

CONTROL BLOCK:

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

CONT

REPORT SOURCE

DOCKET NUMBER

EVENT DATE

REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

(NP-32-80-17) The analysis required by NRC IE Bulletin 80-11 determined that during a seismic event (1) the wall between the control room and stairway AB-1, (2) the floor beam at the top of wall 3307, (3) the connection between wall 2047 and the floor, (4) the floor beams attached to the top of the walls 3167 and 3187, (5) the connections between wall 2337 and the floor would be overstressed. Walls 3167, 3177, 3187, 4107, 4117, and 4127 would be overstressed by compartment pressurization. The conditions are reportable per Technical Specification 6.9.1.8.1.

7 8 9		SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE						COMP. SUBCODE		VALVE SUBCODE			
0 9		Z Z		B		A		X X X X X X						Z		Z			
7 8		9 10		11		12		13		14						15		16	
		EVENT YEAR				SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE		REVISION NO.							
5		17		8 0		0 9 1		0 1		X		5							
LER/RO REPORT NUMBER		21 22		23		24 25 26		27		28 29		30 31							
ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		HOURS		ATTACHMENT SUBMITTED		NPRD-4 FORM SUB.							
X		F		Z		Z		0 0 0		Y		N							
18		19		20		21		22		23		24							
22		23		24		25		26		27		28							
PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER																	
A		Z 9 9 9																	
25		26																	
43		44																	

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 The cause is a change in the analytical methodology used by the architect/engineer
11 since the walls were designed in the early 1970s. Using the methods applicable at
12 that time, the stresses would be acceptable. However, the change in methods results in
13 a dynamic instead of a static analysis. Facility Change Requests 80-277, 81-015, 81-016,
51-017, and 81-020 have been written to make the necessary modifications.

FACILITY STATUS		% POWER		OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION	
1	5	E	28	0	5	5	29	NA	44
7	8	9	10	11	12	13	14	15	16
ACTIVITY CONTENT		RELEASED OF RELEASE		AMOUNT OF ACTIVITY		LOCATION OF RELEASE			
1	6	Z	33	Z	34	NA	44	NA	45
7	8	9	10	11	12	13	14	15	16
PERSONNEL EXPOSURES		NUMBER		TYPE		DESCRIPTION			
1	7	0	0	0	37	Z	38	NA	44
7	8	9	10	11	12	13	14	15	16
PERSONNEL INJURIES		NUMBER		DESCRIPTION					
1	4	0	0	0	40	NA	44		
7	8	9	10	11	12	13	14	15	16
LOSS OF OR DAMAGE TO FACILITY		TYPE		DESCRIPTION					
1	9	Z	42	NA	44				
7	8	9	10	11	12	13	14	15	16
PUBLICITY		ISSUED		DESCRIPTION					
2	0	N	44	NA	44				
7	8	9	10	11	12	13	14	15	16

NRC USE ONLY

TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION UNIT ONE
SUPPLEMENTAL INFORMATION FOR LER NP-32-80-17

5 | DATE OF EVENT: December 23, 1980, February 17, March 10, March 27,
April 21, 1981, and May 7, 1981.

FACILITY: Davis-Besse Unit 1

5 | IDENTIFICATION OF OCCURRENCE: Floor beam at the top of concrete block wall 5107, the floor beam at the top of concrete block wall 3307, the connection between concrete block wall 2047 and the floor, the connection between wall 2337 and the floor, and floor beams at the top of walls 3167 and 3187 would be overstressed during a design basis seismic event. Walls 3167, 3177 and 3187, and Walls 4107, 4117 and 4127 would be overstressed during a compartment pressurization.

CONDITIONS PRIOR TO OCCURRENCE: The unit was in Mode 1 with Power (MWT) = 1525 and Load (Gross MWE) = 289.

DESCRIPTION OF OCCURRENCE: While performing the analysis of concrete block walls required by NRC IE Bulletin 80-11, it was determined that during a seismic event the block wall between the control room and stair AB-1 would cause the floor beam above to be overstressed. This floor beam is attached to the wall and supports a portion of the floor above the control room.

It was determined that this condition was less conservative than assumed in the Final Safety Analysis Report (FSAR) and is being reported under Technical Specification 6.9.1.8.i. The NRC On-Site Inspector was notified at 0925 hours on December 23, 1980.

