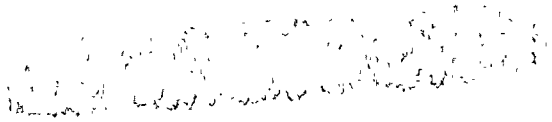
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

## NINE MILE POINT NUCLEAR STATION, UNIT 1

Approximately six or seven years ago, a crack was observed in the Reactor Building wall of Nine Mile Point Unit 1. The cause of the crack was determined to be the result of the thermal expansion of the Screenhouse wall which abuts against the Reactor Building wall. The crack has been under continuous monitoring by the licensee, the Niagara Mohawk Power Corporation, and was found in March 1983 to have some extension. In view of this finding, the licensee was requested to perform an analysis of the crack to determine its significance with regard to near-term operation of the plant.

On March 25, 1983 the licensee submitted a report describing the procedure and the results of the analysis. The analysis was accomplished by idealizing the portion of the wall adjacent to the crack into a finite element model and subjecting it to a thermally induced load of 595 kips and a seismic related deflection of 0.034 inch, both of which are imposed by the Screenhouse wall, and an active earth pressure. The licensee did not provide the bases of the loads originating from the Screenhouse wall nor indicate the manner in which the active earth pressure is applied. In response to the staff's request, the licensee provided the bases of the thermally induced load and seismically related deflection and clarified the application of the active earth pressure. The thermally induced load was obtained by considering the Screenhouse wall subjected to a thermal expansion of 20°F and restrained by a friction with the supporting soil and at the wall/rock interface. The seismic related deflection was obtained by modeling the Reactor Building and the Screen/Pumphouse as free standing structure and by finding the deflection of each at the point of contact between the two buildings under the seismic force. The sum of the two deflections was taken as the input deflection for the analysis. Only the static active earth pressure was considered because the dynamic active earth pressure was found to be of little significance.



In order to enhance the capability of the cracked wall portion to resist seismic load a compression strut was installed at the location of the crack. The strut bears against the Reactor Building wall on one end and the edge of the floor slab on the other to protect the floor slab from being fractured under the application of load. A crushable grout is to be used to cushion the bearing of the strut on the edge of the slab.

The licensee provided the above detailed information first in a July 25, 1983 meeting and then in a formal submittal made on August 25, 1983.

The staff has reviewed and evaluated the information as provided by the licensee and found the licensee has responded to all the staff's questions on the analysis and the remedial measures, in a satisfactory manner to support operation in the near term. In a letter to D. B. Vassallo of NRC from C. V. Mangan of Niagara Mohawk Power Corporation dated September 12, 1983, it is indicated as a long-term solution, that Niagara Mohawk has planned to decouple the Screenhouse wall from the Reactor Building wall by cutting an expansion joint in the Screenhouse wall and this will be accomplished by the end of the 1984 refueling outage. The staff believes this action will preclude further crack extension in the one Reactor Building.

On the basis of the staff's review of the analysis performed together with the licensee's commitment to decouple the Screenhouse wall from the Reactor Building wall as a long-term solution of the problem, the staff concurs with the licensee's conclusion that the facility can be safely operated until the planned decoupling in the Spring 1984 refueling outage.

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Dated: DEC 2 9 1983