mile Point Nuclear Station Unit No. 1 (TAC NO. M91221)</u>

<u>Information Request 1</u>

Please provide assurance that the limiting neutron flux transients remain limiting with the new setpoints and with subsequent reloads, or that a new limiting transient will be identified for establishing operating limits. Provide assurance that the limiting Minimum Critical Power Ratio (MCPR) transient is identified with each reload and has not changed with this new setpoint change.

<u>Response 1</u>

The only two events which involve neutron flux increases that could reach the high neutron flux scram setpoint are addressed in Appendix A, Section B of GE-NE-208-22-1193. Both of these cases are shown to remain significantly less severe than the currently analyzed events. The Inadvertent Startup of a Cold Recirculation Loop is one of those events, and it is discussed in more detail in response to Information Request 4. The other event, Recirculation Flow Controller Failure - Increasing Flow, does not reach the current high flux scram setpoint, and is therefore not affected by the setpoint change. No other Anticipated Operational Occurrences (AOOs) in the UFSAR require protection from the high flux scram, and therefore no other event(s) become limiting due to the 2% change to the high neutron flux scram setpoint.

<u>Information Request 2</u>

Please discuss your analysis of the limiting Anticipated Operational Occurrences (AOOs) assuming a single failure, i.e. the direct position scram, and assume the transient is mitigated by the new higher setpoint neutron flux scram. If the Safety Limit Minimum Critical Power Ratio (SLMCPR) is exceeded, assume the fuel rods that are predicted to be in boiling transition are failed, and show that the consequences are still an acceptable small fraction of 10CFR Part 100. See pages 15.1.1-3&4 and 15.2.1-4 of the Standard Review Plan (SRP) for guidance.

<u>Response 2</u>

There is no single failure that can disable the scram signals which are derived from the closure of the turbine stop valves or the fast closure of the turbine control valves. These protection system functions are designed with redundancy and separation equal to all the other scram signals. Therefore, the assumption of a single failure in addition to one of these initiating events will have no impact upon the fuel thermal margin currently documented in the UFSAR and reload analyses, and the SLMCPR criteria will not be exceeded.

If the direct scram path is ignored and the scram occurs from high neutron flux, the difference in the time of scram due to a 2% increase in the setpoint is very small because the neutron flux would be rising very rapidly through the setpoint range. This rate is about 260%/second in the original 1850 MWt UFSAR analysis for the turbine trip event with failure of bypass. For this case, the delay in the scram signal due to the 2% increase in the setpoint is 0.008 second. The rate of change of neutron flux for the current reloads and current analysis methods is at least equal to this case. Therefore, there would be no significant change in the results of this postulated AOO even if multiple failures were to occur.

Even if the postulated failures occurred, and the reactor is assumed to be operating close enough to the Operating Limit Minimum Critical Power Ratio (OLMCPR) that some fuel rods may experience boiling transition, such a condition would be of very short duration, very little cladding heatup would occur, and no fuel cladding failure would occur. This conclusion is based upon the testing of fuel rods that have experienced boiling transition as documented in NUREG-0562. No radiological release would occur, and the results would remain within the requirements of 10CFR Part 100.

Information Request 3

The discussion of the Control Rod Withdrawal Error (CRWE) needs clarification. The discussion of the CRWE discusses mitigation with the APRM flow-biased rod block system and states this parameter setpoint is increased by 8%. The GE discussion states that the parameter setpoint is increased by 2%. Please clarify this possible inconsistency. The submittal also states that no credit is assumed for the function of this system in the analysis. How is this transient mitigated? What fuel design limits were evaluated when analyzing this event? See pages 15.4.1-3&4 and 15.4.2-3&4 of the SRP for guidance.

Response 3

The current rod block setpoint design basis is 110% at 100% core flow (Section 2.1.2 of the Technical Specifications). Based on the 2% change in analytical limit of the scram setpoint, the rod block setpoint only needs to change by 2%.

However, to avoid nuisance alarms and rod blocks, the analytical limit was established as 118%, equal to the normal trip setpoint (NTSP) of the APRM scram (Appendix A, Section C of GE-NE-208-22-1193). No credit is currently taken for any rod block functions in the current NMP1 reload (Cycle 12) and UFSAR (Section 3.4, currently showing Cycle 11 results analysis). The analysis assumes that the rod is not blocked and is fully withdrawn. The OLMCPR is high enough to safely allow for the full withdrawal of the maximum worth control rod. The basis for this trip is then considered only a warning to the operator of possible reactor scram.

Information Request 4

Please provide assurance that the Inadvertent Startup of a Cold Loop will not become a limiting MCPR event and that all fuel design limit acceptance criteria will not be violated.

Response 4

The UFSAR analysis of this event is provided in Section XV.B.3.6 (Figure XV-8). The impact of the increase in the analytical limit of the APRM neutron flux scram setpoint from 120% to 122% is discussed in Appendix A, Section B GE-NE-208-22-1193. The slight increase in the severity of this event is not significant relative to the events that establish the OLMCPR. The scram is only initiated in this partial core flow analysis when the neutron flux reaches the upper limit of the APRM neutron flux scram setpoint. No credit is taken for the earlier time of scram that would occur if credit was taken for the flow-referenced function of the scram setpoint.

When the scram occurs, UFSAR Figure XV-8 shows that the neutron flux is increasing at a rate of ~9.4%/second. Increasing the setpoint by 2% will delay the scram by 0.21 seconds. At this point in the event, Figure XV-8 also shows that the fuel surface heat flux is increasing at a rate of ~3.1%/second. Therefore, a delay of the scram by 0.21 seconds will increase the peak fuel surface heat flux by 0. 66% of rated. The associated change in MCPR will be about 0.01, an insignificant change for this event which is far from the limiting events that establish the OLMCPR for the unit. This also applies to all fuel design criteria for this AOO event.

Information Request 5

Please provide assurance that the fuel design limits for the low power transients are always bounded by the reload-specific limiting MCPR full power transients for the changes requested in this license amendment.

Response 5

Some of the cases discussed above involve transients that may occur at less than full power (e.g., Recirculation loop startup and Recirculation flow controller failure). One additional case, a turbine trip from 980 MWt (53% of 1850 MWt) is analyzed in the UFSAR. At this point, the direct scram from the stop valve closure is still active, and the event is terminated with minimal impact upon the fuel. If the power level had been just below the 45% power interlock (below which the direct scram is deactivated), a more severe transient would have resulted. Transient analysis experience has shown that the resulting neutron flux peak may or may not be high enough to reach the high neutron flux scram. Therefore, most analyses of this case take credit for the increase in reactor pressure reaching the high vessel pressure scram.

The fuel thermal margins at this partial power and flow condition are adequate to avoid any violation of the fuel protection criteria with no credit taken whether or not the high neutron flux scram setpoint will be reached. Therefore, the small (2%) increase in the high neutron flux scram setpoint will not cause any reduction of the fuel thermal margin for transients initiated at lower power conditions.