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October 28, 2005

AEP:NRC:2573-27

Docket No. 50-315

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1
LICENSEE EVENT REPORT 315/2005-002-00
FAILURE TO COMPLY WITH TECHNICAL SPECIFICATION REQUIREMENTS
PERTAINING TO UNDERVOLTAGE PROTECTION INSTRUMENTATION

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

LER 315/2005-002-00: "Failure to Comply With Technical Specification Requirements Pertaining to Undervoltage Protection Instrumentation"

There are no new commitments identified in this submittal.

Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Supervisor, at (269) 466-2649.

Sincerely,

Lawrence Jweber

Lawrence J. Weber
Plant Manager

RAJ/jen

Attachment

IE22

c: J. L. Caldwell, NRC Region III
K. D. Curry – AEP Ft. Wayne, w/o attachment
J. T. King, MPSC – w/o attachment
MDEQ – WHMD/RPMWS – w/o attachment
NRC Resident Inspector
D. W. Spaulding, NRC Washington DC

NRC Form 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES 6/30/2007

Estimated burden per response to comply with this mandatory 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 and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

Failure to Comply With Technical Specification Requirements Pertaining to Undervoltage Protection Instrumentation

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
									Donald C. Cook	05000-316
08	30	2005	2005	-- 002 --	000	10	28	2005	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Donald C. Cook Nuclear Plant; Michael Scarpello, Supervisor Regulatory Affairs	(269) 466-2649

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	MONTH	DAY	YEAR
	YES (If Yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On August 30, 2005, at approximately 1000 hours, it was identified that an equipment clearance implemented to support planned maintenance on the Unit 1 CD Emergency Diesel Generator (EDG) disabled 4 kV Bus loss of voltage relays required by Custom Technical Specification (CTS) 3.3.2.1, "Engineered Safety Features Actuation System Instrumentation." The equipment clearance was placed and the relays de-energized on August 30, 2005, at 0813 hours. The relays were restored at approximately 1011 hours on August 30, 2005.

The relays were required to be operable per CTS 3.3.2.1, Table 3.3-3, Item 6b and 8a, "4 kV Bus Loss of Voltage," associated with the Motor Driven Auxiliary Feedwater Pumps and Loss of Power functional units, respectively. The CTS required three channels per bus, with a minimum of two channels per bus operable. In the configuration rendered by the equipment clearance, all three undervoltage relays were de-energized. There was no CTS action stated for this configuration, which would have required entry in to CTS 3.0.3. However, this condition was not recognized. This configuration did not meet the requirement of the CTS, and therefore is reportable under 10 CFR 50.73(a)(2)(i)(B) as an operational condition prohibited by the plant's CTS.

The cause of this condition was a failure to assure CTS requirements were met prior to removing the equipment from service. Corrective actions will provide additional information within the equipment clearance software to prompt clearance reviewers of the technical specification impact of de-energizing the circuit and reviewing existing EDG clearances that de-energize circuit 2 of distribution panels TDAB or TDCD, for either unit, to clearly identify technical specification requirements and prevent use of the equipment clearances when the relays are required to be operable.

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

Conditions Prior to Event

Unit 1 = MODE 1 at 100% power
Unit 2 = MODE 1 at 100% power

Description of Event

On August 30, 2005, at approximately 1000 hours, it was identified that an equipment clearance implemented to support planned maintenance on the Unit 1 CD Emergency Diesel Generator (1-CD-EDG) [EK] disabled 4 kV bus loss of voltage relays [JE] required by Custom Technical Specification (CTS) 3.3.2.1, "Engineered Safety Features Actuation System Instrumentation."

At the time of this event, CTS were in effect at Donald C. Cook Nuclear Plant (CNP). This is noted because on September 25, 2005, license amendment 287 was implemented to convert from CTS to the Improved Technical Specifications (ITS) and the specific requirements for the Engineered Safety Features Actuation System (ESFAS) item were changed.

