

August 3, 2007

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop OWFN, P1-35
Washington, D. C. 20555-0001

10 CFR 50.73

Dear Sir:

**TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT (BFN)
- UNIT 1 - DOCKET 50-259 - FACILITY OPERATING LICENSE DPR - 33 -
LICENSEE EVENT REPORT (LER) 50-259/2007-003-00**

The enclosed report provides details of exceeding the Technical Specification allowable outage time due to an inoperable Main Steam Line Flow-High pressure instrument.

As such, in accordance with 10 CFR 50.73(a)(2)(i)(B), TVA is reporting this as any operation or condition prohibited by the unit's TS. There are no commitments contained in this letter.

Sincerely,

Original signed by R. G. Jones for:

Brian O'Grady

cc: See page 2

U.S. Nuclear Regulatory Commission
Page 2
August 3, 2007

Enclosure

cc (Enclosure):

Ms. Eva A. Brown, Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

Mr. James T. Moorman, III, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

NRC Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611-6970

U.S. Nuclear Regulatory Commission
Page 3
August 3, 2007

DTL:DAH:BAB

Enclosure

cc (Enclosure):

A. S. Bhatnagar, LP 6A-C
D. C. Matherly, BFT 2A-BFN
R. H. Bryan, Jr., LP 4J-C
W. R. Campbell, Jr. LP 6A-C
J. C. Fornicola, LP 6A-C
R. G. Jones, POB 2C-BFN
G. V. Little, NAB 1D-BFN
R. F. Marks, Jr., PAB 1C-BFN
B. A. Wetzel, BR 4X-C
S. A. Vance, WT 6A-K
E. J. Vigluicci, WT 6A-K
NSRB Support, LP 5M-C
INPO:LEREvents@inpo.org
EDMS WT CA - K

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Browns Ferry Unit 1

2. DOCKET NUMBER

05000259

3. PAGE

1 OF 5

4. TITLE

Main Steam Line High Flow Instrument Inoperable in Excess of Technical Specification Allowable Outage Time

5. EVENT DATE

MONTH
06DAY
04YEAR
2007

6. LER NUMBER

YEAR SEQUENTIAL
2007 - 003 - 00

7. REPORT DATE

MONTH
08DAY
03YEAR
2007

8. OTHER FACILITIES INVOLVED

FACILITY NAME

None

DOCKET NUMBER

N/A

9. OPERATING MODE

1

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)☐ 20.2203(a)(3)(i)☐ 50.73(a)(2)(i)(C)☐ 50.73(a)(2)(vii)☐ 20.2201(d)☐ 20.2203(a)(3)(ii)☐ 50.73(a)(2)(ii)(A)☐ 50.73(a)(2)(viii)(A)☐ 20.2203(a)(1)☐ 20.2203(a)(4)☐ 50.73(a)(2)(ii)(B)☐ 50.73(a)(2)(viii)(B)☐ 20.2203(a)(2)(i)☐ 50.36(c)(1)(i)(A)☐ 50.73(a)(2)(iii)☐ 50.73(a)(2)(ix)(A)☐ 20.2203(a)(2)(ii)☐ 50.36(c)(1)(ii)(A)☐ 50.73(a)(2)(iv)(A)☐ 50.73(a)(2)(x)☐ 20.2203(a)(2)(iii)☐ 50.36(c)(2)☐ 50.73(a)(2)(v)(A)☐ 73.71(a)(4)☐ 20.2203(a)(2)(iv)☐ 50.46(a)(3)(ii)☐ 50.73(a)(2)(v)(B)☐ 73.71(a)(5)☐ 20.2203(a)(2)(v)☐ 50.73(a)(2)(i)(A)☐ 50.73(a)(2)(v)(C)☐ OTHER☐ 20.2203(a)(2)(vi)☒ 50.73(a)(2)(i)(B)☐ 50.73(a)(2)(v)(D)Specify in Abstract below
or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Denzel Housley, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

256-614-6398

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH

DAY

YEAR

N/A

N/A

N/A

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 4, 2007, during the performance of the channel check required by Technical Specifications (TS) 3.3.6.1, it was discovered that main steam line (MSL) 1D flow instrument 1-PDIS-001-0050D was indicating zero while the other three flow instruments on MSL 1D ranged from 8 to 13 psid. Based on this indication, 1-PDIS-001-0050D was declared inoperable at 2300 hours CDT on June 4, 2007. It was determined that the instrument isolation valves for 1-PDIS-001-0050D were closed. Investigation of this event could not determine when the instrument isolation valves were closed. Therefore, it is postulated that 1-PDIS-001-0050D was inoperable when Unit 1 was restarted in late May 2007. Since this condition was not identified until June 4, 2007, the completion times for the required TS Actions were not met.

