

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-001-00: on 970118, missed surveillance on CR position verification occurred due to inoperable rod deviation monitor. Faulty circuit common connection was corrected & RDM OPERABILITY was restored. W/970326 ltr.

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 97-001-00
Missed Surveillance on Control Rod Position Verification
Due to Inoperable Rod Deviation Monitor

The attached Licensee Event Report 250/97-001-00 is being provided in accordance with 10 CFR 50.73(a)(2)(i)(B).

If there are any questions, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

CLM

attachment

cc: Luis A. Reyes, Regional Administrator, Region II, USNRC
Thomas P. Johnson, Senior Resident Inspector, Turkey
Point Plant, USNRC

IEDD/

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PDR ADDCK 05000250
S PDR



LICENSEE EVENT REPORT (LER)

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|---|--|--------------------|
| FACILITY NAME (1) <div style="text-align: center;">TURKEY POINT UNIT 3</div> | DOCKET NUMBER (2) <div style="text-align: center;">05000250</div> | PAGE (3) 1 OF 7 |
|---|--|--------------------|

TITLE (4) MISSED SURVEILLANCE ON CONTROL ROD POSITION VERIFICATION DUE TO INOPERABLE ROD DEVIATION MONITOR

| EVENT DATE (5) | | | LER NUMBER (6) | | | RPT DATE (7) | | | OTHER FACILITIES INV. (8) | | |
|----------------|-----|----|----------------|-------|----|--------------|-----|----|---------------------------|--|--------------|
| MON | DAY | YR | YR | SEQ # | R# | MON | DAY | YR | FACILITY NAMES | | DOCKET # (S) |
| 1 | 18 | 97 | 97 | 1 | 00 | 3 | 26 | 97 | | | |

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| OPERATING MODE (9) | 1 | 10 CFR 50.73(a)(2)(i)(B) |
| POWER LEVEL (10) | 100 | |

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|------------------------------------|------------------------------------|
| LICENSEE CONTACT FOR THIS LER (12) | |
| C.L. MOWREY, COMPLIANCE SPECIALIST | Telephone Number (305) 246-6204 |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | |
|--|--------|-----------|--------------|--------|-------|--------|-----------|--------------|--------|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | NPRDS? | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | NPRDS? |
| D | IU | MON | W120 | N | | | | | N |

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ABSTRACT (16)

On 1/18/97, the Assistant Nuclear Plant Supervisor recognized that the Rod Deviation Monitor (RDM) was inoperable. An inoperable RDM requires that rod alignment be verified every 4 hours instead of every 12 hours. The 4-hour frequency was invoked immediately, and observed until the RDM was repaired. The RDM should have been declared inoperable in August, 1996, when Instrument and Control personnel (I&C) determined that the RDM would not be able to hold calibration sufficiently to pass successive surveillance tests. Instead, I&C removed the suspect circuit card and cleaned its connectors before taking as found data, in essence preconditioning the RDM. Operations personnel responsible for the rod alignment verification were not aware of the preconditioning, so the 4-hour frequency was not imposed.

The cause of the inoperable RDM was a bad circuit common connection, now repaired. The cause of the missed surveillance was inadequate incorporation of management expectations into procedures. Since out of tolerance data for the RDM did not affect any protection system setpoints or acceptance criteria, reporting of the as found data to Operations was not required by procedure, and the I&C activity was not viewed as preconditioning. Maintenance personnel are being trained in preconditioning. Procedures will be revised to require appropriate notification for any important data found out of tolerance.

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I. DESCRIPTION OF THE EVENT

Technical Specification (T/S) Surveillance Requirements 4.1.3.1.1 and 4.1.3.2.1 both require that the agreement between the group step counter demand position [AA:ctr] and the analog rod position indication (RPI) [IU:zi] be verified every 12 hours, unless the Rod Deviation Monitor (RDM) [IU:mon] is inoperable; then the comparison must be made every 4 hours.

Procedure 3/4-PMI-028.2, "Axial Flux, Rod Deviation and Rod Position Indication Monthly Test," is executed monthly to satisfy the monthly operational test surveillance requirement of T/S 4.1.3.2.2 in accordance with Table 4.1-1. Although not a T/S required surveillance, the operability of the RDM is verified monthly in this same procedure. The purpose of the RDM is to provide annunciation if the analog rod positions differ by more than 12 steps (24 steps moving) for any two rods in the same Control Bank, or if the analog rod position differs from a fixed "rod at top" position for the Shutdown Banks.