On August 30, 2005, the 4 kV loss of voltage relays were required to be operable per CTS 3.3.2.1, Table 3.3-3, Item 6, "MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS," Sub-Item b, "4 kV Bus loss of Voltage" and Item 8, "LOSS OF POWER," Sub-Item a, "4 kV Bus Loss of Voltage."

Action statement 14 of table 3.3-3 of the CTS stated: "With the number of OPERABLE Channels one less that the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour."

In the configuration rendered by the equipment clearance placement, all three undervoltage relays (and their associated channels) for 4 kV busses T11C and T11D were de-energized and incapable of performing the required function. There was no CTS action stated for the configuration of more than one channel inoperable. CTS 3.0.3 requires when a limiting condition for operation is not met, except as provided in the associated action requirements, within one hour action shall be initiated to place the unit in a mode in which the specification does not apply. This did not occur. This was a failure to recognize the requirements of the CTS were not met, and is reportable under 10 CFR 50.73(a)(2)(i)(B) as an operational condition prohibited by the plant's technical specifications (TS).

This condition was discovered when the equipment clearance (CNP-1052035) de-energized circuit 1-TDCD-2 to perform work on control switches associated with 1-CD-EDG. The equipment clearance was placed and the relays de-energized on August 30, 2005, at approximately 0813 hours. As preparations for implementing ITS were underway at CNP, a review of upcoming ITS requirements was performed in conjunction with control room actions taken as required for existing CTS.

De-energizing circuit 1-TDCD-2 brought in several control room annunciators. Licensed operator use of the annunciator response procedures prompted a review of ITS 3.3.5, "Loss of Power Diesel Generator Start Instrumentation," to assess the impact of these annunciator response actions following ITS implementation. ITS 3.3.5 loss of voltage function is applicable in Modes 1, 2, 3, and 4, and when the associated EDG is required to be operable by LCO 3.8.2, AC Sources-Shutdown. In ITS, the associated EDG would be required to be declared inoperable upon a loss of these relays (Condition C). Since the EDG was already removed from service, no further action would be required with ITS implemented. However, ITS 3.3.2, Engineered Safety Features Actuation System (ESFAS) Instrumentation, Item 6e, Action F, only allows one channel per bus to be inoperable. This difference prompted a detailed review of the clearance and its impact on CTS 3.3.2.1.

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At 0940 hours on August 30, 2005, the Shift Manager directed restoration of the clearance that tagged circuit 1-TDCD-2 while the condition was further researched. This circuit was restored at approximately 1011 hours on August 30, 2005, and compliance with the CTS was reestablished.

A historical review of the method in Equipment Clearance Permit CNP-1052035 demonstrated that a similar configuration had been incorrectly used in both Unit 1 and Unit 2. This review identified 14 Unit 1 and 12 Unit 2 clearance permits with a similar configuration, resulting in similar CTS non-compliances. This licensee event report (LER) will serve as the report for all similar historical failures to comply with CTS 3.3.2.1 and 3.0.3 due to this configuration.

Cause of Event

The cause of this condition is a failure to assure TS requirements were met prior to removing equipment from service for an equipment clearance. The Operators preparing, reviewing and placing the clearance did not perform a review in sufficient detail to identify all CTS associated with individual components de-energized by the clearance.

Analysis of Event

Using the described clearance to remove the EDG from service for maintenance had the unintended effect of defeating the T11C and T11D bus undervoltage automatic start function of the East (A-Train) Motor Driven Auxiliary Feedwater Pump (MDAFP) and flow conservation actuation. Therefore, the function affected by this event was the ability of the East MDAFP to start upon loss of voltage to the T11C and T11D buses. Other automatic start and flow conservation signals for the A train of auxiliary feedwater (e.g., Steam Generator Low Level) were not affected. The Turbine Driven Auxiliary Feedwater Pump starts automatically on loss of the reactor coolant pump busses and was unaffected by this event as was the West MDAFP.

