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ZWOLINSKI, J. A. BWR Project Directorate 1

SUBJECT: Forwards application for amend to License DPR-63 permitting operation w/current emergency condenser sys & guard pipe configuration. Guard pipe configuration analysis & MSHC encl. W/o application.

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January 23, 1986
NMP1L 0016

Director of Nuclear Reactor Regulation
Attention: Mr. John A. Zwolinski, Project Director
BWR Project Directorate Number 1
Division of BWR Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

Dear Mr. Zwolinski:

On January 23, 1986, we met with you to discuss the guard pipe configuration at Nine Mile Point Unit 1. Specifically, we summarized the analyses performed to justify the adequacy of this design. As you requested, find attached our analysis and request for license amendment.

Sincerely,

NIAGARA MOHAWK POWER CORPORATION

C. V. Mangan
Senior Vice President

CVM/djm
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NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 1

GUARD PIPE CONFIGURATION ANALYSIS

JANUARY 1986

NINE MILE POINT UNIT 1
GUARD PIPE CONFIGURATION ANALYSIS

I. INTRODUCTION

Our letter dated June 7, 1985, outlined plans to replace the Emergency Condenser System piping inside the drywell, including the associated emergency condenser isolation valves, during the Spring 1986 refueling and maintenance outage. During the preliminary engineering for this modification, the loads on the valve anchors were recalculated. The recalculated loads were compared to those developed during the original plant design. The recalculated loads were larger. These loads result specifically from a re-analysis of the guard pipe configuration used on the emergency condenser system. This discrepancy initiated the requirement for a 10CFR Part 21 evaluation.

On January 16, 1986, notification of a potentially reportable Part 21 was made to the Office of Inspection and Enforcement, Region I. On January 17, 1986, a courtesy notification was made to the Nuclear Regulatory Commission Operation Center of a condition which could be outside the design basis for Nine Mile Point Unit 1. Additional analyses confirmed the high loads for the emergency condenser system. On January 18, 1986, the Nuclear Regulatory Commission Operation Center was notified of shut down of Nine Mile Point Unit 1 until further analyses and/or modifications could be implemented.

The emergency condenser pipe guard pipe configuration is also utilized on various other plant systems at Nine Mile Point Unit 1. These are shown on Table 1.

The purpose of this report is to summarize the anaylsis performed to justify continued operation of Nine Mile Point Unit 1 with the current configuration.

TABLE 1

SYSTEMS WITH GUARD PIPING CONFIGURATIONS

Emergency Condenser	(4 lines)
Main Steam	(2 lines)
Feedwater	(2 lines)
Core Spray	(2 lines)
Shutdown Cooling	(2 lines)
Reactor water Cleanup	(2 lines)
Control Rod Drive Hydraulic Return	

II. DISCUSSION

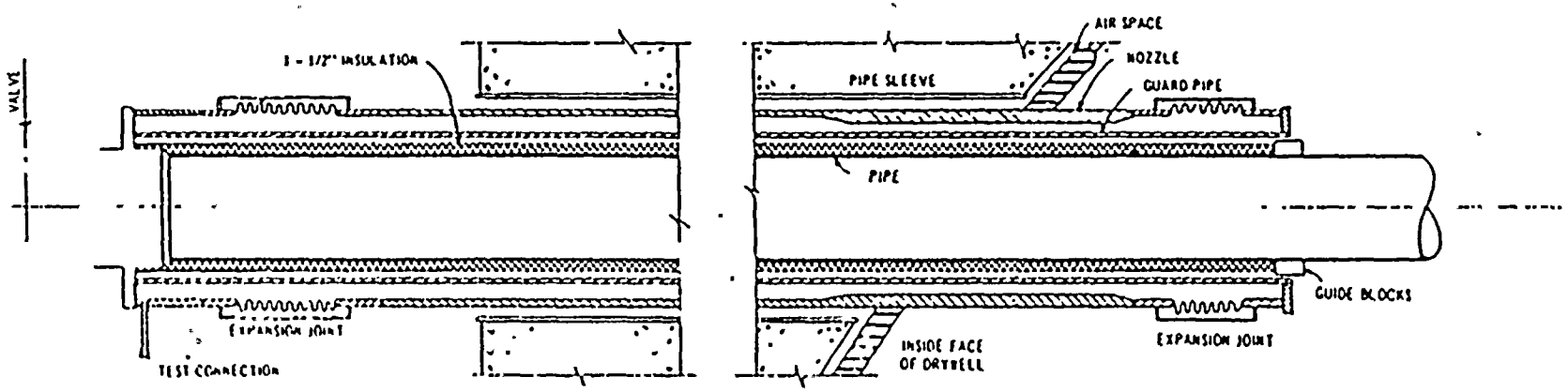
The Nine Mile Point Unit 1 Final Safety Analysis Report discusses the design basis for the guard pipe configuration. Figure 1 shows a typical guard pipe configuration. For hot fluid lines, penetrations have a guard pipe between the hot line and the penetration attachment to the drywell steel. In this manner, the penetration is protected against overpressurization should the hot line rupture inside the penetration. The hot fluid from a rupture of this type would be vented into the drywell by the guard pipe. The guard pipes were designed to the same pressure and temperature as the fluid line. According to the Second Supplement to the Final Safey Analysis Report the penetrations were to be designed to accommodate axial jet loads inside the guard pipe with maximum possible separation of the broken pipe center lines or with the guard pipe fully pressurized by process pipe breaks. The original analysis took into account all of these loads assuming no pressure buildup within the guard pipe.

