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Power Company**
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May 29, 2002

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Operating License DPR-74
Docket No. 50-316

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following report is being submitted:

LER 316/2002-003-00: "2AB 250-Volt D.C. Battery Inoperable For Longer Than Allowed By Plant's Technical Specification"

No new commitments are identified in this submittal.

Should you have any questions regarding this correspondence, please contact Mr. Gordon P. Arent, Manager, Regulatory Affairs, at 616/697-5553.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph E. Pollock".

Joseph E. Pollock
Site Vice President

TW/pae

Attachment

c: G. P. Arent
 A. C. Bakken
 L. Brandon
 K. D. Curry.
 J. E. Dyer, Region III
 R. W. Gaston
 S. A. Greenlee
 T. P. Noonan
 R. Whale
NRC Resident Inspector
Records Center, INPO

A handwritten code "IE22" in black ink, slanted upwards from the bottom right.

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

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 Donald C. Cook Nuclear Plant Unit 2					2. DOCKET NUMBER 05000-316			3. PAGE 1 of 4				
4. TITLE 2AB 250-Volt D.C. Battery Inoperable For Longer Than Allowed By Plant's Technical Specification												
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		
04	03	2002	2002	--	003	--	00	05	29	2002	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
			20.2201(b)		20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)		
10. POWER LEVEL 100			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		
			20.2203(a)(2)(iii)		50.46(a)(3)(ii)			50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A		
			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 Toby Woods, Regulatory Affairs										TELEPHONE NUMBER (Include Area Code) (616) 466-2430		
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		
14. SUPPLEMENTAL REPORT EXPECTED										15. EXPECTED SUBMISSION DATE		
YES (If Yes, complete EXPECTED SUBMISSION DATE).					X	NO						
										MONTH	DAY	YEAR
16. Abstract (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)												
During the weekly battery surveillance on April 3, 2002, a maintenance electrician identified cracks in the top cover between the post seals and the sample tubes of battery cells 27 and 102 of the 2AB 250-volt D.C. battery bank. The cracks were above the electrolyte with no indications of electrolyte leakage observed. The time of identification was 1200 on April 3, 2002. An action request was generated at 1530 on April 3, 2002, to document the deficiency. Shift manager notification was not made by the initiator or supervisor performing the approval as required by procedure. Operations became aware of the equipment deficiency at 1700 on April 4, 2002, when a deficiency tag was processed for the 2AB battery. The Shift Manager visually confirmed the cracking on cells 27 and 102, and identified, during an extent of condition inspection, that cell 35 exhibited the same cracking phenomenon. The 2AB battery was declared INOPERABLE at 1812 and Unit 2 entered technical specification (TS) action statement 3.8.2.3.b. A TS required shutdown commenced at 2114 on April 4, 2002, when the battery was not returned to an operable status.												
A four-hour ENS notification, event number 38832, was made at 2330 on April 4, 2002, in accordance with 10 CFR 50.72(b)(2)(i) for an initiation of a reactor shutdown required by the plant's TS.												
The TS required shutdown was terminated at 0145 on April 5, 2002, when a Notice of Enforcement Discretion (NOED) was granted by the Nuclear Regulatory Commission (NRC). In granting the NOED, the NRC would not enforce the allowed outage time in TS action 3.8.2.3.b for 13 hours, thereby providing an additional 11 hours for restoration of the 2AB battery to an OPERABLE status. The three cracked battery cells were replaced and 2AB battery was declared OPERABLE at 0755 on April 5, 2002. Unit 2 subsequently returned to full power.												

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

Conditions Prior to Event

Unit 1 operating in Mode 1 at 100 percent rated thermal power.
 Unit 2 operating in Mode 1 at 100 percent rated thermal power.

Description of Event

During the weekly battery surveillance on April 3, 2002, a maintenance electrician identified cracks in the top cover between the post seals and the sample tubes of battery cells 27 and 102 of the 2AB 250-volt D.C. battery bank. The cracks were above the electrolyte with no indications of electrolyte leakage observed. The time of identification was 1200 hours on April 3, 2002. An action request was generated at 1530 on April 3, 2002, to document the deficiency. Shift manager notification was not made by the initiator or supervisor performing the approval as required by procedure. Operations became aware of the equipment deficiency at 1700 on April 4, 2002, when a deficiency tag was processed for the 2AB battery. The Shift Manager visually confirmed the cracking on cells 27 and 102, and identified, during an extent of condition inspection, that cell 35 exhibited the same cracking phenomenon. The 2AB battery was declared INOPERABLE at 1812 and Unit 2 entered technical specification (TS) action statement 3.8.2.3.b. A TS required shutdown commenced at 2114 on April 4, 2002, when the battery was not returned to an operable status.

A four-hour ENS notification, event number 38832, was made at 2330 on April 4, 2002, in accordance with 10 CFR 50.72(b)(2)(i) for an initiation of a reactor shutdown required by the plant's TS.

The TS required shutdown was terminated at 0145 on April 5, 2002, when a Notice of Enforcement Discretion (NOED) was granted by the Nuclear Regulatory Commission (NRC). In granting the NOED, the NRC would not enforce the allowed outage time in TS action 3.8.2.3.b for 13 hours, thereby providing an additional 11 hours for restoration of the 2AB battery to an OPERABLE status. The three cracked battery cells were replaced and 2AB battery was declared OPERABLE at 0755 on April 5, 2002. Unit 2 subsequently returned to full power.

