



MAY 14 2004

L-2004-110
10 CFR § 50.73

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

Re: Turkey Point Unit 4
Docket No. 50-251
Reportable Event: 2004-001-00
Date of Event: March 18, 2004
Inadequate Calibration Renders Radiation Process Effluent Monitor Inoperable

The attached Licensee Event Report 251/2004-001-00 is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B) to provide notification of the subject event.

If there are any questions, please call Mr. Walter Parker at (305) 246-6632.

Very truly yours,

A handwritten signature in black ink that reads "Terry O. Jones".

Terry O. Jones
Vice President
Turkey Point Nuclear Plant

SM
Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

Handwritten initials "JERZ" in black ink, located in the bottom right corner of the page.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Turkey Point Unit 4	2. DOCKET NUMBER 05000251	3. PAGE Page 1 of 6
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4. TITLE
Inadequate Calibration Renders Radiation Process Effluent Monitor Inoperable

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	18	2004	2004	- 001	- 00	05	14	2004	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 6	10. POWER LEVEL 0	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more)							
		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)				
		<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)				
		<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 73.71(a)(4)				
		<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(5)				
		<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> OTHER				
		<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A				
		<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)					
		<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)					
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							

12. LICENSEE CONTACT FOR THIS LER	
NAME Stavroula Mihalakea, Licensing Engineer	TELEPHONE NUMBER (include Area Code) (305) 246 - 6454

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
-A	-IL	-DET	-	-N	-	-	-	-	-

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> X	<input type="checkbox"/> NO		MONTH	DAY	YEAR

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

On March 9, 2004, an evaluation to address an NRC unresolved issue concluded that the method used to calibrate the plant vent gaseous effluent monitor [IL], R-14 was not in accordance with the Technical Specification (TS) and Offsite Dose Calculation Manual (ODCM) calibration requirements. Since the calibration is a condition of operability, R-14, was declared inoperable. The inoperability dates back to 1984 when the calibration requirements were revised via a License Amendment. Compensatory measures required by Technical Specifications and the ODCM were implemented. TS Table 3.3-4, item 2b, requires that either R-14 or the Plant Vent System Level Particulate, Iodine, and Noble Gas (SPING) Monitor [DET] be operable. TS Table 3.3-4 Action 28 requires that if neither R-14 or plant vent SPING are operable, then suspend operations in the Unit 4 Spent Fuel Pool (SFP) [ND] area involving spent fuel manipulations.

On March 18, 2004, it was discovered that two irradiated fuel assemblies were moved on 10/21/03 from the Turkey Point Unit 4 SFP to the Reactor with the Plant Vent SPING out of service. Since R-14 was inoperable due to incorrect calibration and the Plant Vent SPING was inoperable due to obtaining a Tritium grab sample with spent fuel manipulations in progress, Action 28 of TS Table 3.3-4 was not met. Accordingly, this event is reportable per 10CFR50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications." The cause of the event is not properly translating the TS calibration requirements into plant procedures. Corrective actions include instrument calibration, revision of calibration procedures, and enhancing TS License Amendment implementation process. The health and safety of the public was not affected by this event.

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Turkey Point Unit 4	05000251	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	Page 2 of 6
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Event Description:

On February 26, 2004, during the biennial NRC Radiation Protection Inspection, a question was raised relating to the method of calibration used for the Process Radiation Monitors (PRMS) for liquid and gaseous effluents. The ODCM calibration requirement for these monitors requires that an initial calibration be performed to a reference standard that is certified by the National Institute of Standards and Technology over its intended range and that all subsequent calibration sources be related to the initial calibration. The current calibration method for these detectors consists of adjusting the detectors operating voltages at least once every 18 months, such that they operate in the plateau region of their counting curve using the installed (non traceable) instrument check source.

On March 9, 2004, FPL determined that the calibration method used for PRMS channels R-14 (Plant Vent), R-15 (Steam Jet Air Ejector), R-18(Liquid Effluent Release) and R-19 (Steam Generator Blowdown) was not in accordance with the ODCM requirements as stated in Tables 2.1-2 "Radioactive Liquid Effluent Monitoring Instrumentation Surveillance Requirements" and 3.1-2 "Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements." Hence R-14, R-15, R-18 and R-19 were declared inoperable and the compensatory measures required by the ODCM were implemented. Channels R-15, R-18, and R-19 are not specifically addressed in the Technical Specifications (TS). The non-compliance with the ODCM calibration requirements will be reported in the next Annual Radioactive Effluent Release Report as required by the ODCM.

Technical Specification Table 3.3-4, item 2b, "Spent Fuel Storage Pool Areas" requires that either R-14 or the Plant Vent SPING be operable anytime irradiated fuel is in the Turkey Point Unit 4 Spent Fuel Pool (SFP). If neither monitor is operable then Technical Specifications require that fuel movement be suspended until a monitor is restored to service. Since the calibration of R-14 was not performed as required, the process radiation monitor was declared inoperable. The inoperability dates back to 1984 when the calibration requirements were revised via License Amendment 103/97.

