

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Sequoyah, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 8	PAGE (3) 1 OF 0 4
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TITLE (4)
Reactor Trip

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 8 3 0 8 4	8 4	8 4	0 1 4	0 1 0 2	2 8 5					0 5 0 0 0	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10)	20.402(b)	20.405(c)	XX	50.73(a)(2)(iv)	73.71(b)					
	20.405(a)(1)(i)	50.38(c)(1)		50.73(a)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.38(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)						
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Glenn E. Duggin, Compliance Section Engineer	TELEPHONE NUMBER AREA CODE: 6 1 5 8 7 0 - 6 5 4 8
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	
B	S J C N T R	A 4 9 2		Yes						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO						

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

On August 30, 1984, unit 2 experienced a lo-lo steam generator reactor trip. During the event, a main feedwater isolation valve failed to close due to a stuck contact, and the 'B' main feedwater pump reset itself due to an incorrect solenoid valve.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

During a normal startup on August 30, 1984, unit 2 was in mode 1 (2235 psig, 558 degrees F) at 25 percent reactor power with the 'A' main feedwater pump in operation. The balance of plant operator was controlling steam generator levels with the main feedwater regulator valves in manual control. During switchover of the steam generator level controls from manual to automatic, steam generator number one was overfed. The number one steam generator high-high level trip setpoint was exceeded resulting in a turbine trip and feedwater isolation. The reactor operator immediately (with increasing level in the number one steam generator) reduced reactor power in an attempt to prevent an anticipated automatic reactor trip. With reactor power at approximately 5 percent, the steam generator level shrink due to the feedwater isolation resulted in a 10-1/2 level in the number three steam generator which tripped the reactor. The unit stabilized at 547 degrees F following the reactor trip.

Following the reactor trip, it was discovered that the 'B' main feedwater pump (which had its steam supply isolated) had received a trip signal, had reset itself, but did not start in conjunction with the reset. In addition, feedwater isolation valve 2-FCV-3-47 to steam generator number two had failed to close.

An investigation into the failure of the feedwater isolation valve 2-FCV-3-47 to close resulted in discovery that an auxiliary contact in the motor starter interlocks had stuck in an incorrect position preventing the contactor from operating to close the valve after receiving an isolation signal. Further inspection of the contact revealed that a gummy, sticky substance on the auxiliary contact(s) which appeared to be a lubricant had caused the contact to stick in the open position, thus preventing the valve from closing. The contacts were cleaned, the starter functionally tested, and the valve returned to service on August 30, 1984.

A visual inspection of 1,750 Arrow Hart breaker compartments was performed, which involved 28 safety-related and 30 nonsafety-related boards. This inspection revealed that 90 to 95 percent of the contactors had a lubricant on them which could be a potential problem. Three contacts were found in a mid-position but would still perform their safety-related function. These three contactors were also cleaned. Research into operational experience information (INPO, I&E Bulletins, I&E Notices, etc.) revealed no similar occurrences.

Discussions with the vendor of the contactors, Arrow Hart, revealed that a lubricant had been used during manufacturing of these contactors. The lubricant was identified as Cosmolub number 102, manufactured by E. F. Houghton Company. Discussion with E. F. Houghton personnel identified the lubricant as a high temperature grease made of benton clay and oil. E. F. Houghton personnel stated that over a long (not defined by vendor) period of time, the clay and oil may separate and possibly become sticky.

Two contactors which had unusual amounts of the lubricant and were in a gummy state have been removed from the plant. One was sent to Arrow Hart for analysis and the other sent to a TVA laboratory for analysis along with a sample of the Cosmolub number 102 lubricant.

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Sequoyah, Unit 2	05000328	84	014	01	03	OF 04

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

Testing done by a TVA laboratory indicates that proper maintenance and lubrication performed on a periodic basis will significantly increase the reliability and life of the contactor. Analysis of the Cosmolub number 102 lubricant did not reveal any unusual foreign material, only atmospheric dirt and debris. Also, there was no breakdown observed in the lubricant. Analysis by Arrow Hart indicates that proper cleaning and lubrication should be performed to maintain operational reliability.

