

## LICENSEE EVENT REPORT

CONTROL BLOCK: 1

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | O H D B S 1 | 2 | 0 0 - 0 0 0 0 0 0 - 0 0 | 3 | 4 | 1 | 1 | 1 | 1 | 4 | 5

7 8 9 | 10 11 12 13 14 15 | 16 17 18 19 20 21 22 23 24 25 26 | 27 28 29 30 31 32 33 34 35 36 | 37 38 39 40 41 42 43 44 45 46 47 48 49 50

LICENSEE CODE | LICENSE NUMBER | LICENSE TYPE | CAT 58

CON'T

0 1 | R E P O R T | L | 6 | 0 | 5 | 0 | 0 | 0 | 3 | 4 | 6 | 7 | 0 | 9 | 0 | 1 | 8 | 3 | 8 | 0 | 9 | 3 | 0 | 8 | 3 | 9

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

REPORT SOURCE | DOCKET NUMBER | EVENT DATE | REPORT DATE

## EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

0 2 | (NP-33-83-59) On 9/1/83 all four high pressure injection (HPI) stop check valves were

0 3 | tested to determine the differential pressure required to establish forward flow.

0 4 | During the performance of this test, it was found that HP48, HP56, and HP59 required

0 5 | 4 psid to allow forward flow while HP49 required approximately 100 psid. This occur-

0 6 | rence is being reported per T.S. 6.9.1.9.b. There was no danger to the public or sta-

0 7 | tion personnel. Upon HPI actuation three lines would have provided an immediate in-

0 8 | jection of water with the 4th (HP49) providing injection when 100 psid occurred across it.

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

0 9 | S F | 11 | B | 12 | A | 13 | V A L V E X | 14 | X | 15 | D | 16

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

SYSTEM CODE | CAUSE CODE | CAUSE SUBCODE | COMPONENT CODE | COMP. SUBCODE | VALVE SUBCODE

17 | LER/RO REPORT NUMBER | 8 3 | 21 22 | 23 | SEQUENTIAL REPORT NO. | 0 4 8 | 24 25 26 | 27 | OCCURRENCE CODE | 0 3 | 28 29 | 30 | REPORT TYPE | L | 31 | 32 | REVISION NO. | 0 | 33 34

ACTION TAKEN | FUTURE ACTION | EFFECT ON PLANT | SHUTDOWN METHOD | HOURS | ATTACHMENT SUBMITTED | NPRD-4 FORM SUB. | PRIME COMP. SUPPLIER | COMPONENT MANUFACTURER

F | 18 | Z | 19 | 33 34 | Z | 20 | 35 36 | Z | 21 | 37 38 | 0 0 0 0 | 22 | Y | 23 | 41 42 | Y | 24 | 43 44 | N | 25 | 45 46 | V 0 8 5 | 26 | 47 48

## CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

1 0 | The cause of this occurrence was a design deficiency. HP49 had a disk to seat contact

1 1 | area of approximately 1/10" wide. According to the valve manufacturer, a wide seat

1 2 | contact area increases the likelihood of the valve sticking. The disk in HP49 was

1 3 | replaced with one with a larger seat angle, resulting in a narrow seat contact area.