A search of the fuel movements on Unit 4 in the past 3 years was compared with the Operator logs for Plant Vent SPING out of service time. On March 18, 2004, while Unit 4 was operating at 100% power, Mode 1, at approximately, 1600 hours, it was discovered that two irradiated fuel assemblies were moved from the Turkey Point Unit 4 Spent Fuel Pool to the Reactor with the Plant Vent SPING monitor out of service on 10/21/03 from 1447 to 1510 hours. Therefore, TS Table 3.3-4 Action 28 which states, if neither R-14 or plant vent SPING monitor are operable, then immediately suspend operations in the spent fuel pool area involving spent fuel manipulations, was not met. This event is reportable per 10CFR50.73(a)(2)(i)(B) "Any operation or condition which was prohibited by the plant's Technical Specifications."

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Background:

Process Radiation Monitoring System (PRMS) [LI], Channel R-14 monitors gaseous radioactivity released to the environment via Plant Vent Stack during normal plant operations. It provides an indication and an alarm on the Waste Disposal System [WE] Control Board [MCBD] in the Control Room and automatic closure of the gas decay tank release valve [V] during waste gas release.

Technical Specification 3/4.3.3.1 allows the Plant Vent Process Radiation Monitor (PRMS) Channel R-14 (as an alternate for the Plant Vent SPING) to be used for operability of the Turkey Point Unit 4 spent fuel pit exhaust during plant operation. The Turkey Point Unit 4 Spent Fuel Pool (SFP) ventilation system exhausts to the Plant Vent [VL] and it is monitored for activity releases resulting from fuel handling accidents or spills in the spent fuel pool area by PRMS Channel R-14 and the Plant Vent SPING, RaD-6304. However, Turkey Point Unit 3 SFP ventilation system exhausts directly to the atmosphere and has a different effluent path through the Unit 3 Spent Fuel Pool Stack monitored by the Unit 3 SFP SPING, RaD-6418. As such this event applies only to Turkey Point Unit 4.

The R-14 effluent monitor is also used as a protection feature to terminate a Gas Decay Tank [TK](GDT) release if the elements of the release (i.e., activity concentration and dilution flow) are different than assumed. If R-14 is not in service, the ODCM requires that at least two independent GDT samples be analyzed and at least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup.

In 1978 the NRC issued a letter requiring Licensees to conform to 10CFR50 Appendix I and initiate technical specification changes using the example technical specifications outlined in NUREG 0472 "Draft Radiological Effluent Technical Specifications for PWRs". The NUREG required initial calibration to certified standards over its intended range of energies. It also required subsequent calibrations to be performed using sources that are related to the initial calibration. This represented a significant change in the calibration method for Radiation Effluent Monitors. Turkey Point submitted the proposed Technical Specification changes in 1982, which invoked the NUREG calibration requirement applicable to R-14, R-15, R-18 and R-19.

NRC approved the Technical Specification changes in 1984 under Turkey Point License Amendment 103/97. A review of the plant calibration procedures for the gaseous effluent radiation monitors did not reflect any change in the calibration method as a result of the Technical Specification change. The method was a plateau check to ensure the detector was operating in the correct region, and a calibration of the electronics. The method did not meet the new TS calibration requirements.

The Radiological Effluent Technical Specification and related operability requirements were eventually relocated to ODCM in 1996.

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Event Analysis and Safety Significance:

On October 21, 2003, Turkey Point Unit 4 was in Mode 6, Refueling Operations. The Plant Vent SPING Monitor was out of service from 1447 to 1510 hours for Chemistry to grab a tritium sample to meet ODCM requirements Control 3.2, Table 3.2-1, item 4. FPL believed that PRMS Channel R-14 was operable and the movement of irradiated fuel was performed in accordance with Technical Specification requirements. During that period there were no unplanned or planned releases or any fuel handling accidents while both the Plant Vent SPING and PRMS R-14 were inoperable.

Although not calibrated to current ODCM requirements and therefore considered inoperable, R-14 remains functional to the extent that it can provide monitoring indication, alarm and automatic functions. This is due to response checks that have been performed by comparing the actual response of the monitor during a particular release to the historical performance of the monitor during past Gas Decay Tank (GDT) releases. Each GDT is sampled and analyzed using instrumentation that has been calibrated to NIST traceable standards.

The PRMS Channel R-14 affected by the calibration deficiencies is part of the gaseous effluent monitoring of plant venting and Unit 4 Spent Fuel Pool exhaust system. The function of the detector is to provide indication to the operator, whenever limits on the release of radioactive material to the environs are reached or exceeded. The movement of fuel in the Unit 4 SFP, without operable radiation detectors monitoring the plant vent effluent stream, was not a safety significant event. The plant vent radiation monitors do not control releases from the Unit 4 SFP ventilation system. Releases to the environment during a postulated fuel handling accident would have been the same regardless of whether R-14 or the plant vent SPING was operable. The only impact associated with inoperable effluent monitors during a potential radiological release from the SFP would be confirmation of the magnitude of the release.

