NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

1 | OHDBS1 (2) | Ø Ø - Ø Ø NPF-Ø3 (3) | 4 1 1 1 1 (4) | (5)

8 9 LICENSEE CODE 14 15 LICENSE NUMBER 25 26 LICENSE TYPE JO 57 CAT 58

CON'T

1 | REPORT SOURCE L (6) | Ø5Ø-Ø346 (7) | 111279 (8) | 123779 (9)

8 60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

2 While performing calculations for I. E. Bulletin 79-02, ITT Grinnell personnel dis-

3 covered the design of 11 seismic hangers was not as conservative as was required

4 by the design criteria and assumptions used by ITT Grinnell. On July 25 further

5 analysis of base plate flexibility found that the anchor bolts for pipe supports

6 41-HBC-36-H3, 33A-GCB-8-H1, H-17, SR-31, SR-32, and SR-39, and for the common

7 support structure for anchors A-55, A-61, A-79, A-80, and A-83 had a factor of

8 safety of less than 2. This finding is reportable under T.S. 6.9.1.8.i. (NP-32-79-13 rev. 1) 80

8 9

SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
XX (11)	B (12)	A (13)	SUPORT (14)	A (15)	Z (16)

9 10 11 12 13 18 19 20

1 (17) LER/RO REPORT NUMBER | EVENT YEAR 79 | — | SEQUENTIAL REPORT NO. 106 | / | OCCURRENCE CODE Ø1 | REPORT TYPE T | — | REVISION NO. 1

21 22 23 24 26 27 28 29 30 31 32

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
F (18)	Z (19)	C (20)	Z (21)	Ø Ø 8 4	Y (23)	N (24)	A (25)	1207 (26)

33 34 35 36 37 40 41 42 43 44 47

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 The occurrence was caused by design errors by ITT Grinnell in the initial calculations

11 of the stresses and deflections in these hangers. The affected hangers were modified

12 prior to the unit returning to operation. The items reported July, 1980, were the re-

13 sults of a change in the classification of rigid base plates. They will be modified

14 prior to startup from this refueling outage and Attachment 1 will be updated when that

8 9 work is complete. 80

FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
G (28)	Ø Ø Ø (29)	NA	D (31)	During analysis of I.E. Bulletin 79-02

15 8 9 10 12 13 44 45 46 80

ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
Z (33)	Z (34)	NA	NA

16 8 9 10 11 44 45 80

PERSONNEL EXPOSURES

NUMBER	TYPE	DESCRIPTION (39)
Ø Ø Ø (37)	Z (38)	NA

17 8 9 11 12 13 80

PERSONNEL INJURIES

NUMBER	DESCRIPTION (41)
Ø Ø Ø (40)	NA

18 8 9 11 12 80

LOSS OF OR DAMAGE TO FACILITY (43)

TYPE	DESCRIPTION
Z (42)	NA

19 8 9 10 80

PUBLICITY

ISSUED	DESCRIPTION (45)
N (44)	NA

20 8 9 10 68 69 80

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NRC USE ONLY

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NRC-366-926

TOLEDO EDISON COMPANY
DAVIS-BESSE NUCLEAR POWER STATION UNIT ONE
SUPPLEMENTAL INFORMATION FOR LER NP-32-79-13

DATE OF EVENT: November 12, 1979

FACILITY: Davis-Besse Unit 1

IDENTIFICATION OF OCCURRENCE: Design of eleven seismic supports was not as conservative as required.

Conditions Prior to Occurrence: The unit was in Mode 5, with Power (MWT) = 0, and Load (Gross MWE) = 0.

Description of Occurrence: While performing calculations for IE Bulletin 79-02, ITT Grinnell personnel discovered the design of eleven seismic hangers was not as conservative as was required by the design criteria used by ITT Grinnell. Four of the hangers did not meet the NRC criteria for pipe support operability. On five other supports, the slenderness ratio exceeded the design criteria of 200 used by ITT Grinnell. The remaining two supports were analyzed to have a maximum deflection of approximately .5 inches which could result in stresses on the piping in excess of the design criteria of ITT Grinnell. These analyses were performed assuming the worst case design base earthquake loading.

1 On July 25, 1980, while performing the base plate flexibility analysis, pipe supports 41-HBC-36-H3 on service water, 33A-GCB-8-H1 on decay heat, and H-17, SR-31, SR-32, and SR-39 on main feedwater were analyzed. The results showed that the anchor bolts nad a factor of safety less than two.