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

1 4 | 7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

FACILITY STATUS | % POWER | OTHER STATUS | METHOD OF DISCOVERY | DISCOVERY DESCRIPTION

D | 28 | 0 0 0 | 29 | NA | 30 | B | 31 | During performance of a special test

1 5 | 7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

ACTIVITY | CONTENT | RELEASED OF RELEASE | AMOUNT OF ACTIVITY | LOCATION OF RELEASE

Z | 33 | Z | 34 | NA | 35 | NA | 36

1 6 | 7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

1 7 | PERSONNEL EXPOSURES | 0 0 0 | 37 | Z | 38 | NA | 39

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

PERSONNEL INJURIES | 0 0 0 | 40 | NA | 41

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

1 8 | LOSS OF OR DAMAGE TO FACILITY | Z | 42 | NA | 43

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

1 9 | PUBLICITY | Z | 44 | NA | 45

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

2 0 | ISSUED | N | 44 | NA | 45

7 8 9 | 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

NRC USE ONLY

DVR 83-111

NAME OF PREPARER John Blankemeyer

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PDR ADOCK 05000346  
S PDR

TOLEDO EDISON COMPANY  
DAVIS-BESSE NUCLEAR POWER STATION UNIT ONE  
SUPPLEMENTAL INFORMATION FOR LER NP-33-83-59

DATE OF EVENT: September 1, 1983

FACILITY: Davis-Besse Unit 1

IDENTIFICATION OF OCCURRENCE: HP49, High Pressure Injection Stop Check Valve, required excessive differential pressure to establish forward flow

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

Description of Occurrence: On September 1, 1983, all four high pressure injection (HPI) stop check valves were tested to determine the differential pressure required to establish forward flow. Three of these valves (HP48, HP56, and HP57) were modified during the 1982 Refueling Outage due to a problem involving the valves sticking in the closed position. The cause of the three valves sticking in 1982 was determined to be a steep seating surface of 15° (reference Licensee Event Report NP-32-82-04 [82-023]). HP49 had a seating surface of approximately 28°, and at no time exhibited signs of sticking.

As a further precautionary measure to ensure the valves remained operable, it was decided to retest these valves during the 1983 Refueling Outage. During the performance of this test, it was found that HP48, HP56, and HP57 required 4 psid to allow forward flow, while the line containing HP49 required approximately 100 psid. HP49 was then torqued closed and flow tested several more times in an attempt to repeat the problem. During each subsequent test, the valve required less than 3 psid to open.

This occurrence is being reported per Technical Specification 6.9.1.9.b, which requires that a written report be submitted within 30 days for conditions leading to operation in a degraded mode permitted by a limiting condition for operation.

Designation of Apparent Cause of Occurrence: The cause of this occurrence was a design deficiency. HP49 had a disk to seat contact area of approximately one tenth of an inch wide. According to the valve manufacturer, a wide seat contact area increases the likelihood of the valve sticking. Based upon this information, Toledo Edison has determined the cause of this problem to be the wide seat angle.

Analysis of Occurrence: There was no danger to the health and safety of the public or station personnel. In the event an HPI actuation would have occurred, the three operable lines would have provided immediate and sufficient injection of water. If the Reactor Coolant System (RCS) depressurized sufficiently, HP49 would have opened when a differential pressure of 100 psi occurred across the valve. There have been no incidents requiring HPI since the 1982 Refueling Outage when three of the valves were modified to correct the sticking problem.

Corrective Action: HP49 was disassembled on September 12, 1983. An inspection revealed a wide seat contact area did exist and that it was irregular around the circumference of the disk. Based upon this information, the disk in HP49 was replaced with one with a 33° seat angle. This resulted in a narrow seat contact area existing at the very top of the seat in HP49. This was verified by a blueing check of the seating surface.

On September 13, 1983, HP49 was reassembled, and the handwheel was torqued closed with 150 ft. lbs. of torque to assure the disk was seated. This amount of torque simulated approximately double the force of RCS pressure. The handwheel was then opened, and the differential pressure needed to establish forward flow was determined. This test was repeated three times with each test showing 2 psid would open the valve.

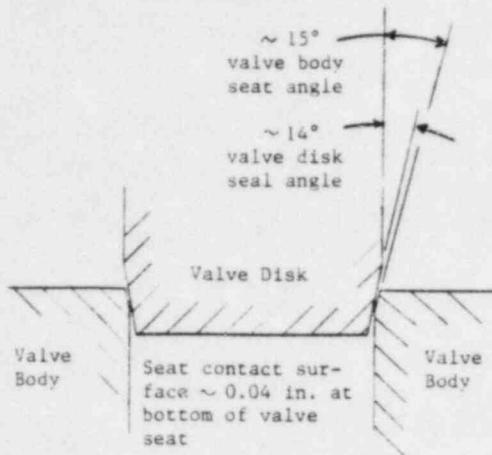
With this modification, HP49 has a narrower contact area and a steeper plug angle to more closely approach the modified design of HP48, HP56, and HP57. See the attached Figure 1 for the details of the modifications made to these valves. HP48, HP56, and HP57 have a 15° angle below the point of contact while HP49 has a 30° angle below the point of contact. These valves will again be tested during the 1984 Refueling Outage.