Operable effluent monitors allow for the immediate confirmation of the magnitude of the radiological release from the SFP. However, information on the magnitude of a radiological release during a fuel handling accident can be achieved by alternate means. For example, personnel involved with the fuel handling operation are in constant communication with the plant control room. These individuals would immediately notify the control room of a fuel handling accident. This notification would immediately trigger entry into plant procedures 3/4-ONOP-033.3, *Accidents Involving New or Spent Fuel*, and 3/4-ONOP-067, *Radioactive Effluent Release*. These procedures would place the control room ventilation system in the recirculation mode to protect control room personnel, and direct health physics personnel to perform radiological surveys to assess plant conditions. Procedural controls associated with the movement of spent fuel assemblies would also allow rapid identification of the affected fuel assembly in a fuel handling accident. Once the affected assembly has been identified, an isotopic assessment of the potential release could be ascertained from the assembly decay history. Emergency Plan Implementing Procedure 0-EPIP-20126, *Offsite Dose Calculations*, currently provides default noble gas and iodine release rates for spent fuel handling accidents, based on the actual or estimated number of damaged assemblies. Based on the above, the movement of fuel in the Unit 4 SFP without operable radiation detectors monitoring the plant vent effluent stream would not have prevented timely identification of a fuel handling event, protection of plant personnel, assessment of the magnitude of a release, or calculation of offsite doses. Therefore, the health and safety of the public was not affected by this event.

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Root Cause:

The event described herein is the movement of irradiated fuel in the Unit 4 SFP without operable plant vent radiation effluent monitors. The cause of this event is a human error in not properly translating the calibration requirements from a TS License Amendment into plant procedures. The failure to recognize the need for a calibration method change was due to the Technical Specification calibration requirements invoked by Amendment 103/97 not being understood by plant personnel. The NUREG 0472, which was used to develop the amendment, required initial calibration to certified standards over its intended range of energies. It also required subsequent calibrations to be performed using sources that are related to the initial calibration. Turkey Point submitted the proposed technical specification changes 103/97 in 1982, which invoked the NUREG calibration requirement. The calibration requirements drawn from the NUREG were not fully understood.

The following are contributing factors to the event: 1) Failure to include definitions of Primary Calibration, Initial Calibration and Traceable Sources in License Amendment 103/97, 2) Inadequate use of Industry Standards which further explained the effluent monitor calibration requirements 3) Lack of rigor in the process of implementing license amendments.

Generic Implications:

A review of the regulatory requested License Amendments, including License Amendment 103/97, between the time frame from 1980 to 1990 will be performed to determine if other requirements have not been implemented correctly.

Similar events:

LER 86-027 was submitted to the NRC, which indicated that 5 of the surveillance requirements contained within Technical Specification 103/97 were missed since they were not carried forward into procedures. The 5 items were Data Acquisition Module calibrations, Radioactive Waste Liquid effluent Line flow rate monitor calibration and channel functional test, Steam Generator Blowdown Effluent Monitor functional check and Steam Jet Air Ejector effluent flow rate measurement device calibration. The event described within LER 86-027 was related to the failure to implement a Technical Specification calibration requirement. The event discussed in this report addresses the incorrect implementation of a calibration requirement.

LER 87-019 was submitted to the NRC, which stated that Turkey Point, failed to meet a surveillance requirement for Refuel Canal Boron Concentration due to inadequate implementation of Technical Specification Amendment 114/108. Contributing factors were Chemistry personnel misinterpreted the requirement during departmental review of the amendment.

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Corrective Actions:

1. Liquid and Effluent Radiation Monitors R-14, R-15, R18 and R-19 were declared inoperable and the compensatory measures required by the ODCM are being implemented until monitors are calibrated.
2. Chemistry, along with a qualified vendor will perform an initial calibration of Liquid and Gaseous Effluent Radiation Monitors R-14, R-15, R18 and R-19 in accordance with ODCM requirements and will procure transfer sources and geometry traceable to this initial calibration.
3. Instrumentation and Control Maintenance will revise applicable calibration procedures to implement the new calibration method required to meet ODCM.
4. Engineering will revise the ODCM to include definitions of Primary Calibration, Initial Calibration and Traceable Sources as they relate to the calibration of the effluent monitors.
5. Licensing will revise administrative procedure to add the requirement for a change management plan for the implementation of a license amendment and to require a kick-off meeting with plant personnel to ensure understanding of the proposed changes.

Additional Information:

EIIS Codes are shown in the format [EIIS SYSTEM: IEEE system identifier, component function identifier, second component function identifier (if appropriate)].