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Dresden Nuclear Power Station
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December 23, 1992

CWS LTR #92-768

U.S. Nuclear Regulatory Commission
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Licensee Event Report 92-041, Docket 50237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.72.

L. J. Nerwen for 12/30/92

Charles W. Schroeder
Station Manager
Dresden Station

CWS/slb

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 2 Docket Number (2) 0 5 10 10 10 12 13 17 Page (3) 1 of 0 7

Title (4) Rod Misposition Event on September 18, 1992 Due to Personnel Error

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	9	1	8	9	2	9	2	0	4	1	0	0	1	2	2	3	9	2	0	5	10	10	10	1	1	1

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																																									
POWER LEVEL (10)		20.402(b)		20.405(a)(1)(i)		20.405(a)(1)(ii)		20.405(a)(1)(iii)		20.405(a)(1)(iv)		20.405(a)(1)(v)		20.405(c)		50.36(c)(1)		50.36(c)(2)		50.73(a)(2)(i)		50.73(a)(2)(ii)		50.73(a)(2)(iii)		50.73(a)(2)(iv)		50.73(a)(2)(v)		50.73(a)(2)(vii)		50.73(a)(2)(viii)(A)		50.73(a)(2)(viii)(B)		50.73(a)(2)(x)		73.71(b)		73.71(c)		X Other (Specify in Abstract below and in Text)	
N																																											

LICENSEE CONTACT FOR THIS LER (12)

Name: Kirk W. Peterman, Procedures Manager Ext. 3502

TELEPHONE NUMBER: AREA CODE 8 1 5 9 4 2 -2 9 2 10

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) Month Day Year

Yes (If yes, complete EXPECTED SUBMISSION DATE) X NO

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

On September 18, 1992, With Unit 2 operating at 99% power, a Nuclear Station Operator (NSO) inadvertently inserted Control Rod H-1 from Position 48 to Position 36. The intended move was Control Rod B-12 from Position 48 to Position 6. In response to the mispositioning event the Qualified Nuclear engineer (QNE) and Station Control Room Engineer (SCRE) wrote an "after-the-fact" set of Control Rod moves which reflected the actual Control Rod movement rather than the planned Control Rod movement. They did not make a log entry of the mispositioned Control Rod nor did they initiate a Deviation Report (DVR) as required by station procedure. On November 24, 1992, Station Management discovered that the control rod mispositioning event occurred. An event investigation was immediately initiated.

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor -2527 Mwt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATION:

Rod Misposition Event on September 18, 1992 due to Personnel Error.

A. CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: September 18, 1992 Event Time: 0949 Hours

Reactor Mode: N Mode Name: Run Power Level: 99%

Reactor Coolant System (RCS) Pressure: 1005 psig

B. DESCRIPTION OF EVENT:

At 1145 hours on Thursday, September 17, 1992 Dresden Unit 2 reached All Rods Out (ARO) Control Rod configuration at 700 MWe. Unit 2 was placed on a 10 MWe/hr load increase at 1550 hours. By 0500 hours on September 18, 1992, the Flow Control Line (FCL) had increased to 107% and Average Power Range Monitor (APRM) HIGH Alarms were occurring. The shift personnel contacted the on-call Qualified Nuclear Engineer (QNE) for instructions. The QNE provided the shift with eight (8) peripheral Control Rod to insert to lower the FCL. A Dresden Administrative Procedure (DAP) 14-14 Form 14-14B, "Flow Control Line Instructions" was completed and signed in accordance with the telephone instructions. Four (4) of these Control Rods (Array 7D) were inserted to position 00 and the other four (4) (Array 8C1) were inserted to position 06 by 0540 hours. This reduced the FCL to 104.7% and provided temporary clearance of the APRM HIGH Alarms. The FCL continued to slowly rise due to Xenon depletion.

