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NRC (5+9	NRC FORN 366 U.S. NUCLEAR REGULATORY CONNISSIO (5-92)								ISSION	APPROVED BY ONB NO. 3150-0104 EXPLOSES 5/31/05									
	LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)								ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF										
FACI	FACILITY NAME (1)										, 00	PAGE (3)							
Browns Ferry Nuclear Plant (BFN) Unit 2    05000260    1 OF 7										OF 7									
	TILE (*) Reactor scram resulting from personnel error during surveillance testing caused the actuation of the ESE System.																		
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On 1 the alto from (les auto read CFR syst Cont swit act:	On March 30, 1995, at 1800 hours, the Unit 2 reactor scrammed during the performance of the Core and Containment Systems Analog Trip Unit Functional Test. During this test, alternate rod insertion solenoid valves opened (i.e., energized) and vented control air from the scram pilot air header, causing a low scram pilot air header pressure condition (less than 53 psig.), which initiated a reactor scram. The scram then resulted in the automatic actuation of the engineered safety feature (ESF) system due to a sensed low reactor water level condition. This event is, therefore, reportable in accordance with 10 CFR 50.73 (a)(2)(iv) as a condition which resulted in an automatic actuation of the ESF system. The root cause of the event was personnel error in that an Instrumentation and Controls technician prematurely repositioned the Anticipated Transient Without Scram mode switch from the 'TEST' to the 'NORMAL' position with a test signal present. Corrective actions involve appropriate personnel corrective actions for the individual in this event.																		
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FACILITY NAME (1)	DOCKET NUMBER (2)	I	LER NUMBER (	(6)	PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Browns Ferry Unit 2	05000260	95	· 004	00	2 of 7		
TEXT (If more space is required, use	additional copies of	NRC Form	366A) (17)				

#### I. PLANT CONDITIONS

At the time this event occurred, Unit 2 was operating at approximately 100 percent power. Units 1 and 3 were shutdown and defueled.

### **II. DESCRIPTION OF EVENT**

#### A. <u>Event</u>

At 1800 hours Central Standard Time (CST) on March 30, 1995, Unit 2 experienced a reactor scram while the unit was at full power. Instrumentation and Controls (I&C) technicians [utility, non-licensed] were performing Surveillance Instruction (SI) 2-SI-4.2.B-ATU(C), "Core and Containment Systems Analog Trip Unit Functional Test." This SI tests certain logic circuits that generate the Anticipated Transient Without Scram (ATWS) [JC]/Alternate Rod Insertion (ARI) [JD] signal for a reactor high pressure condition.

During performance of the SI, an I&C technician stationed at the analog trip unit (ATU) cabinet in Auxiliary Instrument Room No. 2 increased the stable current amplitude which locked in the relay in the ARI initiation circuitry (Figure 1). In step 7.11.22 of the SI, the I&C technician was in the process of decreasing the stable current amplitude when a second I&C technician at the ATWS panel in Electric Board Room 2A prematurely repositioned the ATWS mode switch [HS] from the 'TEST' to the 'NORMAL' position. The premature movement of the handswitch to 'NORMAL' before the ATWS/ARI logic was reset quickly vented the air from the scram pilot air header which caused a low scram pilot air header pressure condition (less than 53 psig.) and resulted in a reactor scram from Reactor Protection System (RPS) actuation.

When the scram pilot air header pressure decreased below 53 psig, the reactor scrammed as expected due to a sensed low reactor water level condition. The reactor low level signal initiated the following primary containment isolation systems: group 2 - shutdown cooling mode of the residual heat removal system [BO]; group 3 - reactor water cleanup system [CE]; group 6 - primary containment purge and vent [JM], Unit 2 reactor zone ventilation [VB], refueling zone ventilation [VA], standby gas treatment system [BH], and control room emergency ventilation system [VI] initiation; and group 8 - transverse incore probes [IG] withdrawal.

At 2316 hours, the SI was re-performed in an attempt to duplicate the scram condition. However, the scram condition could not be repeated in the field. On March 31, 1995 at 0220



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TEXT (If more space	is required, use	additional copies of	NRC Form	366A) (17)					
	hours, th 1506 hour TVA syste This even (a)(2)(iv actuation	e SI was satisfa s, the reactor w m grid. t is reportable ) as a condition of the ESF syst	in acco that is	y completed. carted and sy ordance with cesulted in a	On April 2 ynchronized 10 CFR 50.2 an automatic	2, 1995 at to the 73			
в.	<u>Inoperabl</u> to the Ev	e Structures, Co ent:	mponents, or Systems that Contributed						
	None.		•						
c.	<u>Dates and</u>	Approximate Tin	nes of N	fajor Occurre	ances:				
	March 30,	1995 at 1630 CS	ST 2-3	5I-4.2.B-ATU	(C) commence	ed			
	March 30,	1995 at 1800 Cs	ST Sto pro	ep 7.11.22 ogress when d	f the SI was the reactor	s in scrammed			
	March 30,	1995 at 2033 CS	T TV 50 . not cen . and	A provided a .72(b)(2)(ii tification to ther that the d the ESFs a	10 CFR ) four-hour o NRC operate e reactor se utomatically	tions crammed y actuated			
	March 30,	1995 at 2316 CS	T The ati con	SI was re- cempt to dup ndition; the uld not be re	performed in licate the s scram cond epeated in t	n an scram ition the field			
	March 31,	1995 at 0220 CS	T The	e SI was sat:	isfactorily	completed			
	April 2,	1995 at 1506 CS	T The sys	ereactor was achronized to	s restarted the TVA s	and ystem grid			
D.	Other Sys	tems or Secondar	y Funct	ions Affecte	ed:				
	None.								
E.	Method of	Discovery:							
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			, YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Browns Ferr	y Unit 2	05000260	95	004	00	4 of 7