Failure Data: A previous similar occurrence involving three HPI stop check valves sticking due to a design deficiency was reported in Licensee Event Report NP-32-82-04 (82-023).

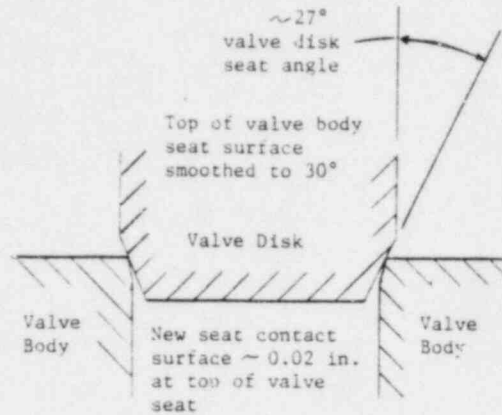
LER #83-048

ATTACHMENT 1

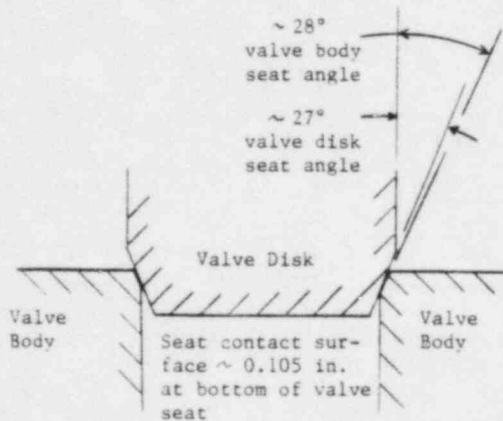
HP48, HP96, & HP57 seat  
 configuration prior to  
 modification in 1982



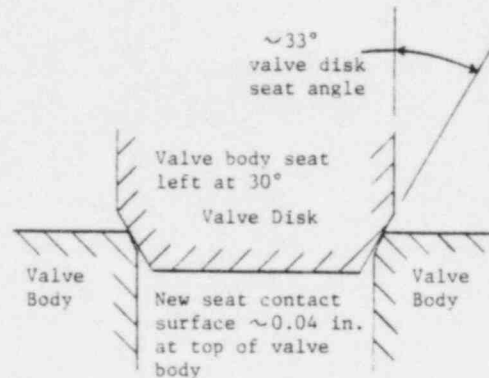
HP48, HP56, & HP57 seat  
 configuration after 1982  
 modification



HP49 seat configuration  
 before modification



HP49 seat configuration  
 after modification



DMB



September 30, 1983

Log No. K83-1341  
File: RR2 (NP-33-83-59)

Docket No. 50-346  
License No. NPF-3

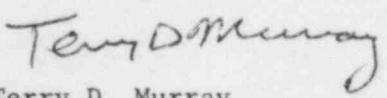
Mr. James G. Keppler  
Regional Administrator, Region III  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

LER No. K83-048  
Davis-Besse Nuclear Power Station Unit 1  
Date of Occurrence: September 1, 1983

Enclosed are three copies of Licensee Event Report 83-048 which are being submitted in accordance with Technical Specification 6.9 to provide 30 day written notification of the subject occurrence.

Yours truly,

  
Terry D. Murray  
Station Superintendent  
Davis-Besse Nuclear Power Station

TDM/ljk

Enclosures

cc: Mr. Richard DeYoung, Director  
Office of Inspection and Enforcement  
Encl: 30 copies

Mr. Norman Haller, Director  
Office of Management and Program Analysis  
Encl: 3 copies

Mr. Walt Rogers  
NRC Resident Inspector  
Encl: 1 copy

OCT 5 1983

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