

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND 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.

FACILITY NAME (1) Dresden Nuclear Power Station, Unit 2		DOCKET NUMBER (2) 05000237	PAGE (3) 1 of 4
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TITLE (4)
Unit 2 Loss of Drywell to Torus dP during Quarterly Valve Timing due to Poorly Structured Technical Procedure Step

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	15	99	99	001	00	02	10	99	N/A	N/A
									N/A	N/A

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)									
POWER LEVEL (10) 99	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)					
	20.2203(a)(2)(i)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)					
	20.405(a)(1)(ii)	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)		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 Ralph M. Fenili, Operations Support Staff	TELEPHONE NUMBER (Include Area Code) (815) 942-2920 ext.: 2917
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

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

On January 16, 1999 at approximately 0100 hours, The Unit 2 Nuclear Station Operator (NSO) was performing DOS 1600-03, Quarterly Valve Timing, in accordance with the station schedule. The NSO was performing the next block of valves, which time the movement of the 2-1601-55, 56, 21 and 22 valves. The surveillance directed him to perform either step I.4 or I.5, based upon plant conditions. The NSO reviewed steps I.4 and I.5 and chose to perform step I.5. The NSO timed the 2-1601-55 valve closed then reopened the valve, timed the 2-1601-56 valve closed and reopened it, timed the 2-1601-22 closed and left closed (normal position) then opened the 2-1601-21 valve so that it could be timed in the closed direction. When the 21 valve opened it created an equalization path between the Drywell (DW) to Torus via the open 2-1601-56 valve. Numerous alarms were received on Unit 2, one of which being the 902-4 B-15 "DW to Torus dP Hi/Lo" alarm. At the time the DW to Torus differential pressure (dP) alarm was received, it was noted by both Unit 2 NSO's and the Unit Supervisor that dP had decreased to 0.85 dP, dropping below the Tech Spec required 1.0 dP. The NSO immediately closed the 2-1601-21 valve and proceeded to re-establish dP. The Shift Manager was notified and a prompt investigation was initiated.

The investigation determined that the stated criteria for determining whether to perform step I.4 or I.5 caused this event. The procedural steps each stated a compound set of plant conditions which misled the NSO during selection of the appropriate action to be taken. This event was determined to be reportable per 10CFR50.73(a)(2)(i)(B), any operation or condition prohibited by the plant's Technical Specifications. Corrective Actions include presenting the event and lessons learned to Operations personnel, reviewing and revising procedures with similar problems, and a review of fundamental operator training and system response. The Nuclear Safety Significance of this event was determined to be minimal.

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

the NSO took the action and opened the 2-1601-21 valve, he created an equalization path between the Drywell to Torus via the open 2-1601-56 valve.

At approximately 0158 hours, as the 2-1601-21 valve was opened, various alarms were received on Unit 2 which included an annunciator indicating the opening of the 2-1601-21 valve (expected), concurrent with annunciator 902-4 B-15, "DW to Torus dP Hi/Lo". Receipt of the DW to Torus low dP alarm was immediately noted by both Unit 2 NSO's and the Unit 2 Unit Supervisor, recognizing that DW/Torus dP had decreased to 0.85 dP, as indicated on the 902-3 panel. The Unit 2 NSO immediately closed the 2-1601-21 valve to re-establish containment dP. Tech Spec 3.7.H for Containment dP was promptly entered by the Operating Team at 0158 hours and subsequently exited at 0207 hours.

The Shift Manager was notified at approximately 0204 hours. Following the event the Shift Manager initiated a prompt investigation. This event is deemed reportable since the valving alignment constituted a greater than 1 square inch opening that would allow leakage between the Drywell and Torus, which is prohibited by Technical Specification 3.7.K.

B.2 Investigation of the Inappropriate Action

It was determined that the procedural steps (I.4 and I.5) each contained a compound set of plant conditions that mislead the procedure user during selection of the appropriate action to be taken.

A review of the Dresden Station Procedure Writers Guide was performed in order to address human factoring of the procedure step. Section 4.2.9.f, Diagnostic Steps, cautions on the use of long, unbroken sentences containing the words "and" or "or". It additionally states that should this condition occur, then list the conditions or actions separately. This caution directly applied to the content of procedural steps I.4 and I.5. Also, the single procedural step directed the performance of two actions by the user, which is not recommended by human factoring. For this event, proper sentence structure (i.e., human factoring) should have read as follows:

IF all of the following conditions exist, THEN continue at step I.5:

- a. The reactor is shutdown,
- b. The Drywell is de-inerted,
- c. The Containment 1 psid is broken.

Furthermore, applying the guidance contained in the Writers Guide would remove the identical distractor at procedure step I.5, to read as follows;

IF step I.4 was performed, THEN N/A step I.5.

It was concluded that the lack of human factoring of the compound statements at steps I.4 and I.5 created a distraction to the operator, resulting in the NSO choosing to perform the incorrect step and the subsequent loss of containment differential pressure.

C. CAUSE OF EVENT:

The Primary Cause of the event was determined to be (NRC Cause Code D) the existence of procedural steps within the surveillance, each stating a compound set of plant conditions which mislead the NSO during selection of the appropriate action to be taken.

A Contributing Cause of the event was determined to be (NRC Cause Code A) the failure by the Nuclear Station Operator to remain cognizant of the anticipated system response prior to performance of a component manipulation.

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D. SAFETY ANALYSIS

Though the equalization path did exist between the Drywell and Torus, it was promptly identified and corrected. Group isolations remained operational for the duration of the event that would have repositioned the containment isolation valves and terminated bypass flow at the onset of the event. For this reason, the Nuclear Safety Significance was determined to be minimal.

E. CORRECTIVE ACTIONS:

1. Operations promptly tailgated this event with all Operating Teams. (Complete)
2. The Operations policy on pre-job briefs was revised to include a step for a peer review of all surveillances prior to the task. Specifically, the use of N/A within the surveillance will be documented prior to performance. (Complete)
3. The Training Department will review Operations request for training on fundamental knowledge of system response and operator expectations. This should include the fundamental use of STAR during performance with an emphasis on Stop & Think, and the Operator's role as the final barrier to error prevention. (2371809900101)
4. Operations performed a cursory review of Operations Surveillances, specifically to identify other areas where surveillance steps consist of compound or potentially misleading action statements. (Complete) This review did not include valve timing or Off Gas system surveillances, which will receive a detailed review due to their complexity. The following actions will be taken to address this issue:
 - Operations will revise the following surveillances, DOS 1600-03,05; DOS 5600-02; and DOS 7500-02, correcting the identified need for human factoring. (2371809900102)
 - Operations will review all valve timing, and Off Gas system surveillances, looking for the need to correct any human factoring deficiencies. (2371809900103)
5. The Shift Operations Superintendent will meet with all Operations Shift personnel to discuss departmental expectations for performance of surveillances, based upon the lessons learned from this event. Also, reinforcement will occur after the D3R15 refueling outage. (2371809900104)
6. The Nuclear Station Operator was temporarily relieved of duty until completion of the investigation. Prior to being released for active duty, coaching was performed in accordance with station policy. (Completed)
7. Operations will revise DAP 09-02 Checklist A, Procedure and Revision Process Checklist, to include an initial block to require the user to assure that action statements added to procedures meet the established writing standard, the "Dresden Writers Guide". (2371809900105)

F. PREVIOUS OCCURRENCES:

None.

G. COMPONENT FAILURE DATA:

None.