Additional analysis per NRC IE Bulletin 80-11 determined that during a seismic event the block wall between component cooling water heat exchanger and pump room (#328) and elevator number 2 would cause the floor beam above to be overstressed. This floor beam is attached to the wall and supports a portion of the floor above the component cooling water exchanger and pump room.

It was also determined that this condition was less conservative than assumed in the FSAR and is being reported under Technical Specification 6.9.1.8.i. The NRC On-Site Inspector was notified at 0935 hours on February 18, 1981.

Additional analysis per NRC IE Bulletin 80-11 determined that during a seismic event, the loads on block wall 2047 (between the two makeup pumps) from the attached piping systems would cause the stresses in the connection between the wall and the floor to be greater than code allowables.

It was determined that this condition was less conservative than assumed in the FSAR and is being reported under Technical Specification 6.9.1.8.i. The NRC On-Site Inspector was notified at 1221 hours on March 11, 1981.

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Analysis of additional walls per NRC IE Bulletin 80-11 determined that during a seismic event, walls 3167 and 3187 would cause the floor beams attached to the tops of these walls to become overstressed. It was also determined that the concrete masonry in block walls 3167, 3177, and 3187 would be overstressed when subjected to compartment pressurization originating from a pipe break. These walls form a cable chase in Mechanical Penetration Room #4 (Room 314) on the 585 foot elevation.

This condition was less conservative than assumed in the FSAR and is being reported under Technical Specification 6.9.8.1.i. The NRC On-Site Inspector was notified at 1325 hours on March 30, 1981.

Additional analysis per NRC IE Bulletin 80-11 determined that during a design basis seismic event, the connection between wall 2337 and the floor could become overstressed. This wall is located in mechanical penetration room #2 on the 565 foot elevation.

It was determined that this condition was less conservative than assumed in the FSAR and is being reported under Technical Specification 6.9.8.1.i. The NRC On-Site Inspector was notified at 1204 hours on April 22, 1981.

5 Additional analysis per NRC IE Bulletin 80-11 determined that after a main feedwater pipe break, the increase in pressure created could develop an overstressed masonry condition in block walls 4107, 4117 and 4127. These walls located on elev. 603'-0" form a pipe chase in corridor 404.

It was determined that this condition was less conservative than assumed in the FSAR and is being reported under Technical Specification 6.9.1.8.i. The NRC On-Site Inspector was notified at 1530 hours on May 7, 1981.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE: This finding is due to a change in the analytical methodology used by the architect/engineer since the walls were designed in the early 1970's. Using the methods applicable at that time, the floor beam would be acceptable as built. However, the change in the method treats wall section properties and seismic floor response inputs differently and is a dynamic instead of static analysis. Under the new methods, the floor beam design and the wall to floor connection is deficient.

Compartment pressures generated by postulated pipe breaks were not originally considered when the architect/engineer designed the walls. Reanalysis of these walls with the additional loading has resulted in the overstressed masonry condition.

ANALYSIS OF OCCURRENCE: There was no danger to the health and safety of the public or to station personnel. The floor beams and wall to floor connection in question are only overstressed during a maximum probable earthquake. During all other postulated unit operating conditions, the stresses are within allowables.

A preliminary review of the portion of the floor above the control room supported by this beam has been made. The results are not conclusive but indicate there is a potential that a portion of the floor above may undergo some structural distress. A more detailed analysis would take three months to perform. The modification to correct this condition consists of two small struts which could be installed in about two weeks. Therefore, in the interest of taking the most expeditious approach, Toledo Edison has decided to make the modification at this time without proceeding with further analytical effort.

Similarly, a preliminary review of the portion of the floor above the component cooling water heat exchanger and pump room supported by the beam has been made. The results are not conclusive but indicate there is a potential that a portion of the floor above may undergo some structural distress. A more detailed analysis would take three months to perform. The modification to correct this condition consists of the installation of three plate stiffeners between the web of the floor beam and the floor above. This modification can be made in a shorter time than it would take to complete the detailed analysis of the floor. Therefore, in the interest of taking the most expeditious approach, Toledo Edison has decided to make the modification at this time without proceeding with the detailed floor analysis.

