

LICENSEE EVENT REPORT (LER)

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FACILITY NAME (1) Dresden Nuclear Power Station, Unit 3	DOCKET NUMBER (2) 05000249	PAGE (3) 1 of 4
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TITLE (4)
Isolation Condenser Inoperable Due To Valve Actuator Motor Pinion Key Becoming Dislodged

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MON TH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	10	1999	1999	005	00	08	09	1999	N/A	05000
									N/A	05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)									
POWER LEVEL (10) 099	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)						
	20.2203(a)(i)	20.2203(a)(3)(i)	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)	X	50.73(a)(2)(v)						
	20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	Specify in Abstract below or in NRC Form 366A						

LICENSEE CONTACT FOR THIS LER (12)

NAME Lance M. Germani, Maintenance Programs	TELEPHONE NUMBER (Include Area Code) (815) 942-2920 ext. 2336
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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
A	BL	20	L200	Y					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES	X	NO		MONTH	DAY	YEAR
(If yes, complete EXPECTED SUBMISSION DATE)						

ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)

On July 10, 1999 at 1555 hours, the Dresden Operations Department was performing Quarterly valve timing on valve 3-1301-4, Isolation Condenser Condensate Return Valve, when it was discovered that the valve could not be electrically opened. The valve, which is normally open, had been cycled earlier in the day in order to support the testing. In response to the valve's failure to open, Operations electrically deenergized the valve at the breaker, in accordance with Dresden Operating procedure (DOP) 0040-01, electronically isolating the valve in the closed position until troubleshooting could be performed. On July 17, 1999, a drywell entry was made at power to perform additional trouble shooting and repairs to the valve. The valve's motor was removed, and a visual inspection revealed the motor pinion gear was loose on the shaft and the drive key had fallen out of the keyway. The motor pinion gear drive key was replaced, and the pinion gear was reinstalled and staked in accordance with Dresden Electrical Procedure (DEP) 0040-09 revision 8, Limitorque Valve Operator Maintenance. The valve was tested and declared operable at 0715 hours on July 17, 1999. The primary cause for the event was determined to be human error by employee's failure to complete work steps contained within Station Procedures.

The On-line Safety Assessment Program has previously determined that the loss of the Isolation Condenser has a relatively low Safety Significance. All of the Unit 3 High Pressure Emergency Core Cooling Systems (ECCS) were fully operable during the entire period, from first cycling of the 3-1301-4 valve on July 10, 1999, until its repair on July 17, 1999. The Unit 3 ECCS systems were fully capable, by design, to provide reactor decay heat removal, pressure control, and inventory control under all design basis accident conditions. The Isolation Condenser was returned to operable status within 7 days, approximately half of its Limiting Condition of Operation (LCO) statement of 14 days. Therefore, the safety significance of this event was minimal.

This event is reportable per 10 CFR 50.73 (a) (2) (v), which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structure or systems to remove residual heat.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Dresden Nuclear Power Station, Unit 3	05000249	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		1999	05	00	

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

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 MWt rated core thermal power

Energy Industry Identification System (EIS) Codes are identified in the text as [XX] and are obtained from IEEE Standard 805-1984, IEEE Recommended Practice for System Identification in Nuclear Power Plants and Related Facilities.

EVENT IDENTIFICATION:

Isolation Condenser Inoperable Due to Valve Actuator Motor Pinion Key Becoming Dislodged

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3	Event Date: 7/10/99	Event Time: 1555
Reactor Mode: 1	Mode Name: Run	Power Level: 99%
Reactor Coolant System Pressure: 1000 psig		

B.1 DESCRIPTION OF EVENT:

On July 10, 1999 at 1555 hours, the Dresden Operations Department was performing Quarterly valve timing on valve 3-1301-4, Isolation Condenser System [BL] Condensate Return Valve, when it was discovered that the valve could not be electrically reopened. The valve, which is normally open, had been cycled earlier in the day in order to support testing under Special Procedure II-05-015, Unit 3 Isolation Condenser Elevated Temperature Data Collection. In response to the valve's failure to open, Operations electrically deenergized the valve at the breaker, in accordance with DOP 0040-01, electronically isolating the valve in the closed position until trouble-shooting could be performed.

Work Request (WR) 9900075576 was generated to perform trouble-shooting activities on the valve. As part of the trouble shooting process, valve motor amperage readings were taken at the Motor Control Center (MCC) breaker that supplied power to the valve. When the valve was given an open signal, motor current data indicated the motor was in an unloaded condition, and was drawing approximately 6 amps. Based on the data collected, it was determined that the valve motor was not driving the valve actuator.

On July 17, 1999, a drywell entry was made at power to perform additional trouble shooting and repairs to valve 3-1301-4. The valve's motor was removed, and a visual inspection revealed the motor pinion gear was loose on the shaft and the drive key had fallen out of the keyway. The motor pinion gear drive key was replaced, and the pinion gear was reinstalled and staked accordance with Dresden Electrical Procedure (DEP) 0040-09 revision 8, Limitorque Valve Operator Maintenance. The valve was tested and declared operable at 0715 hours on July 17, 1999.

