



AUG 01 2002
L-2002-126
10 CFR § 50.73

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

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2002-001-00
Date of Event: June 5, 2002
Vital Battery Cell Voltage
Below Technical Specification Allowable

The attached Licensee Event Report 250/2002-001-00 is being submitted pursuant to the requirements of 10 CFR § 50.73(a)(2)(i)(B).

If there are any questions, please call Olga Hanek at (305) 246-6607.

Very truly yours,

A handwritten signature in black ink that reads 'John P. McElwain'.

John P. McElwain
Vice President
Turkey Point Nuclear Plant

OH

Attachment

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

IE 22

NRC FORM 366 (7-2001)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004					
LICENSEE EVENT REPORT (LER) <small>(See reverse for required number of digits/characters for each block)</small>					Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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 <p style="text-align:center;">Turkey Point Unit 3</p>				2. DOCKET NUMBER <p style="text-align:center;">05000 0250</p>		3. PAGE <p style="text-align:center;">1 OF 4</p>				
4. TITLE <p style="text-align:center;">Vital Battery Cell Voltage Below Technical Specification Allowable</p>										
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	05	2002	2002	- 01	- 00	08	01	02	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE		1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)						
10. POWER LEVEL		100		20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)			
				20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)			
				20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)			
				20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)			
				20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A			
				20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)				
				20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)				
				20.2203(a)(2)(v)	x 50.73(a)(2)(i)(B)	50.73(a)(2)(vii)				
				20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)				
				20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)				
12. LICENSEE CONTACT FOR THIS LER										
NAME <p style="text-align:center;">Olga Hanek – Licensing Engineer</p>						TELEPHONE NUMBER (Include Area Code) <p style="text-align:center;">(305) 246-6607</p>				
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	
X	EJ	BTRY	G185	N						
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
YES (if yes, complete EXPECTED SUBMISSION DATE).				X	NO					
16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>On June 5, 2002, with the unit operating at approximately 100% reactor power, a quarterly surveillance performed under Technical Specification 4.8.2.1.b recorded a 3A vital battery individual cell voltage that was below the Technical Specification allowable value. This condition was recognized during a review of the quarterly surveillance test results by an Electrical Maintenance Supervisor at 1340 on June 17, 2002. This was reported immediately to the Nuclear Plant Supervisor and the 3A battery was declared inoperable. Operation of the unit with an inoperable vital battery for more than two hours is prohibited by Technical Specification 3.8.2.1. Since the condition existed for a longer time than permitted by Technical Specification action statement 3.8.2.1.b, the plant entered TS 3.0.3 and completed the required recovery actions within the time allowed by Technical Specification 3.0.3. The spare battery was placed in service on June 17, 2002 at 1423 and Technical Specification 3.0.3 was exited. This event is reported per the requirements of 10CFR50.73(a)(2)(i)(B).</p> <p>The cause of this event was a small internal short circuit, causing a low voltage condition on one vital battery cell. Contributing causes were personnel error and inadequate procedures for identifying the Technical Specification impact of the failed surveillance. Corrective actions include personnel training and revisions to surveillance procedural guidance.</p>										

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

EVENT DESCRIPTION

On June 5, 2002, with the unit operating at approximately 100% reactor power, a quarterly surveillance performed under Technical Specification (TS) 4.8.2.1.b recorded a 3A vital battery [EJ, BTRY] individual cell voltage that was below the Technical Specification allowable value. This condition was recognized during a review of the quarterly surveillance test results by an Electrical Maintenance Supervisor at 1340 on June 17, 2002. This was reported immediately to the Nuclear Plant Supervisor (NPS), and the 3A battery was declared inoperable. With one of the required battery banks inoperable, TS 3.8.2.1 action b. allows two hours to restore the required battery banks to operable status or be in at least hot standby within the next 12 hours and in cold shutdown within the following 30 hours. Since the condition existed for a longer time than permitted by Technical Specification action statement 3.8.2.1.b, the plant entered TS 3.0.3 on June 17, 2002 at 1340. The spare battery was placed in service on June 17, 2002 at 1423 completing the required recovery actions within the time allowed by Technical Specification 3.0.3. Technical Specification 3.0.3 was exited. This event is reported per 10CFR50.73(a)(2)(i)(B) due to operation of the unit in a condition prohibited by the plant's TS.

BACKGROUND

Emergency power for vital instrumentation and controls is supplied by a station DC power system containing five safety related 125VDC batteries and four DC distribution panels. Two battery banks are associated with each unit. A spare battery bank can be substituted for any of the other four battery banks to allow for testing or maintenance. Each battery has been sized to support operation of its required loads for two hours without terminal voltage falling below its minimum required value.

Technical Specification Table 4.8-2, Category B provides the battery cell voltage limit and allowable values. A battery whose parameters satisfy the allowable value, but does not meet the limits may be considered operable, provided the parameters are restored to the Category B limits within 7 days. Values that are below the allowable value render the battery inoperable. The limit and allowable value for battery float voltage are 2.13 VDC and 2.07 VDC, respectively.

The 3A vital battery consists of 60 individual cells connected in series. Cell #28 voltage of the 3A vital battery was found at 2.06 VDC, which is below the allowable limit.