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## F. Operator Actions:

Once the reactor scrammed, Operations personnel responded to the scram in accordance with appropriate procedures, and the reactor was stabilized and safely brought to a shutdown condition.

### G. <u>Safety System Responses</u>:

All safety systems responded as designed for this type of event.

#### III. CAUSE OF THE EVENT

### A. <u>Immediate Cause</u>:

The immediate cause of the event was that the Unit 2 ATWS mode switch was prematurely repositioned to the 'NORMAL' position before the ATWS/ARI logic was reset. This switch movement quickly vented control air from the scram pilot air header causing a low scram pilot air header pressure condition (less than 53 psig.) and resulted in an RPS reactor scram.

# B. <u>Root Cause</u>:

The root cause of the event was personnel error. An I&C technician prematurely repositioned the ATWS mode switch from the 'TEST' to the 'NORMAL' position. The procedure requires that the switch remain in the 'TEST' position with the logic signal present to prevent energizing the solenoid valves which vent the scram pilot air header.

### IV. ANALYSIS OF THE EVENT

The ATWS/ARI system is designed as a redundant, independent and diverse reactor shutdown system. The ATWS/ARI system provides an alternate means of venting the scram pilot air header to generate a reactor scram in the event of an anticipated transient without the desired RPS response. As expected, the solenoid valves that vented the scram pilot air header remained energized until the initiation logic was reset. The ATWS instrumentation also affects parameters that initiate or control primary containment isolation and initiation of plant ventilation systems. In this event, control air was vented from the scram pilot air header resulting in the initiation of the ATWS/ARI, which caused the control rods to insert to safely shut down the reactor. All plant equipment responded as designed. Therefore, this event did not affect the health and safety of plant personnel and the public.



NRC FORM 366A U.S. MUCLEAR RE (5-92) · LICENSEE EVENT R TEXT CONTINUAT	EPORT	APPROVED BY ONB NO. 3150-0104 EXPIRES 5/31/95 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET,							
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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER					
Browns Ferry Unit 2	05000260	95	004	00	5 of 7				
TEXT (If more space is required, use additional copies of NRC Form 366A) (17)									

# V. CORRECTIVE ACTIONS

# A. <u>Immediate Corrective Actions</u>:

Operations personnel responded to the reactor scram and safely brought the plant to a shutdown condition. The SI was stopped. The ATWS mode switch was investigated to ensure that the correct contacts were opened. The switch was replaced and was benchtested/examined for any evidence of contact wiper failure/sticking. However, the switch internals did not reveal any adverse indications (e.g., contacts burned, cam or switch mechanism problems). The SI was reviewed to determine if any errors existed and then re-preformed in an attempt to replicate the scram condition. However, the scram condition could not be repeated. The SI was then satisfactorily completed. An incident investigation was initiated to determine the root cause of the event and appropriate corrective actions.

# B. <u>Corrective Actions to Prevent Recurrence</u>:

Corrective actions involve appropriate personnel corrective actions for the individual in this event.

# VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

# B. <u>Previous Licensee Event Reports (LERs) on Similar Events</u>:

Although there have been previous LERs for personnel error where a control was inappropriately manipulated or operated out-ofsequence, none of the previous corrective actions would not have precluded this event.

LER 260/93004 addressed a high reactor pressure condition that resulted in an ATWS signal and initiated an ARI signal. The cause of the LER (260/93004) was inattention to detail in that an operator [utility, licensed] did not adequately evaluate the overall effects of ongoing SIs. This oversight subsequently caused a reactor scram. However, the corrective actions for LER (260/93004) would not have precluded this event (LER 260/95004) because the root cause of the previous LER was schedular in nature in that the unit Operator presumed that I&C personnel would notify him prior to each instrument being removed from service. In this LER (260/95004) Operations personnel were informed at appropriate times as required in the SI so that no schedular conflicts existed.



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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	,			
Browns Ferry Unit 2	05000260	95	004	00	6 of 7			
TEXT (If more space is require	d, use additional copies of	NRC Form	366 <u>A)</u> (17)		,			

VII. <u>Commitments</u>

None.

Energy Industry Identification System (EIIS) system and component codes are identified in the text with brackets (e.g., [XX]).





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