

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9006260064 DOC. DATE: 90/06/15 NOTARIZED: NO DOCKET #  
 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250  
 AUTH. NAME AUTHOR AFFILIATION  
 POWELL, D.R. Florida Power & Light Co.  
 HARRIS, K.N. Florida Power & Light Co.  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-001-01: on 900112, liquid effluent process radiation  
 monitor R-18 inoperable during liquid release. W/9 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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| EXTERNAL: | EG&G STUART, V.A          | 4 4                 | L ST LOBBY WARD           | 1 1                 |
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L-90-218  
10 CFR 50.73

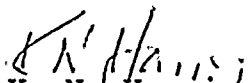
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Gentlemen:

Re: Turkey Point Units 3 and 4  
Dockets No. 50-250 and 50-251  
Reportable Event: 90-001 Revision 1  
Date of Event: January 12, 1990  
Liquid Effluent Process Radiation Monitor R-18 Inoperable  
During a Liquid Release Due to a Control Circuit Malfunction

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73 to provide supplemental information on the subject event.

Very truly yours,

  
K. N. Harris  
Vice President  
Turkey Point Plant

KNH/DRP/DWH/rat

attachment

cc: Stewart E. Ebnetter, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, Turkey Point Plant

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FDR ADOCK 05000250  
S PDC



## LICENSEE EVENT REPORT (LER)

|   |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
|---|--------|--|-------------------|----------------------|-----------------|-------------------|-----------------|-----------|---------------------|--------------------------------------|--|-------------------------------------|------------------|--|----------------------|------|
| FACILITY NAME (1)<br>Turkey Point Unit 3  |        |  |                   |                      |                 |                   |                 |           |                     | DOCKET NUMBER (2)<br>0 5 0 0 0 2 5 0 |  |                                     |                  |  | PAGE (3)<br>1 OF 0 4 |      |
| TITLE (4)<br>Liquid Effluent Process Radiation Monitor R-18 Inoperable During A Liquid Release Due To A Control Circuit Malfunction |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
| 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 1   | 1 2    | 9 0  | 9 0               | 0 0 1                | 0 1             | 0 6               | 1 5             | 9 0       | Turkey Point Unit 4 |                                      |  |                                     | 0 5 0 0 0 2 5 1  |  |                      |      |
|   |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  | 0 5 0 0 0  |                      |      |
| OPERATING MODE (9)  |        | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
| 1   |        | 20.402(b)  |                   |                      |                 | 20.406(e)         |                 |           |                     | 50.73(a)(2)(iv)                      |  |                                     |                  | 73.71(b)   |                      |      |
| POWER LEVEL (10)  |        | 20.406(e)(1)(i)  |                   |                      |                 | 50.36(e)(1)       |                 |           |                     | X 50.73(a)(2)(v)                     |  |                                     |                  | 73.71(e)   |                      |      |
| 1 0 0   |        | 20.406(e)(1)(ii)   |                   |                      |                 | 50.36(e)(2)       |                 |           |                     | 50.73(a)(2)(vi)                      |  |                                     |                  | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |                      |      |
|   |        | 20.406(e)(1)(iii)  |                   |                      |                 | X 50.73(a)(2)(ii) |                 |           |                     | 50.73(a)(2)(vii)(A)                  |  |                                     |                  |  |                      |      |
|   |        | 20.406(e)(1)(iv)   |                   |                      |                 | 50.73(a)(2)(iii)  |                 |           |                     | 50.73(a)(2)(vii)(B)                  |  |                                     |                  |  |                      |      |
|   |        | 20.406(e)(1)(v)  |                   |                      |                 | 50.73(a)(2)(iii)  |                 |           |                     | 50.73(a)(2)(ix)                      |  |                                     |                  |  |                      |      |
| LICENSEE CONTACT FOR THIS LER (12)  |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
| NAME  |        |  |                   |                      |                 |                   |                 |           |                     | TELEPHONE NUMBER                     |  |                                     |                  |  |                      |      |
| David R. Powell, Licensing Superintendent   |        |  |                   |                      |                 |                   |                 |           |                     | AREA CODE                            |  | 3 0 5 2 4 6 1 - 6 5 5 9             |                  |  |                      |      |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)  |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
| CAUSE   | SYSTEM | COMPONENT  | MANUFAC-<br>TURER | REPORTABLE<br>TO NRC |                 | CAUSE             | SYSTEM          | COMPONENT | MANUFAC-<br>TURER   | REPORTABLE<br>TO NRC                 |  |                                     |                  |  |                      |      |
| X   | I L    | M O N  | X 9 9 9           | N                    |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
|   |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  |                                     |                  |  |                      |      |
| SUPPLEMENTAL REPORT EXPECTED (14)   |        |  |                   |                      |                 |                   |                 |           |                     |                                      |  | EXPECTED<br>SUBMISSION<br>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)

