

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Davis-Besse Unit 1

DOCKET NUMBER (2)

0 5 0 0 0 3 1 4 6

PAGE (3)

1 OF 0 2

TITLE (4)
Reactor trip caused by automatic insertion of Axial Power Shaping Rods

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | | | |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|------------------|--|--|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) | | |
| 0 1 | 0 8 | 8 4 | 8 4 | 0 0 1 | | | | | | 0 5 0 0 0 | | |
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| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | | | | | | | |
|--|-------|--|------------------|----|----------------------|----------|--|--|--|--|--|
| POWER LEVEL (10) | 1 0 0 | 20.402(b) | 20.406(e) | XX | 50.73(a)(2)(iv) | 73.71(b) | | | | | |
| | | 20.406(a)(1)(i) | 50.38(e)(1) | | 50.73(a)(2)(v) | 73.71(e) | | | | | |
| | | 20.406(a)(1)(ii) | 50.38(e)(2) | | 50.73(a)(2)(vi) | | | | | | |
| | | 20.406(a)(1)(iii) | 50.73(a)(2)(i) | | 50.73(a)(2)(viii)(A) | | | | | | |
| | | 20.406(a)(1)(iv) | 50.73(a)(2)(ii) | | 50.73(a)(2)(viii)(B) | | | | | | |
| | | 20.406(a)(1)(v) | 50.73(a)(2)(iii) | | 50.73(a)(2)(x) | | | | | | |
| OTHER (Specify in Abstract below and in Text, NRC Form 386A) | | | | | | | | | | | |

| LICENSEE CONTACT FOR THIS LER (12) | | TELEPHONE NUMBER | |
|------------------------------------|-----------|------------------|--|
| NAME | AREA CODE | | |
| John D. Swartz | 4 1 9 2 | 5 9 - 5 0 0 0 | |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | |
|--|--------|-----------|--------------|-------------------|-------|--------|-----------|--------------|-------------------|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC |
| X | R B | 1 6 9 | M 4 5 5 | Y | | | | | |
| | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|-------|-------------------------------|-------|-----|------|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | XX NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

Due to a condenser tube leak, reactor power was reduced to 46%. Operators borated the Reactor Coolant System, RCS, () to minimize the normal negative imbalance caused by the rod insertion during the power reduction. When core imbalance turned around and became positive, operators added demineralized water to the RCS to allow rods to insert. Due to a failure in the Control Rod Drive Control System, CRDCS, (), the operators could not operate the Axial Power Shaping Rods, APSRs, (), and they inserted without command to help reduce the positive core imbalance. The positive core imbalance increased to the Reactor Protection System, RPS, () flux/delta flux/flow setpoint, and the reactor tripped about 3.5 hours after reducing power to 46%. The CRDCS problem was due to a faulty logic card which was later repaired.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) | |
|--------------------|-------------------|----------------|-------------------|-----------------|----------|----|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | |
| Davis-Besse Unit 1 | 050003468 | -001 | -0002 | | OF | 02 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Occurrence: On January 8, 1984, the unit was operating at approximately 100% power. At 1640 hours, high conductivity alarms of the condensate discharging from the polishers were received by Control Room operators, and a reduction in power to 50% was commenced at a rate of 1/3% per minute, eventually reaching 46%.

As the Integrated Control System, ICS, () reduced reactor power, regulating Group 7 rods inserted into the core, and the core imbalance became more negative, reaching a negative imbalance value of -10%, which remained for approximately one hour. As Xenon reactivity increased in the core because of the power reduction, the control rods withdrew to compensate for it.

To limit rod withdrawal, operators began adding demineralized water at 1955 hours. The control rods withdrew to a maximum of 91% withdrawn at 2115 hours. During this 1.5 hour period of rod withdrawal, the core imbalance began a rapid increase to +21% imbalance, as read by out of core detectors, due to both the rod withdrawal and the burnout of Xenon in the top half of the core. The control rod insertion was not enough to stop the Xenon burnout in the top of the core.

Approximately eight minutes prior to the trip, the APSRs were selected to be withdrawn, however, the rods automatically started inserting. The Reactor Operator stopped the insertion by selecting a different group of regulating rods. Total APSR insertion was 8% which caused the imbalance to become even more positive.

The reactor tripped at 2318 hours on RPS flux/delta flux/flow. This event is reportable under 10CFR50.73(a)(2)(iv), Automatic Actuation of RPS.

Designation of Apparent Cause of Occurrence: The cause of the APSR in motion, without a manual command, was found to be a failed integrated circuit gate on system logic module C6 (IC2). The fault caused a constant manual "i." command, which when Group 8 was selected, resulted in the APSR group run in.

Analysis of Occurrence: The RPS acted as designed, tripping the reactor when the flux/delta flux/flow setpoint was reached. A reactor trip would have occurred earlier in the event if the plant would have been at a higher power during the imbalance swing due to a tighter RPS operating envelope on flux/delta flux/flow.

Corrective Action: On January 9, 1984 at 0830 hours, Instrument and Control Mechanics repaired the faulty system logic card under Maintenance Work Order 1-84-0102-00. The group was tested satisfactorily and declared operable at 1245 hours on January 9, 1984.

Failure Data: This is the first failure of this type system logic module.

Report No: NP-33-84-01DVR No(s): 84-001



February 7, 1984

Log No. K84-163
File: RR 2 (NP-33-84-01)

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. 84-001
Davis-Besse Nuclear Power Station Unit 1
Date of Occurrence: January 8, 1984

Enclosed is Licensee Event Report 84-001, which is being submitted in accordance with Technical Specification 6.9, to provide 30 day written notification of the subject occurrence.

Please note that the system code was taken from the old LER instruction book since the new IEEE-805 is not yet available.

Yours truly,

Terry D. Murray lsmq

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

TDM/ljk

Enclosure

cc: U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Mr. Walt Rogers
DB-1 NRC Resident Inspector

FEB 10 1984
FEJ