Shutdown Bank A had an intermittent history of bad as found data for the rod off top alarm [IB:zi], dating as far back as December, 1995. In May, 1996, a Plant Work Order (PWO) was generated to troubleshoot the problem. The affected component was a trip card common to all eight rods in Shutdown bank A. The trip card develops a setpoint for each rod which is compared to the RPI voltage, and generates an alarm when any rod is lower than the rod off top setpoint. When the surveillance was performed all rods on the affected trip card were outside the procedure acceptance criteria by similar amounts. Troubleshooting involved the integral card edge connector and the socket on the motherboard. Both of these were cleaned using an appropriate contact cleaner. These actions were monitored for a few surveillance cycles, after which a degraded card was suspected. The card was suspected because the edge connector cleaning was not solving the problem long enough for consecutive surveillances to pass. A replacement card was ordered in August, 1996, with an expected delivery date of March 21, 1997.

While waiting for the replacement card in order to continue troubleshooting, Instrument & Control (I&C) specialists (non-licensed utility personnel) continued to perform the surveillance monthly. At the start of the surveillance, when the card was tested as found and did not meet acceptance criteria, the card would be removed using the troubleshooting package, cleaned as described above, and then reinstalled to resume the surveillance. In each case, the RDM was declared out of service at the start of the surveillance, and the 4-hour frequency for

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rod misalignment check was imposed. In some cases, starting in August, 1996, the card was tested using the troubleshooting package before any as found data was recorded for the surveillance.

On January 18, 1997, I&C personnel requested permission to perform the monthly surveillance. During the ensuing conversation, the Assistant Nuclear Plant Supervisor (licensed senior operator) recognized that the RDM was inoperable, and invoked the 4-hour surveillance frequency on rod alignment verification. He also generated a Condition Report questioning the apparent preconditioning of the trip card.

Additional troubleshooting was performed beginning on January 18, 1997. The setpoints are developed for each rod by individual voltage dividers, that come from a common reference power supply. The power supply output was steady during troubleshooting. The same power supply would affect Shutdown Bank B rods, for which no problems were identified. Circuit common (ground) connections were suspected. It was found that a circuit common was provided to the board through a lug and bolt connection on the motherboard. A similar connection is provided to other cards except that for the affected card, a flat washer used in the connection was improperly located between the lugs. This connection had a higher voltage drop across it, relative to the other similar connections to other cards. The connection was disassembled and cleaned, and reassembled with the washer moved to the correct location in the stack up of lugs, motherboard land, and nut. This stack up matches other similar connections in the drawer. After restoration, the voltage drop reduced to a value consistent with that observed for other similar lug and bolt connections. In addition, a more thorough cleaning technique was used for the card sockets on the motherboard. Operability of the Rod Deviation Monitor was restored, and the rod alignment verification frequency was relaxed to once per shift. The repair was monitored weekly for a month without any noticeable drift.

The reportability of the condition was first questioned on February 26, 1997, during the closeout of the Condition Report generated in January. The condition was determined reportable on February 28, 1997. The RDM should have been declared inoperable in August, 1996, when Instrument and Control (I&C) maintenance personnel determined that the RDM would not be able to maintain calibration sufficiently to pass successive monthly surveillance tests, and began preconditioning the suspect trip card. Because the RDM was not recognized as inoperable, the four hour frequency was not imposed, thereby resulting in a missed surveillance, and a condition prohibited by Technical Specifications. This event is reportable under the requirements of 10 CFR 50.73(a)(2)(i)(B).

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II. CAUSE OF THE EVENT

Immediate Cause:

I&C personnel failed to recognize "preconditioning" as it applied to the Rod Deviation Monitor. The as found data for Shutdown Bank A rod off top alarms became consistently outside the acceptance criteria. A work order was written to correct the problem, which focused on the trip card, and a replacement was not readily available. While waiting for the replacement card, personnel involved in performing the surveillance became familiar with the problem and accepted that the as found data would be outside acceptance criteria. In order to complete the surveillance the board was conditioned so as to pass the test, with the expectation that the card may again be outside its acceptance criteria at the next surveillance.

Root Cause:

The misconception that preconditioning, and the reporting of out-of-tolerance as found data to Operations, only applied to protection system surveillances and calibrations was inadvertently reinforced by less than adequate administrative procedures. For these more "critical" requirements, out of tolerance data is promptly brought to the attention of supervision, and the appropriate evaluation for past operability is performed. These actions are both department policy and procedurally required. A recent corrective action reviewed and updated all applicable procedures to identify "critical" as found data, and to direct evaluation of the as found data that is found out of tolerance. But the management expectations that any preconditioning is an unacceptable practice, and that Operations be notified immediately of any significant as found data found out of tolerance, were inadequately reflected in procedures. Since out of tolerance data for the rod off top alarm did not affect any protection system setpoints or acceptance criteria, evaluation of the as found data was not required by administrative procedure.

The root cause of the inoperable Rod Deviation Monitor was the improperly stacked circuit common connection described above, which has been repaired.