Since the 1-CD-EDG was out of service for maintenance during placement of this clearance, loss of the automatic start function had no effect on system operation since no power source would be available to the associated pump during an actual loss of voltage to the T11C and T11D buses.

This condition is assumed to have existed the entire time the 1-CD-EDG was cleared for maintenance. As is required by the risk analysis for critical maintenance projects on the EDG, no switchyard work was in progress and no other major equipment was scheduled to be out of service during this time.

Both trains of auxiliary feedwater and their automatic actuation functions were available during this event in every scenario in which the pumps had power available. The risk was reflected in the maintenance rule (a)(4) risk assessment performed prior to removing the 1-CD-EDG from service. The planned work scope and duration were below the NUMARC 93-01 guidance thresholds for high and medium risk activities requiring risk management actions. Consequently, this analysis concludes that this event was not risk significant.

Corrective Actions

Actions Completed:

The circuit was energized to restore compliance with CTS.

Provided additional information within the clearance software to prompt clearance reviewers of the TS impact from de-energizing the circuit (CRE 05242034).

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Reviewed actions taken at the time TSCs were cancelled to ensure no additional vulnerabilities exist due to lack of actions taken (CRA 05242034-04).

Provided a Noteworthy Event memo to all Shift Managers, Operations Work Control Manager, and Operations Support Managers to share with their staff regarding this event. This noteworthy event was specifically to communicate the TS impact if these breakers are opened in Modes 1 through 4 (CRE 05242034).

Actions Pending:

Perform a review of the Reactor Trip Instrumentation Functions in ITS 3.3.1 and the Engineered Safety Features Actuation System Instrumentation Functions in ITS 3.3.2 for both units. The intent of this review is to identify the power supplies that could impact these functions if de-energized. These power supplies will be utilized to add information to the eSOMS Clearance Module that identifies TS impact when removing these power supplies from service (CRA 05242034-01, -02, due January 31, 2006).

Develop a procedure to support removal and restoration of the power supplies that are identified as having an impact on a function contained in ITS 3.3.1 or 3.3.2 (CRA 05242034-03, due March 3, 2006).

Review upcoming EDG work windows being performed on line for work activities that require tagging circuit 2 of TDAB or TDCD for either unit (CRA 05242034-06, due November 4, 2005).

This issue will be considered for inclusion in Operations Initial License Training and Requalification (CR 05242034-05, due November 29, 2005).

Previous Similar Events

During the investigation of this condition, it was identified that the same clearance method has been used routinely for performing scheduled maintenance on the Unit 1-AB-EDG and Unit 2-AB-EDG and 2-CD-EDG. However, it had not been identified and reported, with one exception, Unit 1 LER 1999-030-00, "Improper Use of Clarifications Results in Violation of Two Technical Specifications." This LER reported that a TS clarification regarding the applicability of CTS 3.3.2.1 had mistakenly concluded that it was not applicable during periods the EDG was inoperable. As a corrective action for that condition, the TS clarification was rescinded; however, there was no targeted training provided to operations staff to assure they understood the impact. The clearance software has been changed to prompt users of the TS impact and prevent a repeat of the event.

A second event involving non-compliance with the TS resulting from clearance activities was documented in Unit 2 LER 2004-003-00, "Failure to Comply with Containment Ventilation Operability Requirements specified in Technical Specifications 3.0.4, 3.4.9, and 3.9.9." A review of the root cause and corrective actions indicated that the events were similar in the respect that the operations reviewers did not identify the CTS impact prior to the event. The difference between these two events is that the cause of the LER 2004-003-00 condition was associated with work control. The clearance was initiated in a mode where the CTS was not applicable and should have been removed prior to a mode change where the CTS was applicable. The corrective actions for LER 2004-003-00 were made to address mode change controls to prevent recurrence, and would not have prevented this event.