At 1043, on January 12, 1990, with Unit 3 in Mode 1 at 100 percent power and Unit 4 in Mode 4 (Hot Shutdown), a Reactor Control Operator (RCO) noted at the end of a release that the liquid effluent Process Radiation Monitor (PRM R-18) channel had failed. The ratemeter did not have display indication, the associated chart recorder was off scale high, no alarm conditions existed, and automatic closure of control valve RCV-018 had not occurred. A similar event occurred on December 22, 1989. The PRM R-18 vendor believes an intermittent failure of the + 5 volt low voltage power supply within the radiation monitor cabinet caused these events. Failure of the + 5 volt power supply would affect the ability to cause automatic closure of the liquid effluent release path control valve upon reaching the predetermined alarm setpoint. Cognitive error by licensed utility personnel contributed to these events. Failure to frequently monitor the PRM R-18 channel during a release is not in accordance with Operating Procedure OP 5163.2; however, FPL believes that the PRM R-18 channel alarm setpoint was not reached during the releases. A review of Technical Specification Table 3.9-2, Item 1.a concluded that both events are reportable. The low voltage power supply, processor card, timer card, and limit switch card were replaced.

|                     |                   |                |                   |                 |          |     |            |
|---------------------|-------------------|----------------|-------------------|-----------------|----------|-----|------------|
| FACILITY NAME (1)   | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |     |            |
|                     |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |     |            |
|                     |                   |                |                   |                 |          |     |            |
| Turkey Point Unit 3 | 0 5 0 0 0 2 5 0   | 9 0            | —                 | 0 0 1           | —        | 0 1 | 0 2 OF 0 4 |

TEXT: If more space is required, use additional NRC Form 366A-11 (17)

DESCRIPTION OF THE EVENT

At 1043, on January 12, 1990, with Unit 3 in Mode 1 (Power Operation) at 100 percent power and Unit 4 in Mode 4 (Hot Shutdown: average reactor coolant temperature between 200 degrees F and 350 degrees F), a release of the B Monitor Tank to the environment was completed. Upon termination, a Reactor Control Operator (RCO) noticed the following: the liquid effluent Process Radiation Monitor (PRM R-18) (EIIIS:IL, Component:MON) channel did not have ratemeter display indication, the associated chart recorder was off scale high, no alarm conditions existed and automatic closure of liquid effluent release path control valve RCV-018 had not occurred. A review of the PRM R-18 channel ratemeter signal output to the chart recorder indicated that display functions failed at approximately 0957. The PRM R-18 channel was demonstrated to be operable prior to initiation of the release at 0905, as required by Operating Procedure OP 5163.2, "Waste Disposal System - Controlled Liquid Release to the Circulating Water System."

At 1433, on January 12, 1990, the NRC was notified of the above event pursuant to 10CFR50.72(b)(2)(iii)(C).

The PRM R-18 channel continuously monitors liquid effluent releases from Turkey Point Units 3 and 4. Automatic valve closure is initiated by this monitoring channel to stop the release after exceeding a predetermined alarm setpoint or upon loss of power.

Technical Specification (TS) Table 3.9-2, Item 1.a, requires the liquid radwaste effluent line gross radioactivity monitor providing automatic termination of release (PRM R-18) to be operable during effluent releases. With PRM R-18 inoperable, liquid effluent releases may continue provided that prior to initiating a release:

1. At least two independent samples are analyzed and;
2. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valving (one performs, one verifies);

Otherwise, suspend release of radioactive effluents via this pathway.

An earlier failure of the PRM R-18 channel was noticed at 1350, on December 22, 1989, during release of the A Waste Monitor Tank. The symptoms noticed at the end of this earlier release were identical to those noticed during the January 12, 1990 event. The PRM R-18 channel had been demonstrated to be operable prior to initiation of the release at 1304, as required by Operating Procedure OP 5163.2. A review of the PRM R-18 channel ratemeter signal output to the chart recorder indicates that the display functions failed at approximately 1305. Verification that the release had been terminated was interpreted as meeting the conditions of TS 3.9-2, Item 1.a. The ribbon cable connector to the PRM R-18 channel ratemeter was cleaned and tightened. No further investigation into the cause of the noticed symptoms was performed.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

|                     |                   |                |                   |                 |          |      |     |
|---------------------|-------------------|----------------|-------------------|-----------------|----------|------|-----|
| FACILITY NAME (1)   | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |      |     |
|                     |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |      |     |
| Turkey Point Unit 3 | 0 5 0 0 0 2 5 0   | 9 0            | 0 0 1             | 0               | 1 0      | 3 of | 0 4 |

TEXT: If more space is required, use additional NRC Form 366A's (17)

CAUSE OF THE EVENT

The only fault identified during troubleshooting the PRM R-18 channel failure was a slight loss of regulation on the - 15 volt low voltage power supply. A total loss of the - 15 volt low voltage power supply would produce alarms on the monitor; therefore, this condition was not responsible for the PRM R-18 channel failure. The low voltage power supply was removed and discarded. A new low voltage power supply was installed.