The root cause of the closed instrumentation isolation valves for 1-PDIS-001-0050D could not be determined. Actions were taken to verify that all Analog Trip Unit (ATU) channels were indicating as expected for current plant conditions. The Integrated Computer System was also reviewed for abnormalities. Additional Instrument Inspection Checklists have been re-performed and no additional mispositioned valves were identified.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 5
		2007	- 003	- 00	

NARRATIVE

I. PLANT CONDITION(S)

At the time of discovery of this event, Unit 1 was in Mode 1 (Run) at approximately 55 percent rated thermal power (RTP) during restart activities following the extended shutdown of Unit 1. Units 2 and 3 were unaffected by this event.

II. DESCRIPTION OF EVENT

A. Event:

On June 4, 2007, during the performance of the daily channel check required by Technical Specification (TS) Surveillance Requirement (SR) 3.3.6.1.1, it was discovered that main steam line (MSL) 1D flow instrument 1-PDIS-001-0050D [PDIS] was indicating zero while the other three flow instruments on MSL 1D ranged from 8 to 13 psid. Based on this indication, 1-PDIS-001-0050D was declared inoperable at 2300 hours Central Daylight Time (CDT) on June 4, 2007, and actions were initiated to troubleshoot the instrument. On June 5, 2007, during troubleshooting activities, it was determined that the instrument isolation valves for 1-PDIS-001-0050D were closed.

Technical Specification (TS) 3.3.6.1, "Primary Containment Isolation Instrumentation," requires that Table 3.3.6.1-1 Function 1.c (Main Steam Line Isolation; Main Steam Line Flow - High) [JM] be operable in Modes 1, 2, and 3. With one or more required channels inoperable, TS Action 3.3.6.A.1 requires the applicable channel be placed in trip within 24 hours. If TS Action 3.3.6.A.1 is not met, then TS Action 3.3.6.D.1 requires that the associated MSL be isolated within 12 hours. In order to comply with the requirements of the TS Actions for the inoperable instrument, MSL 1D was isolated at 0240 hours CDT on June 6, 2007.

On June 6, 2007, at 0331 hours CDT, MSL 1D was unisolated under TS 3.0.5 to allow testing to demonstrate operability of 1-PDIS-001-0050D. Operability testing was completed satisfactorily at 0435 hours CDT on June 6, 2007, and 1-PDIS-001-0050D was declared operable.

Investigation of this event could not determine when the instrument isolation valves were closed. During power ascension, the daily channel checks of the 16 MSL Flow - High instruments showed that the instrument indication for 1-PDIS-001-0050D remained at 0 psid while the indications of the other instruments gradually increased. On June 4, 2007, 1-PDIS-001-0050D remained as the only MSL Flow-High instrument still indicating 0 psid. Therefore, it is postulated that 1-PDIS-001-0050D was inoperable when Unit 1 was restarted in late May 2007, following the extended shutdown. Mode 2 was entered initially on May 21, 2007, at 0323 hours CDT. Unit 1 went critical on May 22, 2007, and was manually shutdown on May 24, 2007, following a turbine electrohydraulic control (EHC) system leak. Prior to the scram, the reactor remained in Mode 2 at low power levels (< 3 percent RTP). When restart activities were resumed after the scram recovery, Unit 1 entered Mode 2 on May 26, 2007, at 1027 hours CDT and Mode 1 on May 27, 2007 at 1503 hours CDT. The highest power level attained while 1-PDIS-001-0050D was inoperable was approximately 60 percent RTP. Since this condition was not identified until June 4, 2007, the completion times for the required TS Actions were not met. Therefore, in accordance with 10 CFR 50.73(a)(2)(i)(B), TVA is reporting this event as any operation or condition prohibited by the plant's Technical Specifications.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 5
		2007	- 003	- 00	

NARRATIVE

C. Dates and Approximate Times of Major Occurrences:

May 21, 2007	0323 hours CDT	Mode 2 entered for first time following extended outage
May 24, 2007	0211 hours CDT	Unit 1 scrams and exits Mode 2
May 26, 2007	1027 hours CDT	Mode 2 entered following scram
May 27, 2007	1503 hours CDT	Mode 1 entered
June 4, 2007	2300 hours CDT	Declared 1-PDIS-001-0050D inoperable
June 6, 2007	0435 hours CDT	1-PDIS-001-0050D returned operable

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

The inoperable instrument was identified during the daily channel checks for the Main Steam Line Flow - High instrumentation.

F. Operator Actions

None.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT**A. Immediate Cause**

The immediate cause of this reportable condition was the closed instrumentation isolation valves for 1-PDIS-001-0050D which prevented the instrument from sensing MSL flow.

