



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

MASONRY WALL DESIGN, IE BULLETIN 80-11

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION UNITS 1 AND 2

DOCKET NOS. 50-280 AND 50-281

1.0 INTRODUCTION

The initial staff Safety Evaluation on Masonry Wall Design for the Surry Power Station Units 1 and 2, dated June 14, 1985, identified certain masonry walls as unacceptable, based on simplified assumptions concerning their boundary conditions and the lack of physical restraints at their base mortar joint.

The staff discussed the subject masonry walls during a telephone conversation on March 9, 1989, and further discussed Virginia Electric and Power Company's (VEPCO's) submittal of April 7, 1989, during the meeting of April 20, 1989. VEPCO committed to identify the masonry walls previously assumed as cantilevered walls and to conduct a field inspection to ascertain the actual boundary condition. VEPCO's May 12, 1989, submittal provided the required information for staff evaluation and approval. The staff conducted a site visit on July 20, 1989, to confirm the licensee's data.

2.0 EVALUATION

The original staff Safety Evaluation Report associated with IE Bulletin 80-11 on Masonry Walls identified the unacceptability of several masonry walls which had been evaluated as cantilevered walls without providing a boundary restraint at the cantilever support (boundary mortar joint).

VEPCO's evaluation had utilized simplified assumptions for the boundary conditions of the masonry walls in conjunction with the analytical techniques and acceptance criteria identified in the FSAR. However, the staff had requested that a positive clamping device be provided at the joint of each of the assumed cantilever walls to prevent rotation at the fixed boundaries and to assure that the seismic forces would be transmitted through the cantilever support.

Based on discussions with the staff, the licensee agreed to inspect the subject walls to establish the actual boundary conditions. The licensee submittal of May 12, 1989, identified eight walls with their specific identification number and the actual boundary conditions. These walls had been analyzed as cantilevered walls in the previous analyses. Table 1 shows that the original simplified assumption of cantilever supports do not agree with the actual support conditions. The information in Table 1 indicates additional boundary supports on the sides of these walls consisting of mortar joints with other structural members, and masonry blocks interlocking with adjacent walls.

The staff has concluded that the existence of these types of supports would remove any staff concern related to the original cantilever masonry walls without clamping support at the cantilever support. The staff site visit of July 20, 1989, has confirmed the licensee's data. Therefore, the staff considers the IE Bulletin 80-11 issues on masonry walls for the Surry Power Station Units 1 and 2 resolved.

### 3.0 CONCLUSION

The licensee has resolved the original staff concerns on the adequacy of the cantilever supports for the eight masonry walls by a field inspection as indicated in the attached Table 1. The new information replaces the original licensee assumption that considered these walls as cantilever walls. The licensee has provided new information concerning the actual boundary conditions which has been confirmed by the staff during our site visit. Based on these new findings identified in the VEPCO's submittal of May 12, 1989, and staff site visit of July 20, 1989, we consider the original issues applicable to the cantilever masonry walls under the IE Bulletin 80-11 to be resolved.

Principal Contributor:  
Frank Rinaldi

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TABLE 1  
LIST OF BLOCK WALLS ANALYZED AS CANTILEVER WALLS  
AND THEIR ACTUAL BOUNDARY CONDITIONS

SURRY POWER STATION

<u>Item No.</u>	<u>Wall Number</u>	<u>Actual Boundary Conditions</u>
1	AB-45-10-4	Interlocked joint at both sides
2	AB-45-10-5	Butt joint at both sides
3	AB-45-10-8	Interlocked one side and butt mortar joint for the full height at the other side
4	AB-45-10-13	Interlocked one side and free the other side
5	AB-45-10-17	Interlocked one side and butt joint the other side (See Attachment 2, SH 2 of the May 12, 1989 submittal)
6	AB-45-10	Free one side and butt joint the other side
7	AB-45-10-22	Full height butt mortar joint one side and interlocked the other side
8	AB-2-0-18	Full height butt mortar joint on one side and free the other side (See Attachment 2, SH 3 of the May 12, 1989 submittal)