At 0720 hours the Unit QNE was assigned the task of continuing to reduce the FCL. Control Rod insertions continued, continuing the strategy of inserting peripheral Control Rods. A DAP 14-14 Form 14-14C, "Special Instructions," was completed and signed directing that the four (4) Control Rods (Array 8C1) previously inserted to position 06 were to be inserted to position 00 and four (4) additional peripheral Control Rods (Array 8C2) were to be inserted from position 48 to position 00 in three steps. From 0730 hours to 0800 hours, the Unit 2 Nuclear Station Operator (NSO) performed the Control Rod moves, with the Utility NSO acting as Second Verifier. A second Form 14-14C was completed and approved directing that a set of peripheral "Black and White" control Rods (four (4) Control Rods in Array 3) be inserted from position 48 to position 00 in three steps. At 0815 hours, the four peripheral "Black and White" Control Rods were inserted the first step from position 48 to position 12. The FCL had been reduced to 102.3%. Control Rod movement was temporarily suspended. The Utility NSO left to perform other duties. The Unit 2 NSO selected another peripheral Control Rod (H-1) in Array 5 to suppress Rod Block Monitor (RBM) high alarms.

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The Unit 2 QNE determined that a better choice of Control Rods to be inserted would have been Array 8D1 instead of the four (4) Control Rods in Array 3. A Third Form 14-14C was written and approved to:

- Step 1 First, insert Array 8D1 from position 48 to position 06;
- Step 2 Second, withdraw the four (4) Control Rods in Array 3 from position 12 to position 48; and
- Step 3 Third, withdraw Array 8D1 from position 06 to position 12.

The shift was ready to begin Control rod movement again at approximately 0945 hours. The Utility NSO was not re-assigned as Second Verifier. Normally, when an NSO is not assigned as Second Verifier, the QNE performs that function; however, in this instance, there was not a formal assignment made. At 0949 hours, the Unit 2 NSO began to insert the previously selected Control Rod H-1 in Array 5 rather than the intended Control Rod in Array 8D1. The Unit 2 NSO and the QNE discovered the mistake at about the same time; Control Rod H-1 eventually reached position 36 before it stopped. The Unit 2 NSO then continued to insert the four (4) Control Rods in Array 8D1 from position 48 to position 06. These insertions were completed by 0952 hours.

Discussions were held (jointly and separately) between the Unit 2 NSO, the QNE, and the Station Control Room Engineer (SCRE) on how to handle the "out-of-position" Control Rod. The discussion concluded that, in writing the third Form 14-14C, the QNE could have chosen Control Rods in Array 5 rather than Control Rods in Array 8D1. The decision was reached to write a fourth Form 14-14C which indicated the following:

- Step 1 First, insert five (5) Control Rods in Array 5 from position 48 to position 00;

A notation on the fourth Form 14-14C provided instructions to perform Step 2 of the third Form 14-14C (withdrawal of four (4) Control Rods in Array 3 from position 12 to position 48) between Steps 2 and 3 of the fourth Form 14-14C.

- Step 2 Second, insert Array 8D2 from position 48 to position 00; and
- Step 3 Third, withdraw the five (5) Control Rods in Array 5 (which were inserted in Step 1) from position 00 to position 48.

Step 1 of the fourth Form 14-14C did not reflect the fact that one (1) of the five (5) Control Rods in Array 5 (H-1) had already been inserted from position 48 to position 36. The QNE and the SCRE both signed the fourth Form 14-14C. Both the QNE and the SCRE knew the Control Rod H-1 was already at position 36.

At 0957 hours, the Unit 2 NSO began to perform Step 1 of the fourth Form 14-14C. The QNE was performing the duties of Second Verifier. Control Rod (H-1) was inserted from position 36 to position 00 and four (4) Control Rods were inserted from position 48 to position 00. The Step was completed and signed-off by the Unit 2 NSO at 1005 hours.

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Additional Control Rod moves continued throughout the morning. A fifth Form 14-14C was written to perform some of the moves.

The Unit 2 NSO, the SCRE, QNE, and two nuclear engineer trainees agreed not to report the Control Rod mispositioning event to their supervisors.

