830 Power Building
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

Reactor Facilities Branch

August 5, 1976

Mr. Norman C. Moseley, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 818
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. Moseley:

BROWNS FERRY NUCLEAR PLANT UNIT 3 - REPORTABLE DEFICIENCY - RPV STABILIZER PLATES INSTALLED INCORRECTLY - IE CONTROL NO. HO 1340 F2

Initial report of the subject reportable deficiency was made to G. R. Klingler, NRC-IE, Region II, on May 13, 1976, and was followed by our June 14, 1976, letter, J. E. Gilleland to N. C. Moseley. Enclosed is our final report concerning this deficiency.

Very truly yours,

H. G. Parris for

J. E. Gilleland
Assistant Manager of Power

Enclosure
CC (Enclosure):
Dr. E. Volgenau, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

BROWNS FERRY NUCLEAR PLANT UNIT 3

RPV STABILIZER PLATES INSTALLED INCORRECTLY

DDR 232

FINAL REPORT

On May 13, 1976, an initial report was made by telephone to NRC-OIE Region II Inspector Gerald R. Klingler by J. G. Adair, T. W. Barkalow, and S. H. Mindel in accordance with 10CFR50.55(e). Subsequently, a written interim report on this deficiency was submitted to Norman C. Moseley (NRC-OIE) from J. E. Gilleland (TVA) on June 14, 1976. This is the final report on DDR 232.

Description of Deficiency

The General Electric Company released a field disposition instruction (FDI) requesting that an inspection be performed on the reactor pressure vessel (RPV) seismic stabilizers at Browns Ferry Nuclear Plant. The purpose of the inspection was to ensure the stabilizers were installed with sufficient clearances to permit relative deflections between the reactor pressure vessel and the shield wall without binding and inducing cyclic stresses in the stabilizers. When performing this inspection it was discovered that part of the stabilizer assembly had been incorrectly installed. Bearing plates at each end of the assembly had been installed 90 degrees from their intended orientation, see figure 1, attached.

Cause of Deficiency

The stabilizer bearing plates were originally installed rotated 90 degrees from their intended orientation.

Safety Implications

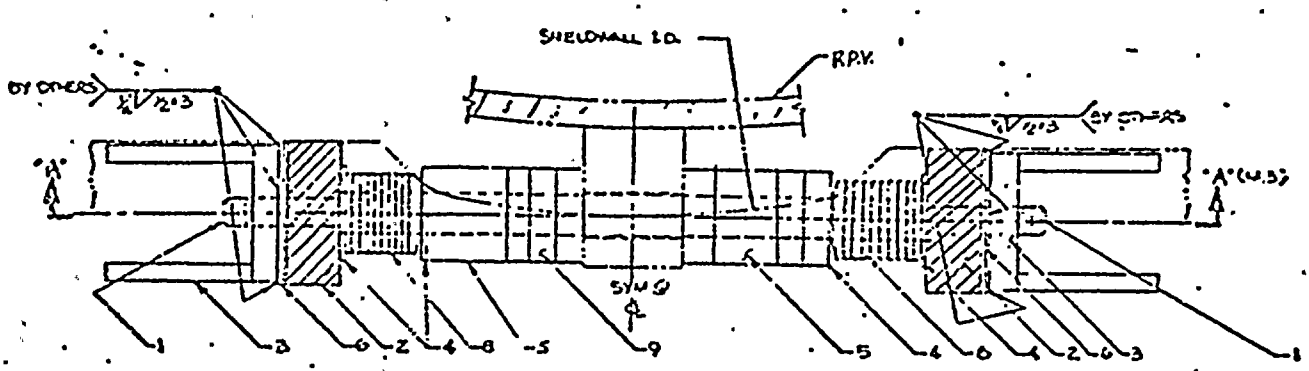
The RPV stabilizers are the seismic restraints for the reactor pressure vessel. The bearing plates that were incorrectly installed are the bearing surfaces between the RPV stabilizer assemblies and the bumper assemblies mounted on the biological shield wall. The bearing plate of a stabilizer assembly directly reacts against a shim plate welded to the bracket. This shim plate is "U"-shaped to allow for movement of the stabilizer assembly due to thermal expansion of the RPV (see figure 1). With the bearing plate installed rotated 90 degrees from the correct orientation, the amount of bearing surface between it and the shim plate is reduced. It is possible that the thermal expansion of the RPV could move the stabilizer assembly so that one edge of the bearing plate is above the cut-out portion of the shim plate. During a seismic event this orientation could lead to the bearing plate "punching through" one side of the shim plate cut-out resulting in binding of the stabilizer assembly which could impair its operability. The RPV would not be damaged due to the stabilizer assembly binding, but the stabilizer could be damaged to the extent that replacement would be necessary.

