

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-237/85020(DRS)

Docket No. 50-237

License No. DPR-19

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Dresden Nuclear Power Station, Unit 2

Inspection At: Morris, IL May 14, 1985, and Chicago, IL June 4, 1985

Inspection Conducted: May 14 and June 4, 1985

Inspector: A. S. Gautam

A. S. Gautam

Approved by: C. C. Williams, Chief
Plant Systems Section

C. C. Williams

Inspection Summary

Inspection on May 14 and June 4, 1985 (Report No. 50-237/85020(DRS))

Areas Inspected: Announced special safety inspection by regional inspector of licensee actions on previous inspection findings regarding the Unit 2, 125 V DC battery modification, identified in Region III Inspection Report No. 50-237/85014(DRS). The inspection involved a total of 6 inspector-hours onsite and 9 inspector-hours offsite by one NRC inspector.

Results: Of the area inspected, no violations or deviations were identified.

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DETAILS

1. Persons Contacted

- *J. Scott, Station Manager
- *J. D. Brunner, Assistant Superintendent, Technical Services
- *G. L. Smith, Tech Staff Lead Engineer
- *M. S. Tucker, CECo/SNED
 - F. Petrusich, QC Engineer
- *R. S. Deobler, Tech Staff Engineer
 - M. Strait, SNED On-Site Representative
 - J. Jurecki, Maintenance & Staff Engineer
 - L. F. Seby, Master Electrician

Sargent & Lundy (S&L)

- F. W. Fischer, Senior Electrical Project Engineer
- R. H. Sadlowski, Electrical Engineer
- B. G. Treece, Electrical Engineer
- T. R. Eisenbart, Electrical Engineer

*Denotes those attending the exit meeting on May 14, 1985.

◦Denotes those attending the exit meeting on June 4, 1985.

2. Action on Previous Inspection Findings

- a. (Open) Unresolved Item (237/85014-01). This item addressed NRC concerns regarding the need for the licensee to perform a service test to verify that the Unit 2, 125 V DC battery would meet the design requirements of the connected DC loads. Since the licensee is not committed to IEEE 450-75, which references the requirement for a service test, the inspector reviewed the Dresden Unit 2, 125V DC load profile and battery loading documented by S&L on a January 22, 1985 submittal. The associated calculation (705600-19-2) pages 181 through 190 was reviewed for evidence that the 125V DC battery could supply the connected DC loads.

The inspector reviewed the 125 V DC battery loadings listed in Table 8.2.3.4 of the Dresden FSAR Rev. 2, dated June 1984, and the analysis of these loads documented in the S&L load profile. The inspector also examined these loads in regard to the sizing of the Unit 2, 125 V DC 60 cell plant battery. Questions regarding the battery's loading and sizing were discussed in a June 4, 1985, meeting with representatives of CECo and S&L at the S&L office in Chicago, where battery sizing was also reviewed against methods described in IEEE 485-1983. During review of the Unit 2 battery sizing and loading, the inspector determined that the Station Nuclear Engineering Department (SNED) had recommended in their January 23, 1985, memo to the Dresden Station Manager, that loads indicated with an 'M' in the load profile listing should be measured to verify actual loading, or that a procedure be instituted to manually shed loads indicated by an 'S' in the load profile listing prior to startup of Unit 2.

These SNED recommendations for load shedding reflected in part a previous NRC concern at Quad Cities Station, where the licensee was required by a Confirmatory Action Letter from the NRC to implement a procedure requiring load shedding to reduce 125 V DC loads within one half hour of a loss of battery chargers. As of June 4, 1985, no action had been taken by the Dresden Station to document and implement the load shedding procedures recommended by SNED in the load profile analysis. Unit 2 had been started up and placed back on line on April 14, 1985, approximately two months before NRC identified this omission.

On June 10, 1985, a conference call was held with the Dresden Station Assistant Superintendent, who informed the NRC (C. C. Williams and A. Gautam) that appropriate load shedding procedures were being prepared and would be sent to SNED for concurrence. A copy is to be forwarded to the NRC for review.

On June 14, 1985, a copy of procedure DGA-13, Revision 0, "Loss of 125 V DC Battery Chargers With Simultaneous Loss of Auxiliary Electrical Power", was received by the NRC from the licensee for review. The inspector compared the loads to be shed as identified in Tables 1 and 2 of this procedure against those recommended to be shed by SNED in the load profile. No discrepancies were found.

Based on the above review, the procedural aspects of this item are considered resolved. However, Region III has a continuing concern regarding the lack of timely implementation of the SNED recommendations that the subject procedure be implemented prior to Unit 2 startup. Based on the foregoing this item remains open.