1 Also the common support structure (i.e., one support for five anchors) for anchors A-55 high pressure injection, A-61 low pressure injection, A-79, A-80, and A-83 containment spray was analyzed for base plate flexibility. The results showed that the anchor bolts had a factor of safety less than two.

Further information on the affected hangers is contained on Attachment 1. Since more than one part of a redundant system was affected, this incident is being reported in accordance with Technical Specification 6.9.1.8.i.

These design deficiencies were discovered while the unit was in cold shutdown during a unit outage.

Designation of Apparent Cause of Occurrence: The cause of this occurrence was design errors by ITT Grinnell in the initial calculations of the stresses and deflections in these hangers. These design errors were discovered while calculating base plate forces and moments for the analysis required by IE Bulletin 79-02. The errors in the original design were random and not due to a general deficiency in the original design method.

1 Items reported July 25, 1980, were the result of a change in the design criteria as to what constitutes a rigid base plate. The base plates for these supports were originally analyzed as rigid base plates and under the new criteria are now considered flexible.

Analysis of Occurrence: There was no danger to the health and safety of the public or to station personnel. These supports are not required for normal system performance but are required only to protect the systems from a worst case condition of maximum earthquake loading.

The affected systems have been re-analyzed taking into account the non-conservative support designs. These analyses show that all affected safety systems would have performed their safety function if a design basis accident had occurred.

Corrective Action: All affected hanger modifications were completed by 1200 hours on November 15, 1979, prior to the unit returning to operation. Details on the work performed, the applicable facility change request (identical to work order number), and the location of hanger is contained in Attachment 1.

The design of all Q-listed supports attached to concrete on 2½" and larger piping (over 1000 supports) have been reviewed during work performed while responding to IE Bulletin 79-02. Supports on piping smaller than 2½" were not designed by ITT Grinnell.

The following items reported July 25, 1980, will be modified by the following FCRs:

41-HBC-36-H23	by	FCR 80-093 supplement 14
33A-GCB-8-H1	by	FCR 80-088 supplement 12
SR-32 & SR39	by	FCR 80-125 supplement 2
H-17 & SR31	by	FCR 80-125 supplement 3
A-55, A-61, A-79, A-80, A-83	by	FCR 80-089 supplement 9

These discrepancies will be corrected prior to startup from the current refueling outage. Attachment 1 will be updated when that work is complete.

Failure Data: There has been one previously reported similar occurrence, see Licensee Event Report NP-32-79-08.

LER #79-106

ATTACHMENT 1
LICENSEE EVENT REPORT NP-32-79-13

FCR/W.O.	HANGER NO.	LOCATION	CONTROLLING ITEM	WORK PERFORMED
79-379	41-HBC44-H5	Service Water Supply to Emergency Core Cooling Room Cooler 1-3	SF < 2	1/4" x 5" cover bar welded to channel
79-380	33A-HCB2-H44	Borated Water Storage Tank Supply to Emergency Core Cooling System 1	SF < 2	3" x 3" x 3/8" angle iron added
79-381	34-GCB5-H17	Containment Spray Pump 1-1 discharge	Deflection ~ .5"	Added 2-1/2" pipe and 3/4" x . x 7" Gusset plates
79-381	34-HCC38-H19	Containment Spray Pump 1-1 Recirculation Test Line	Deflection ~ .5"	Added 2-1/2" pipe and 3/4" x 5" x 7" Gusset plates
79-387	34-EBD19-H79	Main Steam (upstream of MS-107A)	Slenderness ratio > 200	1/2" x 4-1/2" stiffener bar added to I-beam, replaced kickers with W4 x 13 I-beam
79-388	6C-EBD14-H43	Auxiliary Feed Pump 1-2 Discharge	Slenderness ratio > 200	Replaced kicker with 4" x 4" x 3/8" structural tubing
79-389	31-CCB21-H22	Letdown Delay Coil	SF < 2	1/2" x 5" cover bar added
79-390	33A-GCB4-H5	High Pressure Injection 1-2 Suction	Slenderness ratio > 200	3/8" x 3-1/2" bar added to flanges
79-391	34-6CB5-H2	Containment Spray Pump 1-2 Discharge	Slenderness ratio > 200	3/8" x 4-1/2" stiffener plate added to kicker
79-392	36-HBC39-H8	Component Cooling Water Supply to Letdown Coolers	Slenderness ratio > 200	3/8" x 4-1/2" stiffener plate added to kicker
79-393	41-HBC36-H26	Service Water Outlet of Component Cooling Water Heat Exchanger 1-3	SF < 2	1/4" x 2-3/4" stiffener plate added, W6 x 15 beam added