Description of Corrective Action

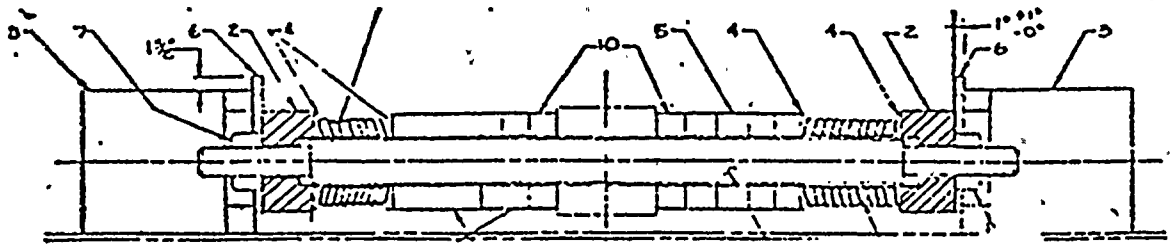
General Electric was notified of this deficiency and recommended that TVA implement one of two fixes: (1) rotate the bearing plate 90 degrees to the correct orientation, or (2) replace the shim plate on the bumper bracket with a new design of different dimensions. Since the stabilizers are fully assembled and are located in an area with limited access, rotation of the bearing plates would have been very difficult. Instead, new shim plates have been fabricated and have been installed. These new shim plates increase the amount of bearing surface area available and decrease the likelihood of a bearing plate "punching through" the shim plate cut-out (see figure 2 for new shim plate dimensions).

Means Taken to Prevent a Recurrence

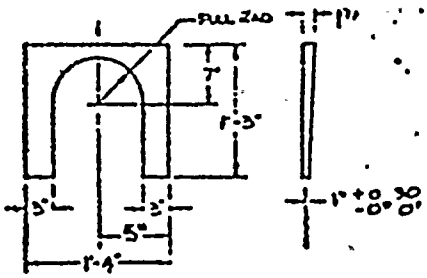
At the time the RPV stabilizer assemblies were installed there was not a formal Quality Assurance Program for Browns Ferry. Since that time a formal program has been developed and implemented. This program decreases the probability of incorrect installation of equipment and QA hold points are identified to verify critical dimensions and orientations. Since no further stabilizers are to be added to Browns Ferry, this particular deficiency will not recur. The current formal QA Program significantly decreases the chance of recurrence of a similar deficiency.



