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ComEd

May 25, 1995

TPJLTR 95-0055

U.S. Nuclear Regulatory Commission
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Washington, D. C. 20555

Licensee Event Report 94-008-01, Docket 50-249 is being submitted as required by Technical Specification 6.6 and 10CFR50.73(a)(2)(i). This supplement is being issued to correct typographical errors found int the original LER and provide more detail into the safety significance of the event.

Sincerely,

Thomas P. Joyce
Site Vice President

TPJ/SP:pt

Enclosure

cc: J. Martin, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden Nuclear Power Station, Unit 3	05000249	1 OF 5

TITLE (4)
Anticipated Transient Without Scram (ATWS) Trip Time Delay Failure Due to Management Deficiency

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
03	11	94	94	-- 008 --	01	05	12	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)	000		20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
			20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iv)		73.71(c)
			20.2203(a)(2)(i)		20.2203(a)(4)		50.73(a)(2)(v)		OTHER
			20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
			20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
			20.2203(a)(2)(iv)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
			20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Tom Leffler, System Engineer Ext. 2349	(815) 942-2920

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
X	JC	94	G080	Yes						

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 15 single-spaced typewritten lines) (16)

At 1355 hours on March 11, 1994, with Unit 3 in the Refuel Mode, during the performance of Dresden Instrument Surveillance (DIS) 0260-06, "Anticipated Transient Without Scram (ATWS) [JC] Transmitter and Master Trip Unit Calibration and Logic System Functional Test", time delay relay 3-0260-K101D tripped at 32.29 seconds and relay 3-0260-K101C failed to time out. Dresden Technical Specification 3.2.H., "Recirculation Pump Trip Initiation", requires that the time delay be greater than or equal to 8 seconds and less than or equal to 10 seconds. The relay failures were a result of component aging and cycling. Under Work Request D21641, both relays were removed and replaced. The root cause of this event was incomplete corrective actions from a previous event. The original relays were not replaced in a timely manner.

EVENT IDENTIFICATION:

Anticipated Transient Without Scram (ATWS) Trip Time Delay Failure Due to Management Deficiency.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: March 11, 1994 Event Time: 1355 hrs.

Reactor Mode: N Mode Name: Refuel Power Level: 0%

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

At 1355 hours on March 11, 1994, with Unit 3 in the Refuel Mode, during the performance of Dresden Instrument Surveillance (DIS) 0260-06, Anticipated Transient Without Scram (ATWS) Transmitter and Master Trip Unit Calibration and Logic System Functional Test, time delay relay 3-0260-K101D tripped at 32.29 seconds and relay 3-0260-K101C failed to time out. Dresden Technical Specification 3.2.H., Recirculation Pump Trip Initiation, requires that the time delay be greater than or equal to 8 seconds and less than or equal to 10 seconds.

The Shift Engineer was notified that the Technical Specification limit was exceeded and a Problem Identification Form (PIF) was initiated per Dresden Administrative Procedure (DAP) 02 -27, "Integrated Reporting Process."

Initially, the corrective action included initiating a work request (WR) to replace relays 3-0260-K101C and K101D. However, the ATWS system refuel outage (D3R13) work schedule indicated that all three types of agastat relays (normally energized,normally de-energized and time delay)were scheduled to be replaced. Consequently, on March 13, 1994, both relays were removed and replaced under WR D21641.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i) which requires the reporting of any operation or condition prohibited by the Technical Specifications.

The ATWS/ARI logic was installed as a modification in 1984. The time delay relays 3-0260-K101C and K101D on Unit 3 ATWS system were found to be the original installed equipment as part of the modification. The failure of the relay K101C (normally de-energized) was due to fatigue caused by age and cycling.

A review of the Maintenance History revealed that On September 9, 1991, an IMD Work Request was written to replace the Unit 3 ATWS time delay relays, normally energized and normally de-energized, as a corrective action (NTS # 249-200-91-06301) for Deviation Report (DVR) #12-3-91-63.

The DVR report was written to address an ATWS trouble alarm failure that was caused by a time delay relay. The report stated the cause of the failure was also attributed to component aging and cycling of the relay. The relays had exceeded their life expectancy of 10 years (normally de-energized relays). The relays were original installed equipment as part of the modification. Corrective actions included initiating a work request (WR D21641) to replace all ATWS system relays and creating a preventative maintenance general surveillance (GSRV) to replace the relays at a frequency less than their life expectancy. The GSRV item was not schedule to begin until all the relays were replaced to establish a new beginning of service-life date. Work request D09827 was written to have the relays replaced during the D3R12 refuel outage. During the D3R12 refuel outage, Dresden Station management elected not to replace the ATWS relays. The schedule of NTS item 249-200-91-06301 was then delayed. Work request D09827 was cancelled and new WR D21641 was written to perform the relay replacement. As a result of this decision, the relays remained in operation and eventually exceeded their life expectancy.

Therefore, the root cause of this event was management deficiency resulting in the failure of station personnel to replace the relays in a timely manner.

D. SAFETY ANALYSIS:

The ATWS system monitors plant parameters which would indicate an abnormal transient is in progress and/or the Reactor Protection System (RPS) has failed to provide plant protection. The two parameters that actuate the ATWS system are low-low reactor vessel water level and high reactor vessel pressure.