B.2 ANALYSIS OF EVENT

Information obtained during the drywell entry on July 17, 1999 determined the failure of valve 3-1301-4 to operate was caused by the motor pinion gear becoming loose on the shaft, and the drive key falling out of the keyway due to improper staking (rolling of the metal) of the motor shaft keyway. Staking of the motor shaft keyway assists in preventing the motor pinion drive key from moving under high motor torque conditions exhibited by SMB-3 Limitorque actuators. A review of maintenance history indicated that the valve experienced an over thrust condition in February 1999 while performing diagnostic testing. WR 990012898 Task 01 was written to inspect the valve actuator for damage and rebuild as required. Task 02 of WR 990012898 incorporated work instructions to support Task 01 with deterring and reterming motor leads, removing and reinstalling the torque switch, and to verify the motor pinion gear key was staked in accordance with the applicable steps of DEP 0040-09. A review of the work

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Dresden Nuclear Power Station, Unit 3	DOCKET (2) 05000249	LER NUMBER (6)			PAGE (3) 3 OF 4
		YEAR 1999	SEQUENTIAL NUMBER 05	REVISION NUMBER 00	

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

package for WR990012898 Task 02 revealed that the requirement for verifying the motor pinion gear was staked and initialed in the work instructions. The steps in the attached DEP 0040-09 had not been performed on the basis that the inspection was completed under Task 01 of WR 990012898. Task 01 of WR 990012898 was reviewed, no documentation could be found indicating that the pinion key was staked. Additionally, a note was written under the step to perform the Limitorque gear inspections that stated: "Verified all gears in operator. Could not check motor pinion gear". The individuals who initialed the series of work instructions as being completed in Task 02, including the staking of the motor pinion key, and the individual who deferred the motor pinion gear inspection to Task 01 of WR 990012898 are no longer on site and could not be interviewed.

C. CAUSE OF EVENT:

The primary cause for the event was determined to be human error by employee's failure to complete work steps contained within Station Procedures. [NRC Cause Code A].

An additional observation was noted during the investigation that indicates a lack of knowledge regarding the proper way to secure the motor pinion gear in accordance with the requirements of DEP 0040-09.

D. SAFETY ANALYSIS

The purpose of the Isolation Condenser System [BL] is to provide for reactor decay heat removal under conditions when the Main Condenser is unavailable. Although the Isolation Condenser is not an Emergency Core Cooling System (ECCS) [BM], it does remove decay heat from the reactor without a loss of reactor inventory. Inability to open the inboard condensate return valve 3-1301-4, via its control switch, rendered the Isolation Condenser inoperable at 1555 hours on July 10, 1999. The 3-1301-4 valve is located in the primary containment and would not be accessible for manual operation under accident conditions; furthermore, the failure mode (dislodging of the motor pinion gear key) would have also prevented local manual operation. The valve had been previously cycled via its control switch in both directions earlier that day. Therefore, it is concluded that the 3-1301-4-valve operator motor pinion gear key became dislodged on July 10, 1999.

The On-line Safety Assessment Program has previously determined that the loss of the Isolation Condenser has a relatively low Safety Significance. All of the Unit 3 High Pressure ECCS systems were fully operable during the entire period, from first cycling of the 3-1301-4 valve on July 10, 1999 until its repair on July 17, 1999. The Unit 3 ECCS systems were fully capable, by design, to provide reactor decay heat removal, pressure control, and inventory control under all design basis accident conditions. The Isolation Condenser was returned to operable status within 7 days, approximately half of its LCO statement of 14 days. Therefore, the safety significance of this event was minimal.

E. CORRECTIVE ACTIONS:

The population of Safety Related SMB-3 Actuators, which had work performed during D3R15, were identified by the MOV Program Engineer. The Work Requests were reviewed to determine if similar problems associated with securing motor pinion gears existed. This review did not identify any additional concerns. (Complete)

Prior to D2R16, a dedicated ComEd Valve Component Specialist will be appointed to review completed Motor Operated Valve work packages. The review will be performed to ensure that steps that are labeled N/A or have been deferred to other packages are valid. (ATI #13497-12)

The Valve Component Specialist will revise the model work instructions for determ/reterm and support operator/valve disassembly to be more specific concerning the requirements to verify that motor pinion gears are properly secured. In addition, all applicable D2R16 Work Packages will be verified to contain the latest model work instructions. (ATI #13497-13).

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Dresden Nuclear Power Station, Unit 3	05000249	1999	05	00	4 OF 4

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

DEP 0040-09 will be revised by the Valve Component Specialist to be more specific in the requirements for verifying the motor pinion gear is secured. (ATI #13497-14).

F. PREVIOUS OCCURRENCES:

On July 21, 1998 Operations Department Discovered the declutch lever/handle on MOV 3-1301-2 would not stay engaged when manually cycling the valve. The valve was repaired. Associated corrective actions were to verify that all GL 89-10 MOV's that had modifications performed were inspected and repaired accordingly. This action item is to be completed by September 24, 1999.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u> Limitorque	<u>Model Number</u> SMB-3-100	<u>Mfg. Part Number</u> N/A
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