The actions taken by the individuals involved in the event violated several station procedures:

1. Step F.2 of Dresden General Operating Procedure (DGP) 03-04, Revision 17, "Control Rod Movements," requires QNE approval to move Control Rods out-of-sequence. DAP 14-14 prescribes the method of obtaining QNE approval; the insertion of Control Rod H-1 was accomplished without approval of a QNE, and thus was a mispositioned Control Rod.
2. Step D.3 of DGP 03-04, Revision 17, requires either the Rod Worth Minimizer (RWM) to be capable of providing rod blocks or a Second Verifier to monitor Control Rod movement. Step G.1.e prescribes the method of accomplishing the Second Verification. When Control Rod Moves resumed at 9:49 a.m., the Utility NSO was not available to perform the Second Verification. It was presumed that the QNE would perform the task. Neither the QNE nor the Unit 2 NSO followed the requirements of DGP 03-04, Step G.1.e for performing the Second Verification.
3. Step C.2 of Dresden Abnormal Operating Procedure (DOA) 300-12, "Mispositioned Control Rod," IMMEDIATE OPERATOR ACTION, requires that all Control Rod movement be discontinued if a Control Rod is mispositioned more than one (1) even notch. After Control Rod H-1 was mispositioned six (6) even notches, the Unit 2 NSO (presumably with the QNE acting as the Second Verifier) moved an additional four (4) Control Rods in Array 8D1 from position 48 to position 06 before stopping Control Rod movement.
4. Step D.2.a(1) of DOA 300-12, SUBSEQUENT OPERATOR ACTION, requires that the mispositioned Control Rod be inserted to position 00. Four (4) Control Rods in Array 8D1 were moved from position 48 to position 06 before the mispositioned Control Rod was inserted to position 00. Step D.3 of DOA 300-12 requires notification of a QNE of a Control Rod mispositioning event. The individuals involved in the event believed that the QNE could authorize Control Rod moves which were different than those prescribed in DOA 300-12. In fact, the QNE could not authorize Control Rod moves in conflict with DOA 300-12.
5. Step D.4 of DOA 300-12 requires the Unit Operating Engineer or the Operations Duty Supervisor to be notified. This was not done.
6. Step D.5 of DOA 300-12 requires the mispositioning event to be noted in the Unit log Book. This was not done.
7. Step D.6 of DOA 300-12 requires that "Upper Station Management" conduct an investigation of the mispositioning event. Since the event was not reported to Upper Station Management until November 24, 1992, the event was not investigated in a timely manner.

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8. Step F.1.e of DAP 14-14, "Control Rod Sequences," requires that "Special Instructions" describing Control Rod movements be approved by a QNE and Operations Shift Supervisor and be strictly adhered to. The fourth Form 14-14C (which was written after Control Rod H-1 was already mispositioned to position 36) required Control Rod H-1 to be inserted from position 48 to position 00. The movement the Unit 2 NSO performed was from position 36 to position 00. The fourth Form 14-14C was written and approved after one of the moves it was allowing.

C. APPARENT CAUSE OF EVENT:

This event is being voluntarily reported due to its significance and NRC interest.

The apparent causes of the Control Rod mispositioning are as follows:

1. The Unit 2 NSO was inattentive to his actions. When he was ready to restart inserting Control Rods, he did so without taking time to properly consider the actions he was taking. He did not select the Control Rod to insert. He started to insert the previously selected Control Rod H-1.
2. The process of selecting a Second Verifier was unclear and lacked formality. The QNE "knew" that when a second NSO was not available to perform the task, it was his responsibility; however, in the case it was not apparent until too late.
3. The method of Second Verification prescribed in DGP 03-04, which involved a detailed repeat-back sequence, was not being followed.

The apparent causes of the failure to follow the actions prescribed in DOA 300-12 are as follows:

1. There was a misunderstanding by all of the individuals involved regarding the authority of the Qualified Nuclear Engineer to authorize Control Rod moves in response to mispositioned Control Rod events which were in conflict with DOA 300-12.
2. The Failure to report and make proper Log entries of the event in accordance with DOA 300-12 requirements was due to desire by the individuals involved to suppress knowledge that the event occurred.

D. SAFETY ANALYSIS OF EVENT:

The purpose of the Control Rod Drive System is to control reactor power, provide a means to shape both axial and radial flux profiles in the reactor, and to provide adequate excess negative reactivity to shutdown the reactor from any normal or accident condition at the most reactive time in core life. No nuclear limits were challenged by this event due to the significant margin to these limits at this point in the operating cycle. The general safety significance of implementing effective administrative controls over Control Rod movement is due to reactivity management considerations. Control Rod mispositioning events under different core conditions have the potential to damage fuel or could result in unanalyzed conditions for a postulated Control Rod Drop Accident.

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The failure to report conditions adverse to quality, as required by station procedures, suppresses management knowledge of events occurring which should receive a thorough investigation.