Contributing Causes:

Training of maintenance personnel on preconditioning was less than adequate. While training had been performed, it focussed on surveillances and/or acceptance criteria specifically required by T/S.

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The same PWO was kept open and used each month to troubleshoot the RDM. Had the work order been closed each month, another area of our work controls program would have captured and highlighted the fact that the RDM was undergoing repetitive maintenance; a Condition Report is required if the same component requires repair twice within 30 days. This would not have prevented the preconditioning, but would have caused it to be identified much earlier.

III. ANALYSIS OF THE EVENT

OPERABILITY of the control rod position indicators is required to determine rod positions and thereby ensure compliance with the rod alignment and insertion limits. OPERABLE condition for the analog rod position indicators is defined as being capable of indicating rod position to within the Allowed Rod Misalignment of Specification 3.1.3.1 of the group step counter demand position. For the Shutdown Banks and Control Banks A and B, the Position Indication requirement is defined as the group step counter indicated demand position between 0 and 30 steps, and between 200 and All Rods Out. This permits the operator to verify that the control rods in these banks are either fully withdrawn or fully inserted, the normal operating modes for these banks. Knowledge of these bank positions in these two areas satisfies accident analysis assumptions concerning their position.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified once per 12 hours, with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable Limiting Conditions for Operation are met.

NUREG 1431, "Standard Technical Specifications for Westinghouse Plants," provides the following basis for this Surveillance Requirement:

"Verification that individual rod positions are within alignment limits at a Frequency of 12 hours provides a history that allows the operator to detect a rod that is beginning to deviate from its expected position. If the rod position deviation monitor is inoperable, a Frequency of 4 hours accomplishes the same goal. The specified Frequency takes into account other rod position information that is continuously available to the operator in the control room, so that during actual rod motion, deviations can immediately be detected."

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Although it is reasonable to require more frequent visual verification of rod alignment when the automatic alarm is not available, there is no identifiable basis for the specific times of 12 and 4 hours. These frequencies first appear in NUREG 0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors," with a basis identical to that in our present T/S Bases, i.e., 12 hours with an OPERABLE Rod Deviation Monitor, "more frequent" with an inoperable Rod Deviation Monitor.

Since at least 1975, Turkey Point operators have recorded rod alignment data "more frequently" (every 8 hours), thereby ensuring that the 12 hour SR frequency is satisfied. While rod misalignments and rod drops have occurred, there has been no recorded history of control rods "beginning to deviate," as discussed in NUREG 1431 Bases. Therefore failure to verify rod deviation every 4 hours, from August, 1996 to January 1997, did not compromise the health or safety of plant personnel or the general public.

IV. CORRECTIVE ACTIONS

- 1) I&C supervisors have been counseled on the event, with the emphasis that any equipment operating in this manner needs to be brought to the attention of the shift operations management.
- 2) Mechanical and Electrical Maintenance supervisors and personnel are being trained to recognize preconditioning, and that management expectations are clear that preconditioning is an unacceptable practice.
- 3) Procedures will be changed to require notification of Operations shift management of data found out of tolerance on any instrument that provides Control room indication, annunciation, data logging, or other information within the control room, and to require appropriate evaluation of such data.
- 4) Open PWOs will be assessed monthly to identify PWOs that are being left open for repetitive work. This assessment will be performed until Corrective Actions #2 and #3 are complete.
- 5) I&C has reviewed present practices, and verified that no other preconditioning is taking place. Other disciplines will perform the same review and verification once training is complete.
- 6) The faulty circuit common connection was corrected, and the RDM OPERABILITY was restored.

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- 7) All other Unit 3 RDM trip cards have been checked to ensure that their circuit common connections are properly made up. Although similar problems have not been experienced on Unit 4, its RDM trip cards will be checked as well.

V. ADDITIONAL INFORMATION

- A. Similar events: LER 250/96-004-03 reported missed surveillance due to inadequate procedures, which resulted in a circuit not being tested adequately. That condition was discovered during circuit reviews performed in response to Generic Letter 96-01. There was no issue of preconditioning. LER 250/96-008 reported a missed surveillance due to a failure to recognize an act of preconditioning. That event, however, resulted from having incorporated a vendor's recommendation into surveillance procedures, without recognizing that the recommendation resulted in preconditioning. LER 250/96-12 also reported a missed surveillance, not related to preconditioning. In that event, the surveillances required by Technical Specifications (T/S) were performed, but not in the manner specified by T/S (only two temperature detectors were averaged, when T/S required three). Operations personnel were aware that one detector was out of service, but did not correlate its significance to the T/S requirement. In the event reported herein, operators were not aware that the Rod Deviation Monitor was inoperable.
- B. EIIS Codes are shown in the format [EIIS SYSTEM: IEEE component function identifier, second component identifier (if appropriate)].