Analysis of Event

Donald C. Cook Nuclear Plant (CNP) Technical Specifications require two D.C. bus trains to be energized and OPERABLE with the tie breakers between the bus trains open. A D.C. bus train consists of a 250-volt D.C. bus, a 250-volt D.C. battery bank, and a full capacity charger. This specification is applicable in Modes 1 through 4. The action statement for an INOPERABLE bus, battery bank, or charger requires restoration in 2 hours or be in HOT STANDBY in 6 hours and COLD SHUTDOWN in the next 30 hours. Surveillance requirement 4.8.2.3.2.c requires, in part, that the battery bank cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

The cracking identified by the maintenance technician and Operations Shift Manager was determined to be abnormal deterioration. With abnormal deterioration, surveillance requirement 4.8.2.3.2.c was not satisfied and the 2AB battery was declared inoperable at 1812 on April 4, 2002. Unit 2 commenced a plant shutdown at 2114 to comply with the plant's TS. Since the condition was first identified by the maintenance electrician at 1200 hours on April 3, 2002, the identified condition existed for longer than allowed by the plant's TS and is reportable as an operation or condition prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B).

Evaluation of the cracked battery casing revealed the cracking was symptomatic of a previously identified condition. On December 13, 2001, during performance of TS 4.8.2.3.2 surveillance requirement, it was noted that the sealing material was breaking away from the positive post on the inside of 23 of 116 battery cells for the 2AB battery bank. Discussions with the battery vendor concluded that the breaking away of the seal ring was caused by corrosion of the sacrificial lead

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ring, to which the positive battery post is bonded. At the time, the condition was not considered abnormal deterioration because the lead ring is designed to corrode in order to protect the positive post from corrosion.

Destructive testing of one of the affected battery cells was performed by the vendor in February 2002. The failure analysis report published in March 2002 concluded that the accelerated corrosion was caused by the failure of the coating between the lead ring and the rubber sealing ring. The coating failure was attributed to a misapplication of the coating, and/or damage to the coating during the welding of the lead ring to the positive post. The report also concluded that the corrosion could build up, potentially causing the battery covers to crack. The vendor concluded that this condition was considered a maintenance issue rather than a battery performance issue.

Discussions with the vendor in the evening of April 4, 2002, determined that the cracking identified was consistent with the results of the March 2002 failure analysis report. The vendor stated that the cracking of the top cover was likely in those cells displaying coating failure. The battery vendor confirmed that the cracking was abnormal deterioration, but stated that it would not impact the functionality of the affected cells. The plastic battery cell cover does not support the battery plates, and is not responsible for the separation of the positive from the negative plates. The affected cells satisfied the TS requirements for voltage and specific gravity. In addition, the noted cracks were small enough that existing plant hydrogen safety controls were considered adequate. Therefore, reasonable assurance that the battery would perform its intended safety function was provided.

To prevent the unnecessary transient of shutting down the Unit 2 reactor, CNP verbally requested an NOED at 2235 on April 4, 2002. The NOED was verbally granted at 0020 on April 5, 2002, whereby the NRC would not enforce the TS action statement, allowing an additional 11 hours to restore the battery to an operable condition. The TS required shutdown was halted and Unit 2 was stabilized at 40 percent power. The additional 11 hours allowed the three deficient battery cells to be replaced and post maintenance testing to be completed. The 2AB 250-volt D.C. battery was declared OPERABLE at 0755 on April 5, 2002 and Unit 2 returned to full power.

By granting the NOED, the NRC exercised discretion by not enforcing the plant's TS for a given period of time and did not extend the action times of the TS limiting conditions for operation (LCO). When CNP suspended the plant shutdown while the battery cells were being replaced, the plant's TS LCO action times were exceeded. Exceeding the TS LCO action times is reportable as an operation or condition prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B).

Safety Significance

The cracked battery covers did not represent a significant reduction in a margin of safety or significantly increase the probability of an accident. The condition did not represent a significant degradation of plant safety, or prevent the fulfillment of safety-functions needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident.

Cause of Event

The root cause for the untimely notification to the Operations Shift Manager of the equipment deficiencies is human error. The maintenance electrician has a strong background in battery maintenance obtained from experience at other nuclear plants. The electrician relied on experience and concluded that the small cracks in the battery top were the result of age related conditions and that they did not impact the functionality of the battery. Therefore, the technician saw no reason to immediately notify the Operations Shift Manager of the condition and did not fill in the Shift Manager notification section of the action request form – a skill based human error. Additionally, the technician left the completed surveillance paperwork in the Work Control Center (WCC) for Senior Reactor Operator (SRO) review without discussion

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of the surveillance with the WCC SRO. The electrical supervisor on afternoon shift reviewed and approved the action request, but did not identify that the Shift Manager notification section had not been filled in by the electrician – a qualification, validation, and verification (QV&V) error.

The request for an NOED was made to preclude unnecessary plant shutdown due to abnormal deterioration on the 2AB battery that did not impair the safety function of the battery, but nonetheless, required declaring the battery INOPERABLE.

Corrective Actions

A stand-down for CNP employees and contractors was held on April 5, 2002, to reiterate the procedural requirements to notify the Operations Shift Manager for:

- Equipment, analysis, or setpoint deficiencies that affect structures, systems or components located in the Protected Area or Switchyard
- Procedure or process issues affecting TS or License compliance
- Deficiencies impacting dose rates
- Potential reportability concern
- Nuclear or significant industrial safety issue
- Tampering, vandalism or malicious mischief

A license amendment was submitted to the NRC to preclude unnecessary plant shutdowns or NOED requests. The approval of the amendment will allow CNP to determine the operability of a battery exhibiting physical damage or abnormal deterioration, thereby eliminating an unnecessary plant shutdown or NOED request.

Due to additional cracking identified since this event in the 2AB battery bank, a supplement to the license amendment was made requesting emergency approval of the Unit 2 Train AB and CD battery surveillance change. This supplement was approved by the NRC and implemented into CNP TS on April 26, 2002.

Previous Similar Events

None.