

August 2, 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) 50-259/2007-004-00**

The enclosed report provides details of a condition prohibited by the plant's Technical Specifications due to inoperability of the main turbine control valve fast closure turbine scram function.

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

Sincerely,

Original signed by:

Brian O'Grady

cc: See page 2

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

Enclosure

cc (Enclosure):

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

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Enclosure

cc (Enclosure):

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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
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4. TITLE: Main Turbine Control Valve Fast Closure Turbine Scram Function Inoperable For A Period Longer Than Allowed by the Plants TSs

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	03	2007	2007-004-00			08	02	2007	None	N/A
									None	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)	
10. POWER LEVEL 38	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)			X 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									
NAME Steve Austin, Licensing Engineer						TELEPHONE NUMBER (Include Area Code) 256-729-2070			

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (if yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO						15. EXPECTED SUBMISSION DATE MONTH: N/A DAY: N/A YEAR: N/A		
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced type written lines)

On June 4, 2007, TVA determined that BFN Unit 1 operated in a condition prohibited by the Technical Specifications (TSs). Previously, Unit 1 commenced start-up from an extended outage in late May of 2007. On June 2, 2007, at approximately 1727 hours central daylight time, BFN Unit 1 attained 30 percent rated thermal power (RTP). On June 2 and 3, 2007, TVA performed scram time testing activities. Subsequent to the testing activities, TVA noted that during the test, the scram initiation signal was being bypassed when RTP was between 32 and 34 percent RTP. As such, the scram initiation signal for the turbine control valve (TCV) and the turbine stop valve closure (TSV) is also bypassed. TS 3.3.1.1 require that the bypass occur when reactor power is < 30 percent RTP. TS 3.3.1.1 Action E requires, within 4 hours, reduce reactor power to < 30 percent RTP. This condition existed from June 2, 2007, when 30 percent RTP was attained until the scram time testing was completed June 3, 2007. The design calculation that determines first stage turbine pressure at 30 percent power was incorrect. BFN established an operator action that requires the operator to either trip the first stage pressure switches, which will enable the scram function, or requires that the RTP be less than 30 percent power. TVA revised the turbine first stage pressure calculation to reflect the Unit 1 high pressure turbine first stage pressure at 30 percent RTP with the feedwater heaters out of service. At the first opportunity TVA will implement the change.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 5
		2007	-- 004	-- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

I. PLANT CONDITION(S)

Prior to the event, Unit 1 was operating at approximately 38 percent of rated thermal power (approximately 1300 megawatts thermal). Units 2 and 3 were operating in Mode 1 at 100 percent rated thermal power (approximately 3458 megawatts thermal) and were not affected by the event.

II. DESCRIPTION OF EVENT

A. Event:

On June 4, 2007, TVA determined that BFN Unit 1 operated in a condition prohibited by the Technical Specifications (TSs). Previously, Unit 1 commenced start-up from an extended outage in late May of 2007. On June 2, 2007, at approximately 1727 hours central daylight time (CDT), BFN Unit 1 attained 30 percent rated thermal power (RTP). On June 2 and 3, 2007 as part of the startup activities, TVA performed 1-SR-3.1.4.1, Scram Insertion Times. This surveillance scrams individual control rods thus, causing fluctuations in reactor power.

Subsequent to the testing activities, TVA noted that during the test, the scram initiation signal was being bypassed when RTP was between 32 and 34 percent. As such, the scram initiation signal for the turbine control valve [FCV] (TCV) and the turbine stop valve closure [SHV] (TSV) is also bypassed. The bypass is intended to occur when the reactor power, as determined by the turbine first stage pressure, is < 30 percent RTP. TVA determined the scram signal was being bypassed when RTP was between 32 to 34 percent instead of the 30 percent RTP prescribed by the TSs.

The Unit 1 Technical Requirements Manual (TRM) requires two operable or tripped Reactor Protection Systems (RPS) [JC] or tripped systems with a minimum of two operable instrument channels per trip system for the Turbine First Stage Pressure permissive. The permissive is controlled by pressure switches. The first stage permissive pressure switch setting was incorrect at 30 percent RTP. Inoperability of the Turbine First Stage Pressure permissive also affects Technical Specification 3.3.1.1.

Technical Specification 3.3.1.1, Reactor Protection Instrumentation, states: The Reactor Protection System instrumentation for each function in TS Table 3.3.1.1-1, Reactor Protection Instrumentation, shall be operable, furthermore, the Turbine Stop Valve [SHV] - Closure and the turbine Control Valve Fast Closure, trip Oil Pressure - Low, are not bypassed when core thermal power is >= 30 percent. TS 3.3.1.1 Action E requires, within 4 hours, reduce reactor power to < 30 percent RTP. This condition existed from June 2, 2007, when 30 percent RTP was attained until scram time testing was completed June 3, 2007.