On a low-low reactor water level (-59 inches) initiation signal, the ATWS system actuates to trip the reactor recirculation pumps following a nine second time delay. The nine second time delay is consistent with the assumption in the Loss of Coolant Accident (LOCA) analysis. The inertia of the motor-generator set will provide short term pumping capability following a recirculation pump motor trip. If the trip occurs at the field breaker of the motor of the motor-generator set, the inertia of the motor-generator is no longer available to prolong the pumping capability. The nine second time delay is used to compensate for this loss of pumping capability, thus satisfying the LOCA analysis for a reactor low-low water level trip. The recirculation pumps [AD] are tripped in order to reduce flow through the core rapidly, thereby providing an initial reduction in core power at the same time that the time delay is energized for the recirculation pumps, the ATWS circuit energizes the Alternate Rod Insertion (ARI) solenoid valves to depressurize the Control Rod Drive (CRD) [AA] scram air header, and Scram Discharge Volume (SDV) air header. The valve initiation circuit is sealed-in for 39 seconds, which is sufficient time for all control rods to insert fully.

When actuated by a high reactor pressure signal (1240 psig), the ATWS system operates to trip the reactor recirculation pumps immediately and to energize the ARI valves. The nine second time delay is not required on a high pressure actuation of the ATWS system. Increasing pressure in the vessel causes a void reduction in the core; this in turn causes reactor power to increase. The increasing power causes more steam to be produced, which increases pressure still further, thereby causing a further power increase. Any time delay would allow this cycle to develop further and increase the danger of core damage.

The ATWS system is designed as a redundant, independent and diverse reactor shutdown system which provides a backup function for the RPS. The ATWS system is divided into two divisions, each division being capable of performing the system's function. Each division of the ATWS system is physically and electrically separated from each other. This ensures that a failure, or partial failure, of one ATWS division will not affect the operation of the other. The system is designed so that a single component failure will not inadvertently initiate the system or prevent the ATWS system from accomplishing its function.

The safety significance is minimal. RPS and high pressure ATWS initiation was operable during the period in which ATWS Reactor low low water level initiation was inoperable. Although the ATWS system would not have initiated on a low-low reactor water level of -59 inches after a 9 second time delay, it would have initiated at 32.2 seconds. Additionally, a low low reactor water level would have tripped both reactor recirculation pumps [AD] motor breakers immediately. In approximately 8 seconds after reactor water level reached -59 inches the LPCI loop select logic would have tripped both reactor recirculation pump motor breakers. However, for reactor low water level conditions a reactor scram signal would have been initiated at +8 inches reactor water level as opposed to -59 inches automatic actuation of the ATWS system. In addition, Dresden Emergency Operation Procedure (DEOP) 100, "Reactor Control", directs the operators to manually scram the reactor if the reactor fails to scram from a valid scram signal. If the manual scram fails and the reactor power is greater than 6 percent, the operator would exit DEOP 100 and enter DEOP 400-5, "Failure to Scram".

The following sections are taken per DEOP 400-5 for operator action:

1. Place the ADS (automatic depressurization system) inhibit switch in the inhibit position. This prevents blowing down reactor water to the torus thereby preventing the lowering of reactor water level and increasing feedwater flow and thereby increasing reactor power.

2. Pull to lock both core spray [BG] pumps.

   a. The following steps are performed by the operator in parallel:

      1. monitor and control reactor water level

      2. monitor and control reactor pressure vessel pressure

      3. monitor and control reactor power

         a. place the reactor mode switch to shutdown,will initiate a reactor scram signal.

         b. If no scram has occurred and alternate rod insertion (ARI) has not initiated as detected by alarm (ARI initiates on control panel 902-5). Manual initiate ARI.

         c. Runback the reactor recirculation pumps to minimum speed if the unit is on line preventing a reactor water level

transient which could trip the turbine and then the recirculation pumps.

d. If the turbine is offline, trip the recirculation pumps immediately.

In conclusion, since the manual ARI circuit was operable when DEOP 400-5, step 2.a.3.b is performed, the ATWS system would generate a reactor recirculation pump trip and then energize the ARI valves to insert all operable control rods to shutdown the reactor.

E. CORRECTIVE ACTIONS:

Corrective action included replacing all the ATWS relays under Work Request D21641. The ATWS Trip time delay relays will continue to be checked every quarter and calibrated every refuel outage. Also, to ensure relays do not exceed their life expectancy, the Instrument Maintenance Department will replace the relays every third refuel outage per existing General Surveillance items.

Dresden Administrative Procedure (DAP) 02-15, "Tracking Station Commitments", has been revised to provide specific guidance for changing scope, schedule and due dates for internal action items developed from station root cause reports (Type 200). This guidance will provide personnel accountability for unjustifiable extensions in implementing corrective actions and commitments (NTS # 249-180-94-00801).

Dresden Administrative Procedure DAP 11-02, Surveillance and Periodic Task Scheduling, revision 23, form 11-2A, Request For Surveillance File Change, requires engineering concurrence for all GSRV/PM (Preventative Maintenance) items due to extensions, deferments or changes in frequency of PMs. This procedure ensures that GSRV/PM items are replaced in a timely manner. If a delay in replacement is requested, system engineer and department head approval must be granted by use of form 11-2A. This should address any previous management deficiency for replacement of GSRV/PM items.

F. PREVIOUS OCCURRENCES:

None.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Agastat	Relay	FTR14B3CC750	164C5257P013

A national nuclear plant reliability data system (NPRDS) data search for failures of Agastat FTR series relays on various systems revealed two other events. The first failure was attributed to relay application was not designed by the manufacturer to operate within a plus or minus 2 second tolerance, and the other event was attributed to end of life of relay due to normal service conditions. The above component failure has been recorded into the NPRDS database.