



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
MAINE YANKEE ATOMIC POWER COMPANY  
MAINE YANKEE ATOMIC POWER STATION  
DOCKET NO. 50-309

The staff, in its SE, concluded that the masonry walls qualified on the basis of the working stress criteria at Maine Yankee were adequate to withstand design basis loading conditions as the licensee's working stress criteria complied with the staff acceptance criteria. However, six walls indicated in Table 1 below, were qualified on the basis of arching action theory. The staff stated in the SE that the use of the arching action theory was not acceptable and implementation of the staff position on this issue was required to render these walls acceptable to the staff.

Table 1

Walls Originally Qualified Using Arching Action Theory

<u>LOCATION</u>	<u>NUMBER OF WALLS</u>
Battery Room - Elevation 35' - 0"	4 walls
Battery Room - Elevation 45' - 6"	1 wall (Westwall)
Cable Tray Room - Elevation 35' - 0"	1 wall (Eastwall)

By a letter dated December 19, 1984, the licensee informed the staff that it rereviewed the original analysis for these walls to determine the extent of the required modification. Upon examination, the cable tray room east wall was found not to affect any safety equipment or system; thus, this wall may be deleted from the scope of IE Bulletin 80-11. The remaining five walls were reanalyzed using the tested compressive strengths for block and mortar and the working stress criteria. The test samples were extracted from a Battery Room wall. The results of analyses indicated that the four Battery Room walls at elevation 35' - 0" complied with the licensee's working stress criteria (and, hence, the staff acceptance criteria) requiring no modifications. Only the west wall of Battery Room at elevation 45' - 6" was overstressed and required modification.

The staff visited the Maine Yankee facility to review the modifications to the west wall and the licensee's reanalysis based on the test data. Based on the site visit and the review of the above information, the staff finds that the licensee's reanalysis and modifications are acceptable and concludes that the issues regarding the arching action theory at Maine Yankee are now resolved.

In the SE, the staff also indicated that the upgrading of the block wall on south side of the fuel pool was required as it can not withstand the postulated tornado effects. By a letter dated January 25, 1985, the licensee

responded to the staff requirement by examining the consequences of the wall failure and proposing some administrative controls regarding the storage of freshly discharged fuel and parking of the refueling crane. This response is currently under the staff review and the staff findings regarding the adequacy of these measures will be reported separately.

In January 25, 1985 letter, the licensee also indicated that because of the installation of additional safety-related steam generator instrumentation, the block walls enclosure for the containment elevator shaft was now considered within the scope of IE Bulletin 80-11 and was being evaluated. By a letter dated February 25, 1985, the licensee informed the staff of results of its evaluation regarding the enclosure walls. The integrity of the north, south and west elevator shaft walls above 46' elevation could not be assured under the postulated seismic loads. The licensee indicated that these walls will be either modified or the safety equipment removed from the vicinity of these walls. The staff, during the aforementioned site visit, reviewed the modifications to the north wall which consisted of the installation of wire mesh and structural members to catch the falling debris. Safety related equipment was removed from the vicinity of the other walls. The staff also reviewed the associated calculations for north wall during the site visit and concluded that the modifications are acceptable as they comply with the staff acceptance criteria.

By a letter dated April 22, 1985, the licensee provided a final and complete list of the safety related masonry walls at Maine Yankee. In addition to the walls discussed in the staff SE and above, this list included two masonry walls in the Turbine Building (At els. 21' - 0" and 61' - 0") and one located in the Primary Auxiliary Building (PAB) (At el. 11' - 0"). These walls were evaluated in response to the IE Bulletin 80-11 but were not included in the previous list of the safety related walls. The safety related equipment in the vicinity of the Turbine Building el. 61' - 0" wall and the PAB wall has been protected. The licensee contended that the collapse of the Turbine Building el. 21' - 0" wall will not adversely affect the adjacent safety related equipment. During the site visit, the staff observed this wall and requested some additional information from the licensee. The licensee provided this information by a letter dated September 24, 1985. This wall is adjacent to heat exchanger Hx E-4A which is the only safety related item in the vicinity. Only the top few courses of this wall potentially could interact with this heat exchanger and because of the close proximity of the wall to the heat exchanger the impact energy is minimized. The licensee's calculations indicate that very low shell stresses (4 ksi) will be induced in the heat exchanger shell because of the impact between the wall and the heat exchanger. Based on the review of this information and site observations, the staff concurs with the licensee that the collapse of this wall will not adversely affect the safety related equipment.

Based on the foregoing discussions, the staff concludes that, with the exception of the wall on the south side of the fuel pool, there is a reasonable assurance that the safety related masonry walls at Maine Yankee will withstand the specified design load conditions without impairment of wall integrity or the performance of the required safety functions.

Date: November 8, 1985

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