Additional troubleshooting was performed on the Central Processing Unit (CPU) and the watchdog timer, which re-programs the CPU in the event the CPU locks-up. The PRM R-18 channel failure could not be duplicated. The three removable cards that comprise the radiation monitor channel logic and control circuitry were replaced. The removable cards (processor, timer/alarm and limit switch) were sent to the vendor (Nuclear Research Corp.) for further analysis.

The vendor was unable to produce a failure in the three removable cards that comprise the radiation monitor channel logic and control circuitry. However, the vendor did duplicate the symptoms of the failure experienced in the PRM R-18 channel by removing the + 5 volt low voltage power supply to the cards. The vendor believes that an intermittent failure of the + 5 volt low voltage power supply was the cause for the PRM R-18 channel failure. Because this low voltage power supply was discarded after being replaced during earlier troubleshooting, further analysis of the PRM R-18 channel failure to the component level can not be performed.

Cognitive errors by licensed utility personnel contributed to these events. Operating Procedure OP 5163.2, Step 4.2, Precautions and Limits, requires the PRM R-18 channel to be frequently observed during a release to be assured that countrate is not approaching the setpoint stated on the liquid release permit. Section 8.0, Instructions, contains requirements for the Auxiliary Building operator to request the RCO to periodically monitor the PRM R-18 channel and notify him if the indication approaches the alarm setpoint. An unmonitored release condition lasted for approximately 46 minutes on January 12, 1990 and for approximately 45 minutes on December 22, 1989. In both events, the failed PRM R-18 channel condition was not discovered until the end of the release.

ANALYSIS OF THE EVENT

A sample of the remaining tank contents determined that radioactivity concentrations were lower than at initiation of the release for both events. Because of this, FPL believes the PRM R-18 channel alarm setpoints were not reached. Additionally, the radioactivity concentrations released were within the limiting combined Maximum Permissible Concentrations (MPC) allowed by 10CFR20, Appendix B, at the release point when averaged over a time period of one hour.

|                     |                               |                |                   |                 |          |       |       |    |   |   |
|---------------------|-------------------------------|----------------|-------------------|-----------------|----------|-------|-------|----|---|---|
| FACILITY NAME (1)   | DOCKET NUMBER (2)             | LER NUMBER (6) |                   |                 | PAGE (3) |       |       |    |   |   |
|                     |                               | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |       |       |    |   |   |
|                     |                               |                |                   |                 |          |       |       |    |   |   |
| Turkey Point Unit 3 | 0   5   0   0   0   2   5   0 | 9   0          | —                 | 0   0   1       | —        | 0   1 | 0   4 | OF | 0 | 4 |

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

CORRECTIVE ACTIONS

1. An On The Spot Change (OTSC) has been generated against Operating Procedure OP 5163.2, "Waste Disposal System - Controlled Liquid Release to the Circulating Water System," which requires the RCO to record PRM R-18 channel readings on the Liquid Release Permit every 15 minutes during a liquid effluent release.
2. An On The Spot Change (OTSC) has been generated against Nuclear Chemistry procedure NC-44, "Preparation of a Liquid Release Permit," which revises the Liquid Release Permit form to require the recording of PRM R-18 channel readings at 15 minute intervals.
3. The low voltage power supply, processor card, timer card and limit switch card were replaced. The PRM R-18 channel tested satisfactorily and was returned to service.
4. The replaced cards were returned to the vendor (Nuclear Research Corp.) for evaluation. The vendor was unable to produce a failure in the replaced cards. However, the vendor did duplicate the symptoms of the failure experienced in the PRM R-18 channel by removing the + 5 volt low voltage power supply to the cards.

ADDITIONAL INFORMATION

The PRM R-18 microprocessor based ratemeter/controller is a Model DRM-200 RemRad monitoring system manufactured by Nuclear Research Corporation (NRC) Industries.

No similar Licensee Event Reports have been submitted for Turkey Point Unit 3 or 4.