E. CORRECTIVE ACTIONS:

- Disciplinary actions have been taken against the five (5) individuals involved in the event for failure to report the Control Rod mispositioning event.
- The event has been extensively discussed by the Station Manager with all Dresden Station personnel emphasizing the expectation of high personal integrity.
- DOA 300-12 will be revised to clarify the QNE duties and responsibilities in response to mispositioned Control Rods by January 31, 1993.
- All QNEs and Licensed Operating personnel will be trained on the revised DOA 300-12 by March 31, 1993.
- Commonwealth Edison will develop and implement a corporate policy regarding QNE responsibilities, authority, and interface with NRC Licensed Operating Personnel by April 30, 1993.
- Lessons-learned from this event will be incorporated into Commonwealth Edison QNE training program by January 31, 1993.
- A corporate policy, clearly identifying the expectations for nuclear division personnel relative to integrity and trustworthiness, will be developed by April 30, 1993.

F. PREVIOUS OCCURRENCES:

There have been seven (7) previous Control Rod mispositioning events at Dresden since September 1990.

LER/Document Numbers

Title

Non Reportable Event
12-3-92-71

Control Rod C-5 Mispositioned

On May 12, 1992, while inserting control rods for Unit 3 shutdown, Control rod C-5 was moved from 12 to 08 out-of-sequence. The NSO immediately stopped all rod movement and DOA 300-12 was entered. Per procedure, the rod was inserted to 00 after discussions with the QNE.

Non Reportable Event
12-2-92-64

Control Rod Drive M-4 Mispositioning Due to Incorrect Insert Speed

On April 10, 1992, while conducting control rod movements with Unit 2 at 99% power, CRD M-4 triple-notched in from position 16 past its intended position of 14 to position 10 when given a single notch-in signal. The NSO indicated that drive water pressure was normal (280 psi over reactor pressure) and drive movement was faster than normal. With QNE approval, the NSO returned CRD M-4 to the correct position.

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Non Reportable Event
12-2-91-179

Inadvertent Scram Test of CRD P-10 During Scram Testing due to Personnel Error

On October 6, 1991, Unit 2 was at approximately 250 MWe. During the withdrawal of the fourth control rod to reposition it to its pre-scam core position, a radio communication was received by the NSO from an operator who was assisting with scram testing by performing the required valve operations. The NSO was informed that valving had been completed for the next control rod to be scram tested. The NSO acknowledged the operator and continued to reposition the control rod that had just been scram tested. When the NSO acknowledged the operator, the acknowledgement was overheard by the Center Desk NSO who interpreted the communication as his command to scram the next control rod.

Non Reportable Event
12-2-91-125

Control Rod Sequence Usage Discrepancy due to Procedural Deficiency

On July 23, 1991, a QNE identified a discrepancy involving usage of the Control Rod Sequence Package. The Unit 2 NSO had determined that insufficient margin existed to the APRM rod blocks. Upon discussion with the SCRE, it had been decided to make a rod pattern adjustment via the sequence package; however, the QNE raised a concern that the pattern adjustment should have been made utilizing the Flow Control Line Instructions.

Non Reportable Event
12-3-91-33

CRD D-6 Unexpected Movement Due to Apparent Personnel Error

On May 18, 1991, CRD-6 was given a momentary single-notch insert signal from position 46 while performing control rod drive exercise. During this evolution, CRD D-6 stopped at position 38 rather than position 44 as was expected.

Non Reportable Event
12-2-91-29

Control Rod Mispositioned During Stall flow Testing Due to Personnel Error

On February 19, 1991, while performing CRD Stall flow testing, the NSO inadvertently withdrew CRD B-8 from position 08 to 18, although stall flow tests were only to be performed on CRDs with original positions of 00 or 48.

Non Reportable Event
12-3-90-97

Mispositioned Control Rod During Scram Testing Caused by Personnel Error

On September 8, 1990, while performing CRD Scram Testing, CRD G-3 was inadvertently scrammed at the same time as CRD H-2. A Trainee under the direct supervision of a Licensed NSO scrammed CRD H-2; his finger slipped and also moved the test switch for CRD G-3.

G. COMPONENT FAILURE DATA:

As this event was not caused by component failure, this section is not required.