Because TVA exceeded the 4 hour LCO action time limit, TVA is submitting this report according to 10 CFR 50.73(a)(2)(i)(B), 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)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 5
		2007	-- 004	-- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

C. Dates and Approximate Times of Major Occurrences:

May 2007	TVA commences Unit 1 startup activities following an extended outage.
June 2, 2007 1727 hours CDT	Reactor power is greater than 30 percent.
June 4, 2007	TVA determined Unit 1 operated outside TS 3.3.1.1.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

An engineering review determined that Unit 1 had operated in a manner prohibited by the TSs.

F. Operator Actions

None.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT

A. Immediate Cause

The actual turbine first stage pressure used for the scram function at 30 percent RTP was incorrect. The setpoint would not have enabled the reactor scram function at 30 percent RTP.

B. Root Cause

The design calculation that determines first stage turbine pressure at 30 percent RTP is incorrect. The calculation utilizes a turbine first stage pressure versus steam flow curve which assumes that all of the feedwater heaters [SM] are in service. Historically, BFN does not have all of the feedwater heaters in service during low power startup activities. This results in a non-conservative calculated pressure setpoint.

C. Contributing Factors

In anticipation of operations at extended power uprate conditions, TVA modified the high pressure turbine to pass additional steam flow. The modifications to the Unit 1 high pressure turbine resulted in a lower first stage pressure at 30 percent RTP.

IV. ANALYSIS OF THE EVENT

In anticipation of operating Unit 1 at extended power uprate (EPU) operations, the Unit 1 High Pressure Turbine was modified to pass additional steam flow. The modified Unit 1 High Pressure Turbine passes more steam flow at a given power level than the unmodified High Pressure Turbine.

TVA evaluated Unit 1 plant data and confirmed that the turbine first stage pressure at 30 percent RTP was less than 136 psig. Above 34 percent RTP, turbine first stage pressure remained above 136 psig. TVA found the pressure switches for the turbine first stage pressure were functioning as designed. The indicated turbine first stage pressure agreed closely with the GE calculated values and the modified turbine was operating as expected.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 5
		2007	-- 004	-- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

The setpoint calculations agreed with the GE Thermal kit. The calculation used the appropriate first stage pressure versus steam flow curve for the Unit 1, however; the calculation was based on plant heat balance calculations performed with all of the feedwater heaters in service. The steam flow to the turbine at a given power level with the feedwater heaters out of service is less than the steam flow with the feedwater heaters in service, therefore; the predicted turbine first stage pressure is lower with the feedwater heaters out of service. Normally, plant procedures place the feedwater heaters in service at power levels higher than 30 percent RTP. This results in an actual first stage pressure less than the calculated first stage pressure.

V. ASSESSMENT OF SAFETY CONSEQUENCES

The safety consequences of this event were not significant. During the time that Unit 1 operated outside the TSs, the scram function would be enabled at \geq 34 percent RTP. If a turbine trip had occurred during the timeframe the reactor operated between 30 and 34 percent RTP, the majority of the steam would have been directed to the main condenser [SG], via the turbine bypass valves [FSV]. If the steam flow through the bypass valves is in excess of their design capacity, a reactor scram will occur on high dome pressure.

The conditions described in this report are bound by the BFN Updated Final Safety Analysis Report. Section 14.4.2.6, Bypass valves Failure Following Turbine Trip, Low Power, discusses a turbine trip at the approximately 30 percent RTP bypass valve failure, and no credit for reactor scram on TSV closure. With total bypass valve failure, the transient analysis indicates the reactor will scram on high vessel pressure. The neutron flux remains acceptable. No fuel damage occurs. Main Steam Relief Valves [SB] open to control vessel pressure and relieve the transient. The peak pressure remains below the ASME code limits for the reactor. Therefore, the failure to meet the TSs during the low power ascension testing did not adversely affect the safety of plant personnel or the public.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

BFN established an operator action that requires the operator to either trip the first stage pressure switches, which will enable the scram function, or requires that the RTP be less than 30 percent power.

B. Corrective Actions to Prevent Recurrence⁽¹⁾

TVA revised the turbine first stage pressure calculation to reflect the Unit 1 high pressure turbine first stage pressure at 30 percent RTP with the feedwater heaters out of service. At the first opportunity TVA will implement the change.

(1) TVA does not consider these corrective actions as regulatory requirements. The completion of these actions will be tracked in TVA's Corrective Action Program.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Browns Ferry Nuclear Plant Unit 1	05000259	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 of 5
		2007	-- 004	-- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

VII. ADDITIONAL INFORMATION

A. Failed Components

None.

B. Previous LERs on Similar Events

None.

C. Additional Information

Browns Ferry Corrective action document PER 125755.

D. Safety System Functional Failure Consideration:

No safety functions were compromised as a result of this event. Therefore, this event is not considered a safety system functional failure in accordance with NEI 99-02.

E. Loss of Normal Heat Removal Consideration:

This event was not the result of a reactor scram, therefore; this event did not result in a scram with a loss of normal heat removal as defined in NEI 99-02.

VIII. COMMITMENTS

None.