SEQUENCE OF EVENTS

On June 5, 2002, a quarterly surveillance performed under Technical Specification (TS) 4.8.2.1.b recorded a 3A vital battery individual cell #28 voltage of 2.06 VDC, which is below the TS limit and allowable values of 2.13 VDC and 2.07 VDC, respectively. As required by procedure, the journeyman immediately notified his General Maintenance Leader (GML) of the unacceptable as-found condition. The GML instructed the journeyman to complete the surveillance for the rest of the battery. The journeyman noted in the remarks section of the procedure that the voltage on cell #28 did not meet acceptance criteria, and proceeded to complete the surveillance for the rest of the battery at the end of shift.

The GML has the responsibility to review the as-found cell voltage data to determine if any corrective actions are required, such as electrolyte level correction or the performance of an equalizing charge. The GML did not recognize the TS impact of not meeting the acceptance criteria on cell #28. Since the surveillance test was completed at the end of the shift, the GML turned over the work package for review to an Electrical Supervisor.

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He did not alert the Electrical Supervisor of the as-found condition on cell #28. Unaware of the failed surveillance, the Electrical supervisor did not perform the surveillance data review that day.

On June 17, 2002, at 1340, an Electrical Supervisor performed the review of the as-found data and recognized that 3A battery low voltage on cell #28 rendered the vital battery inoperable. The NPS was notified at 1350; the 3A battery was removed from service and the spare vital battery was placed in service at 1423 on June 17, 2002.

CAUSES OF THE EVENT

The cause of this event is postulated to be a minor plate defect which resulted in an internal short circuit, causing the low voltage condition in cell #28 of the 3A vital battery.

A contributing cause of this event is an inadequate battery surveillance procedure, which did not alert the journeyman of the TS implications of a battery cell voltage below the TS minimum allowable voltage. The TS action statement has a two-hour allowable outage time to return the vital battery to operable status or to place the spare battery in service. In addition, the surveillance procedure did not require NPS notification when an as-found condition on a vital battery cell fails to meet the acceptance criteria.

Personnel error is another contributing cause of this event. The GML did not recognize the TS implications of an as-found battery cell voltage below the TS minimum allowable voltage, therefore, the NPS was not notified of the situation at the time of discovery, and the surveillance data review was not performed in a timely manner.

ANALYSIS OF SAFETY SIGNIFICANCE

The safety related function of the Vital AC and DC Systems is to provide power to the safety related loads required to achieve and maintain safe shutdown of both Turkey Point Units 3 and 4 during a loss of off-site power. The Vital DC System is designed to: 1) provide power, as required, to support one Auxiliary Feedwater System pump train during a loss of all off-site and on-site AC power; 2) provide power to its safety related loads during a design basis accident, with or without concurrent loss of off site power; and 3) support systems, as required, that mitigate the consequences of an accident on the affected unit, and systems that achieve and maintain safe shutdown of the unaffected unit.

The as-found condition of the 3A battery cell #28 was below the criteria for operability of TS Table 4.8-2. The as-found cell voltage was 2.06 VDC compared to the minimum allowable value of 2.07 VDC. The root cause of the low voltage is a microscopic internal short. Cells with minor internal shorts are not failed and are capable of providing high discharge currents close to their rated values, and are able to pass overall battery current.

An evaluation was performed to determine the impact of the as-found condition on the 3A battery's capability to perform its design safety related functions. The as-found specific gravity for cell #28 was 1.218, which is in the normal band and within the acceptance criteria (greater than 1.195). This parameter indicates that the cell had the chemical ability to pass its design output current on demand. Maintaining the battery on float charge prevented the suspected internal short from discharging the cell completely.

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With a conservative assumption that the internal short had reduced the capacity of cell #28 to zero, the evaluation determined that the battery string was capable of meeting its design load profile. The as-found voltage and electrolyte values for the remaining 59 cells in the 3A battery support the following conclusions: 1) the 3A battery was capable of providing the capacity found during the previous performance test (104%); 2) the electrolyte solution of the battery was not degraded and was capable of passing the current from the remaining 59 cells; 3) the remaining cells had sufficient capacity to satisfy the required load profile; and 4) the minimum battery terminal voltage during a design basis event would remain above the minimum design value of 105 VDC.

Therefore, the noted degraded condition of cell #28 would not have prevented the 3A battery string from meeting its design function. Thus, the health and safety of the public were not affected by this event.

CORRECTIVE ACTIONS

The following corrective actions have been completed:

1. Replaced cell #28 of the 3A vital battery
2. Provided training to Electrical Maintenance personnel addressing the event and emphasizing the reporting requirements and management expectations.
3. Battery Surveillance Procedures have been enhanced to include caution statements requiring immediate NPS notification, if acceptance criteria is not met, and a briefing requirement prior to performing the surveillance to ensure all personnel are aware of the applicable Technical Specification and NPS notification requirements.

ADDITIONAL INFORMATION

EIIS Codes are shown in the format [EIIS SYSTEM: IEEE component function identifier, second component function identifier (if appropriate)]. There have been no previous similar events at Turkey Point Units 3 and 4.