B. Root Cause

The root cause of the closed instrumentation isolation valves for 1-PDIS-001-0050D could not be determined. The last performance of the Main Steam System Instrument Inspection Checklist associated with the instrument valves was April 24, 2007, which included independent verification that the valves were open. Reviews were conducted to determine possible actions that could have led to manipulations of the instrument isolation valves. This included reviews of the Operations Logs, the work order system, and the Operations Clearance database. No entries were identified that could have led to operation of these valves after being verified open on April 24, 2007.

C. Contributing Factors

None.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 5
		2007	- 003	- 00	

NARRATIVE

IV. ANALYSIS OF THE EVENT

Since it could not be identified when the instrument isolation valves for 1-PDIS-001-0050D were closed, it is postulated that these valves were closed prior to the reactor startup from the extended outage on Unit 1. Therefore, 1-PDIS-001-0050D would not be considered to be operable as required by TS 3.3.6.1 when Unit 1 initially entered Mode 2 on May 21, 2007. Due to the low power level and low steam flow during the restart activities, the individual readings of the MSL flow instruments were too low to identify a discrepancy with 1-PDIS-001-0050D until instrument readings were taken on June 4, 2007. At this time, actions were taken to return 1-PDIS-001-0050D to operability. During this event, the remaining MSL flow instruments on MSL 1D remained in operation and would have provided the isolation function in the event of a MSL break.

V. ASSESSMENT OF SAFETY CONSEQUENCES

The Main Steam Line Flow - High function is provided to detect a break of the MSL and to initiate closure of the main steam line isolation valves (MSIV). If the steam were allowed to continue flowing out of the break, the reactor would depressurize and the core could uncover. If the RPV water level decreases too far, fuel damage could occur. Therefore, the isolation is initiated on high flow to prevent or minimize core damage. The Main Steam Line Flow - High Function is directly assumed in the analysis of the main steam line break (MSLB). The isolation action, along with the scram function of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46 and offsite doses do not exceed the 10 CFR 50.67 limits.

The MSL flow signals are initiated from 16 transmitters that are connected to the four MSLs. The transmitters are arranged such that, even though physically separated from each other, all four connected to one MSL would be able to detect the high flow. Four channels of Main Steam Line Flow - High Function for each MSL (two channels per trip system) are available and are required to be operable so that no single instrument failure will preclude detecting a break in any individual MSL. The Allowable Value is chosen to ensure that offsite dose limits are not exceeded due to the break.

During this event, the other three high flow instruments on MSL 1D were operable and capable of isolating the MSL in case of a break of this MSL. Additionally, reactor power did not exceed approximately 60 percent RTP during the time that 1-PDIS-001-0050D was inoperable. Therefore, this event is not considered to be safety significant.

VI. CORRECTIVE ACTIONS**A. Immediate Corrective Actions**

Upon discovery, steps were taken to troubleshoot 1-PDIS-001-0050D. The closed instrument isolation valves were opened and testing was performed to demonstrate the operability of 1-PDIS-001-0050D.

B. Corrective Actions to Prevent Recurrence¹

Investigations to determine the cause of the closed instrument isolation valves were taken including reviews of plant documentation that could have led to operation of the valves following the valves being verified open on April 24, 2007. The cause of the valve closures could not be identified.

¹ TVA does not consider this corrective action a regulatory commitment. The completion of this action will be tracked in TVA's Corrective Action Program.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REV NO.	5 OF 5
		2007	- 003	- 00	

NARRATIVE

Other actions were taken to verify that all Analog Trip Unit (ATU) channels were indicating as expected for current plant conditions. The Integrated Computer System was also reviewed for abnormalities. Instrument Inspection Checklists have been re-performed (excepting instruments that were inaccessible) for systems 01 (Main Steam) [SB], 63 (Standby Liquid Control) [BR], 64 (Primary Containment) [JM], 71 (Reactor Core Isolation Cooling) [BN], 73 (High Pressure Coolant Injection) [BJ], 74 (Residual Heat Removal System) [BO], and 75 (Core Spray) [BM]. No additional mispositioned valves were identified.

VII. ADDITIONAL INFORMATION

A. Failed or Degraded Components

None.

B. Previous LERs on Similar Events

None.

C. Additional Information

Browns Ferry Corrective Action document PER 125786.

D. Safety System Functional Failure Consideration:

During this event, the remaining MSL flow instruments on MSL 1D remained in operation and would have provided the isolation function in the event of a MSL break. Therefore, this event is not considered a safety system function failure in accordance with NEI 99-02.

E. Loss of Normal Heat Removal Consideration:

The condition being reported did not involve a reactor scram.

VIII. COMMITMENTS

None.