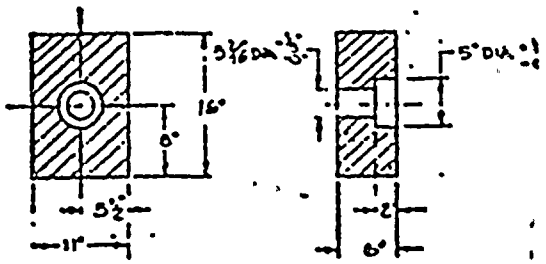
Stabilizer Assembly
TOP VIEW



SECTION A-A

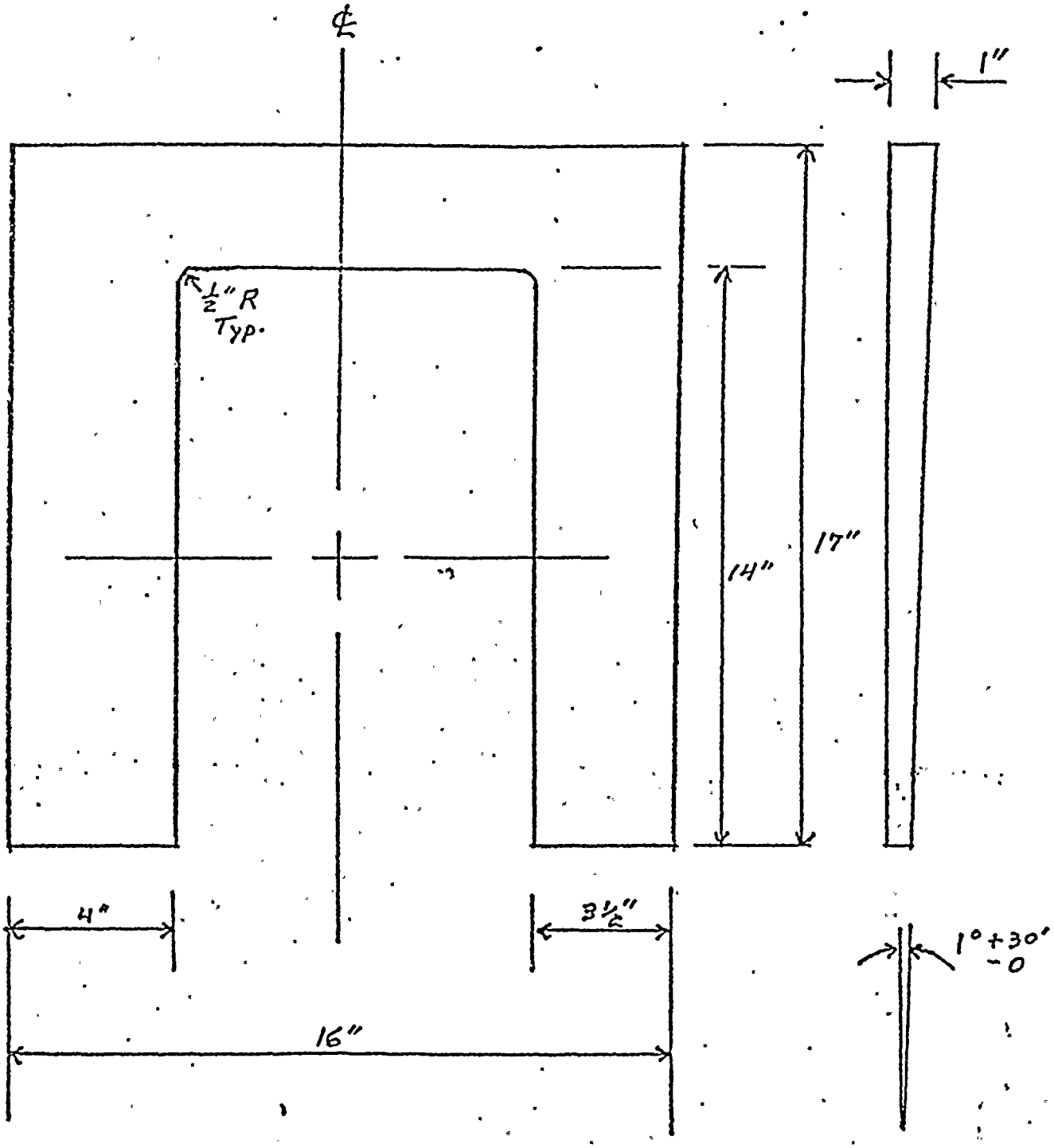


(6) TAPERED SHIM (2 REQ'D)



(2) PLATE (2 REQ'D)

FIGURE 1



NEW SHIM PLATE

FIGURE 2