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Masoud Bajestani  
Site Vice President  
Sequoyah Nuclear Plant

February 25, 2000

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

10 CFR 50.73

Gentlemen:

**TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT (SQN)  
UNIT 2 - DOCKET NO. 50-328 - FACILITY OPERATING LICENSES DPR-79 -  
LICENSEE EVENT REPORT (LER) 50-328/2000002**

The enclosed report provides details concerning a January 26, 2000, condition where the 2B safety injection pump and the 2A safety injection pump were concurrently out of service for approximately 30 minutes. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B), as an operation prohibited by technical specifications, and 10 CFR 50.73(a)(2)(v)(D) as any event or condition that could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

Sincerely,

  
Masoud Bajestani

Enclosure

cc: See page 2

IE22

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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 information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1) Sequoyah Nuclear Plant (SQN) UNIT 2		DOCKET NUMBER (2) 05000328	PAGE (3) 1 OF 7
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TITLE (4)  
Inoperability of the Both Safety Injection Pumps as a Result of Personnel Error During Performance of a Maintenance Activity

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 NAME	DOCKET NUMBER
01	26	2000	2000	-- 002	-- 00	02	25	2000	N/A	05000
									NA	05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 100	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	50.73(a)(2)(viii)					
	20.2203(a)(1)	20.2203(a)(3)(l)		50.73(a)(2)(ii)	50.73(a)(2)(x)					
	20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71					
	20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER					
	20.2203(a)(2)(iii)	50.36(c)(1)	<input checked="" type="checkbox"/>	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A					
	20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)

NAME J. W. Proffitt, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (423) 843-6651
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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**Abstract** (Limit to 1400 paces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 25, 2000, at 2023 Eastern standard time (EST), Operations entered Limiting Condition for Operation (LCO) 3.5.2.a for removing the 2A-A safety injection pump (SIP) from service for maintenance activities. As part of the maintenance activity, the oil for the 2A-A SIP motor was to be changed out. On January 26, 2000, at approximately 0220 EST, Operations was notified that Maintenance personnel had changed out the oil in the 2B-B SIP motor. Operations personnel entered LCO 3.0.3 (effective at 0039 EST) for both trains of emergency core cooling subsystems being inoperable at the same time. During the time of the oil change out, both SIPs were considered inoperable. The cause of the oil change on the wrong SIP motor was human performance error. There was a lack of self checking, as well as a lack of peer checking, to ensure that the correct component was identified prior to performance of work. The involved individuals were coached and counseled on the failure to perform self checking, as well as a lack of peer checking.

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

**I. PLANT CONDITION(S)**

Unit 2 was in power operation at approximately 100 percent.

**II. DESCRIPTION OF EVENT**

**A. Event:**

On January 25, 2000, at 2023 Eastern standard time (EST), Operations entered Limiting Condition for Operation (LCO) 3.5.2.a for removing the 2A-A safety injection pump (SIP) [EIIS Code BQ] from service for maintenance activities. One of the planned maintenance activities was a work order for changing the oil in the motor bearings. There are two bearings involved with the oil change out. Unknowingly, the Maintenance personnel changed the oil in the 2B-B SIP motor. The oil change takes approximately 15 minutes for each bearing. On January 26, 2000, at approximately 0220 EST, Operations was notified that Maintenance personnel had changed out the oil in the 2B-B SIP motor. Operations personnel entered LCO 3.0.3 (effective at 0039 EST) for both trains emergency core cooling subsystems being inoperable at the same time. During the time of the oil change out, both SIPs were considered inoperable.

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

None.

**C. Dates and Approximate Times of Major Occurrences:**

January 25, 2000, at 2023 EST Operations entered LCO 3.5.2.a for removing the 2A-A SIP from service for maintenance activities.

January 26, 2000, at 0039 EST Maintenance personnel signed onto the radiation work permit to perform maintenance on the 2A-A SIP.

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at 0042 EST Maintenance personnel entered the radiological controlled area (RCA) to replace the oil in the 2A-A SIP.

at approximately 0050 EST Maintenance personnel began replacement of the oil from the 2B-B SIP motor.

at 0129 EST As Maintenance personnel were exiting the RCA, they set off the personnel contamination monitor alarms. Radcon personnel questioned where the Maintenance personnel had performed their activity. The Maintenance personnel stated that they had performed maintenance in the 2A-A SIP room.

at 0130 EST Radcon personnel went to perform a survey of the 2A-A SIP room. Radcon personnel did not identify any contamination.

between 0202 EST and 0215 EST Radcon personnel requested the Maintenance personnel to show them where the maintenance activity was performed. The Maintenance personnel took the Radcon personnel to the 2B-B SIP room and realized an error had been made.

at 0220 EST Radcon personnel notified Operations and Maintenance management that the Maintenance personnel had notified them that they replaced the oil in the 2B-B SIP instead of the 2A-A SIP. Operations entered LCO 3.0.3 (effective 0039 EST) for both trains emergency core cooling subsystems being out of service at the same time.