The 1,750 breaker compartments inspected involved inspection of approximately 7,000 contacts. Since only four contacts were found stuck, the failure rate was estimated to be 0.05 percent. Based on this substantially low failure rate, no additional immediate corrective action was considered necessary. Long-term corrective action will consist of a preventive maintenance (PM) program to be performed on a five-year basis. All of the Arrow Hart contacts in safety-related systems will be cleaned and lubricated on units 1 and 2 at the next refueling outage. In subsequent refueling outages (every 18 months), twenty five percent of the Arrow Hart contacts in safety-related systems will be cleaned and lubricated, thus providing a continuous PM program. Cosmolub number 102 continues to be the recommended lubricant, and analysis has proved lubrication necessary to the life of the contactors. Arrow Hart recommends the use of isopropyl alcohol to clean the contactors before lubrication. Other TVA plants (Watts Bar, Browns Ferry, and Bellefonte) were notified of this occurrence.

Investigation into the 'B' main feedwater pump self reset resulted in discovery that the overspeed trip reset solenoid valve was leaking through. This caused the pump to reset itself without a reset command from the main control room or local control station. Further research revealed that the solenoid valve was not the proper solenoid for the application. The solenoid had been replaced on August 23, 1984, with an ASCO Model 8320A179, which has a maximum operating differential pressure rating of 12 psi. Maintenance personnel had used nameplate data which had an obliterated model number to obtain a replacement solenoid. With the model number on the nameplate unreadable, the differential pressure rating shown on the nameplate was used to find a replacement, but the differential pressure rating was incorrectly labeled as 20 psi on the nameplate. Maintenance personnel were unable to locate a 20 psi differential pressure-rated solenoid and contacted Westinghouse to determine if a 12 psi rated solenoid was acceptable as a replacement for the 20 psi rated solenoid. Westinghouse personnel agreed that the 12 psi solenoid would be an acceptable replacement for the 20 psi rated solenoid. Maintenance personnel also questioned Westinghouse representatives on the fact that a 20 psi rated solenoid was being used in an application where the operating differential pressure was approximately 160 psi. Westinghouse personnel responded that an orifice was in the line to reduce the differential pressure. The 12 psi rated solenoid was installed and satisfactorily functionally tested on August 23, 1984, with no leakage. With an actual operating differential pressure across the solenoid of approximately 160 psi, the 12 psi rated solenoid did not prevent the subsequent leakage and the main feedwater pump self reset.

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

The proper solenoid is an ASCO Model 8320A182. The proper solenoid was installed on September 5, 1984. The solenoid valves on the other three feedwater pump turbines have been checked and are correct. The recommended model number has been changed to ASCO Model 8320A183. This is the same solenoid as the Model 3320A182 except that this one is explosion proof. A revision has been submitted to the vendor manual (Westinghouse) to reference the proper ASCO model number of this valve.

All other equipment and personnel performed as expected during and after the reactor trip. There was no effect on public health or safety. For 1984, this has been the second automatic reactor trip for unit 2 and the second automatic reactor trip on lo-lo steam generator level for unit 2. (Reference SQRO-50-328/84008.)

TENNESSEE VALLEY AUTHORITY

Sequoyah Nuclear Plant
Post Office Box 2000
Soddy Daisy, Tennessee 37379

February 28, 1985

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

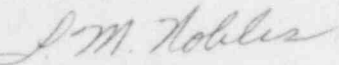
Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET NO.
50-328 - FACILITY OPERATING LICENSE DPR-79 - REPORTABLE OCCURRENCE REPORT
SQRO-50-328/84014, REVISION 1

The enclosed revised licensee event report provides details concerning
an automatic reactor trip on lo-lo steam generator level. This event
was reported in accordance with 10 CFR 50.73, paragraph a.2.iv.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



for P. R. Wallace
Plant Manager

Enclosure
cc (Enclosure):

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NRC Inspector, NUC PR, Sequoyah