The new analysis in addition to jet impingement loads assumes limited venting due to choke flow conditions exiting the guard pipe. Therefore, this results in a load increase of approximately 2 times the original jet impingement load.

Although the new analysis was originally performed for the emergency condenser line, there are a total of 15 penetrations that utilize a similar guard pipe configuration. These are summarized in Table 1. Of the affected piping systems, only the emergency condenser steam supply, main steam, feedwater and cleanup systems are subject to significant thrust loads as a result of postulated pipe breaks within the guard pipes. The other systems have normally closed isolation valves and/or check valves which prevent pressurization of the piping in the guard pipes as a result of a postulated break during normal operation. Preliminary analyses performed for the high energy lines (emergency condenser, main steam, feedwater and cleanup) indicate jet thrust loads exceed the original design loads for the isolation valve anchors.

FIGURE 1

TYPICAL GUARD PIPE CONFIGURATION



III. LEAK BEFORE BREAK ANALYSIS

A leak before break analysis was previously performed on the emergency condenser main steam, feedwater and cleanup systems. This was submitted on August 6, 1984 in conjunction with a response to Inspection and Enforcement Bulletin 80-11. However, the analysis only considered that portion of the piping outside of primary containment. We have re-evaluated the applicability of this analysis for systems inside the drywell. Since the piping stresses inside the drywell are no higher than those outside the drywell we conclude that this analysis is applicable and demonstrates that for significant through wall flaws (including postulated 90 degree circumferential cracks), adequate margin against unstable pipe rupture exists. Further, the analyses show that the leak rate for such flaws would exceed one gallon per minute which as outlined below is well within the leak detection of the drywell leakage detection system.

In support of the leak before break scenario, there are two leakage detection systems within the primary containment at Nine Mile Point Unit 1. Unidentified pressure boundary piping leakage is detected and monitored by the drywell floor drain tank. Existing technical specifications limit the unidentified leakage to 5 gpm and an increase in unidentified leakage to 2 gpm within a 24 hour period. The primary means of determining unidentified reactor coolant leakage is by monitoring the rate of rise in the level of the drywell floor drain tank. A second method also used to determine reactor coolant leakage is the time required to fill the tank between two predetermined levels. As can be seen from Table 2, the rate of rise system can detect leakage of less than one gallon per minute.

TABLE 2

DRYWELL LEAK DETECTION SYSTEM

Type of System	Time to Sensitivity	Achieve Sensitivity
Rate of Rise (level vs time)	0.2 gpm for inflows of 1 gpm	0.66 hours
	0.5 gpm for inflows for 1-5 gpm	0.13 hours
Rate of Rise (rate of change)	0.25 gpm	0.03 hours
Timer (with level sensor)	5 gpm	0.30 hours

IV. CONCLUSION

The Guard pipe configuration for several systems at Nine Mile Point Unit 1 were originally analyzed as discussed earlier. The new analysis imposes loads due to pressurization of the penetration which exceeds the original design loads. However, as shown, other mitigating measures are in place which result in a configuration that provides adequate safety margins. Therefore, we plan to resume operation of Nine Mile Point Unit 1 and operate until the Spring 1986 refueling outage now scheduled to begin before March 30, 1986. We also plan to evaluate the need to modify the systems that use this configuration. As required, modifications will be performed during the Spring 1986 refueling and maintenance outage.

V. NO SIGNIFICANT HAZARDS CONSIDERATION

10CFR50.91 requires that at the time a licensee requests an amendment, it must provide to the Commission its analysis, using the standards in 10CFR50.92, about the issue of no significant hazards consideration. Therefore, in accordance with 10CFR50.91 and 10CFR50.92, the following analysis has been performed.

The proposed amendment in accordance with the operation of Nine Mile Point Unit 1 will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment would allow continued operation of Nine Mile Point Unit 1 with system designs that are not consistent with those described in the Final Safety Analysis Report. This would not increase the probability of any accident previously evaluated or consequences of an accident previously evaluated based on the capability to detect a leak of one gallon per minute or less and the associated low stress levels in the piping system. In addition, several lines have internal isolation valves which allow for reactor isolation.

The proposed amendment in accordance with the operation of Nine Mile Point Unit 1 will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment would allow continued operation of Nine Mile Point Unit 1 with system designs that are not consistent with those described in the Final Safety Analysis Report. However, the low piping stresses and sensitive leak detection system provides appropriate mitigation. In addition, several lines have internal isolation valves which allow for reactor isolation.

The proposed amendment in accordance with the operation of Nine Mile Point Unit 1 will not involve a significant reduction in a margin of safety.

Although the system design is not consistent with that described in the Final Safety Analysis Report, the low pipe stresses and sensitivity of the leakage detection system provides adequate mitigation with no significant reduction in margin of safety. In addition, several lines have internal isolation valves which allow for reactor isolation.

Based on the above analysis, the proposed amendment involves no significant hazards consideration.

VI. ENVIRONMENTAL CONSIDERATIONS

This request for license amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10CFR Part 20 and change in surveillance requirements. Niagara Mohawk has determined that this amendment involves no significant hazards consideration. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9). Pursuant to 10CFR51.22(b), Niagara Mohawk has determined that no environmental impacct statement or environmental assessment need be prepared in connection with the issuance of this amendment.