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at 0255 EST

Operations started the 2B-B SIP for the postmaintenance test (PMT) for the oil replacement.

at 0316 EST

Operations stopped the 2B-B SIP following completion of the PMT run time. Operations declared the 2B SIP operable and exited LCO 3.0.3.

**D. Other Systems or Secondary Functions Affected:**

None.

**E. Method of Discovery:**

As the Maintenance personnel were exiting the radiological control area, the personnel contamination monitor alarmed. Radcon personnel questioned where the Maintenance personnel had performed their activity and determined that the maintenance had been performed on the wrong equipment.

**F. Operator Actions:**

Control room operators entered LCO 3.0.3 for both trains emergency core cooling subsystems being inoperable at the same time. Operations started the 2B-B SI pump as the PMT for the change out of the oil.

**G. Safety System Responses:**

None.

**III. CAUSE OF THE EVENT**

**A. Immediate Cause:**

The immediate cause of the event was performing a maintenance activity on one train of equipment with the opposite train of equipment out of service.

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**B. Root Cause:**

The root cause of the oil change on the wrong SIP motor was human performance error. There was a lack of self checking, as well as a lack of peer checking, to ensure that the correct component was identified prior to performance of work.

**B. Contributing Factors:**

Roles and responsibilities were not clearly defined. Two workers were assigned to perform the task. Responsibility for a lead to self check the correct component was not discussed. Responsibility for the coworker to peer check in order to ensure that the correct component was identified was not assigned.

**IV. ANALYSIS OF THE EVENT**

The design basis of the emergency core cooling system (ECCS) is to provide two independent trains of ECCS for accident mitigation. During the time the 2B-B SIP was out of service because of the oil change, the 2A-A SIP was also out of service. The total time both pumps were out of service was approximately 30 minutes.

For a large-break loss-of-coolant accident (LOCA), the reactor coolant system (RCS) will depressurize rapidly. The safety analysis assumes one complete train of ECCS (centrifugal charging pump [CCP], SIP, and residual heat removal [RHR] pump) delivers flow to the reactor coolant system during the reflood phase. Two RHR pumps were available to deliver flow during the period of time that both SIPs were out of service. The flow delivered by two RHR pumps bounds the analysis assumptions.

For a small-break LOCA, a much slower depressurization of the RCS will occur. The safety analysis assumes one complete train of high-head safety injection flow (one CCP and one SIP). With both CCPs available and no SIP, the CCPs will deliver greater than or equal amount of flow to the cold leg than required.

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In the unlikely event of an accident situation requiring an SIP to actuate during the period of time that both SIPs were inoperable, other ECCS equipment would have been available. Also, it is expected that the operator would start an SIP within a reasonable amount of time after the initiation of the transient, given the early steps within the emergency procedures to verify pump operation. The change in core damage probability is  $5.86E-09$  with both SIPs out of service for 30 minutes. Therefore, there was minimal actual safety significance that could have arose during this period.

**V. CORRECTIVE ACTIONS**

**A. Immediate Corrective Actions:**

A PMT was performed on the 2B-B SIP and the pump was declared operable.

**B. Corrective Actions to Prevent Recurrence:**

The involved individuals were coached and counseled on the failure to perform self checking, as well as a lack of peer checking.

Additionally, the associated Corrective Action Program document contains actions to define expectations for coworkers when more than one person is assigned to perform a task. This should include clear responsibility for conducting peer checks to ensure correct components.

This event and other human performance issues were reviewed with plant personnel by senior site management.

**VI. ADDITIONAL INFORMATION**

**A. Failed Components:**

None.



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**B. Previous LERs on Similar Events:**

A review of previous reportable events for the past three years did not identify any events involving maintenance activities on wrong or incorrect equipment.

**C. Additional Information:**

None.

**D. Safety System Functional Failure:**

This event is considered to be a safety system functional failure in accordance with NEI 99-02.

**VII. COMMITMENTS**

None.