Pipe supports 31-HCC-5H5, 31-HCC-5H6, 31-HCC-5H7 and 31-HCC-5H9 are attached to wall 2047. During a maximum probable earthquake these pipe supports impart loads to wall 2047 which causes the stresses in portion of the connection between wall 2047 and the floor to be greater than allowed by the Uniform Building Code (UBC) and American Concrete Institute (ACI) Code. The wall was analyzed as five wall strips. The stresses in the connection between the wall and the floor in only two of the wall strips were greater than allowable. However, even in these two strips, the factors of safety are greater than one, demonstrating that these strips are still stable.

There is also an inherent conservatism in our analysis since the interaction between wall strips is not considered.

The piping systems attached to the wall have been reanalyzed assuming that there will be deflection in wall 2047. The resulting piping and support stress are all within the interim allowable stresses developed for IE Bulletin 79-14.

Overstress of the masonry comprising block walls 3167, 3177, and 3187 is due to the postulated compartment pressure resulting from a break in the main feedwater line in room 314. During all other operating conditions, the stresses are within allowables. However, such a break in this room has a low probability of occurring. The portion of the pipe meets most of the criteria established by NRC Branch Technical Position MEB 3-1 to qualify as a "no break zone", the exception being that the piping was designed to ANSI B31.1 instead of ASME Section III, Class 2. However, the Toledo Edison procurement and installation specifications required the same material and installation documentation as is required under ASME Section III, Class 2.

The effects of the wall deflection caused by the seismic loads on nuclear safety related conduit attached to these walls have been investigated and failure of the conduit will not occur. Additional analysis to determine if yielding of the floor beams would cause structural distress in a portion of the floor above would take approximately six months to perform, while a modification to ensure the condition is conservative can be made in a shorter time.

In the case of wall 2337, the stresses created in the wall to the floor connection are greater than criteria allowables per the Uniform Building Code (UBC) and the American Concrete Institute (ACI) code. However, the factor of safety on the connection was still greater than 1, thus demonstrating wall stability during a seismic event.

The stresses in the piping and conduit systems attached to this wall have been reviewed assuming the wall would deflect during a seismic event, and found to be within allowable limits.

When a break in the main feedwater line in corridor 404, including the portion within the pipe chase is postulated, the masonry in Walls 4107, 4117 and 4127, and all wall connections, could become overstressed due to the pressure loading. During all other postulated unit operating conditions, the stresses are within allowables.

5 The above postulated event (a main feedwater pipe break in corridor 404) has a low probability of occurrence. The affected portion of the main feedwater line has been reviewed against current design criteria. Our review indicates that this piping meets the requirements of Branch Technical Position MEB 3-1 (Section B.1.b) for Fluid System Piping in Containment Penetration Areas where break need not be postulated, with the following exceptions: 1) the piping system was designed to ANSI B31.1 instead of ASME Section III, Class 2. However, the Toledo Edison procurement and installation specifications required the same material and installation documentation as is required under ASME Section III, Class 2; and 2) this portion of piping does not comply with Section B1.1b(4) which requires that the length of the section of pipe for which breaks are not postulated be kept to a minimum.

CORRECTIVE ACTION: Under Facility Change Request 80-277, two struts were added to the floor beam above the wall between the control room and stairway AB-1. This work was completed March 6, 1981.

For the second finding, three plate stiffeners will be installed between the beam and floor above, under Facility Change Request 81-015.

For the third finding, the condition will be corrected by removing the pipe supports from wall 2047 and attaching them to the makeup pump room ceiling. This relocation work will be done under Facility Change Request 81-016 when station operating conditions permit.

For the fourth finding, the condition will be corrected by the addition of a two-layered internal bracing system to the cable chase formed by walls 3167, 3177, and 3187. The top layer of bracing will lower the floor beam stresses to allowable limits by reducing the wall deflections. The lower level internal bracing will reduce the masonry wall stresses (these caused by compartment pressurization) to within allowables. These modifications will be made under Facility Change Request 81-018 when station operating conditions permit.

For the fifth finding, the condition will be corrected by reinforcing the connection of the base of wall 2337 by adding steel angles connected to the wall and floor with thru-bolts and expansion anchors. This modification will be made under FCR 81-017 when station operating conditions permit.

5 | For the sixth finding, the condition will be corrected by the removal of Walls 4117 and 4127, and replacement of Wall 4117 with a steel jet impingement shield. Wall 4107 will be reinforced with a steel post anchored to the floor. This modification will be made under Facility Change Request 81-020 when station operating conditions permit.

FAILURE DATA: There have been no previously similar reported occurrences.

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