- b. (Closed) Open Item (237/85014-02): This item addressed concerns regarding the potential of an inadvertent closing of the 125 V DC Panel 5, Compartment C1, 600 Amp breaker, resulting in a loss of feed to the 125 V DC Turbine Building Main Bus 2A-1. Concerns were also raised by the NRC regarding a lack of protection of the Unit 1 battery during faults in the 125 V DC cable runs due to the C1 breaker being functionally disconnected from the circuit. The licensee addressed these concerns by issuing Engineering Change Notice (ECN) No. D-85E-04 dated April 10, 1985, which requires the feed from the 125 V DC distribution panel No. 5 comp C1 to be from the 'bus side' of the Compartment C1 breaker. This in effect allows the 600 amp breaker to provide fault protection for the cable runs to the 125 V DC Turbine Building main bus 2A-1. The 600 amp breaker in compartment C1 is to be normally closed while all other breakers in the 125 V DC panels are to be kept manually open with out of service tags posted in accordance with temporary out of service tagging procedure ZAP 3-5 Rev. 14. The licensee is also considering disconnecting the compartment C1 breaker from the panel 5 bus to prevent problems resulting from inadvertent closing of the 125 V DC Panel 5 breakers. Based on the above review this item is closed.

- c. (Closed) Unresolved item (237/85014-03): This item addressed concerns regarding the licensee not requiring the ventilation system for the Unit 1, 125 V DC HPCI battery room 1C to be safety-related. During the previous inspection, the NRC had requested the licensee to calculate the maximum hydrogen buildup during a loss of ventilation in the Unit 1 125 V DC battery room. During this review the inspector examined S&L calculations documented on a May 13, 1985, submittal from S&L to SNED/CECo. These calculations provided the time period for the Dresden Unit 1 HPCI battery room 1C to reach a two percent hydrogen concentration, during a loss of exhaust fans, with batteries producing a maximum amount of hydrogen and the battery room temperature rising. These calculations determined that it could take 219 hours for a 2% hydrogen concentration to build up at 77° F, and 24 hours for a 2% hydrogen concentration to build up at 131° F. Based on these calculations, it appears that the maximum concentration of accumulated hydrogen will remain below the normal industry combustible limits of 3% at 77° F for a sufficient time to repair the ventilation. This item is closed.
- d. (Closed) Open Item (237/85014-04): The NRC had raised concerns regarding a lack of instructions in the station traveller WR D42720, Rev. 0, for accomplishing the seismic mounting of the Unit 1 HPCI 125 V DC battery racks. During this review, instructions regarding the seismic mounting requirements of the battery racks were reviewed in the traveller and found acceptable. Letters from S&L and GNB Batteries Inc. were reviewed for referenced specifications on battery spacers and the clearance of cells from racks, these specifications were verified to be referenced on the traveller. Based on the above review, this item is considered closed.
- e. (Closed) Noncompliance (237/85014-05a and b): This item was identified in part as 235/8504-04a on page 7 (typo), section 3.d(2) of report 50-237/85014. The correct item designation is 237/85014-05a. This paragraph corrects this error.
- This item of noncompliance referred to the lack of instructions or procedures to perform cable splices and installation. The licensee responded to this noncompliance in their May 28, 1985, letter to the NRC, and reported issuing specific work instructions covering cable splicing and installation for this battery modification. During this review the inspector reviewed these work instructions referenced on the revised traveler and found them to be adequate. This item is closed.
- f. (Closed) Unresolved item (237/85014-06): This item referenced a lack of documented evidence of training of those personnel splicing cables associated with the Unit 2, 125 V battery modification. The licensee subsequently trained appropriate personnel, including 27 electricians, three foremen and six QC inspectors on cable preparation butt splicing and lugging. Cable samples were used during this training. This training also included instructions on Raychem heat splicing applications, and is being documented on form DPP 107, "CECo Training Data Entry

Course Information". Other personnel will be trained as appropriate. Based on the licensee's corrective action, this item is closed.

- g. (Closed) Open Item (237/85014-07): This item referred to NRC concerns regarding appropriate testing of 5 KV cables 11082 and 11083, and 600 V cables 67660, 67661, 67662, and 67663. The tests to be performed were to demonstrate that these cables would perform satisfactorily. These cables are being used in a 125 V DC application, and have protective devices on both ends.

During this review the licensee's test program for the above cables was reviewed for adequacy as documented on station traveller WR #D42720 Rev. 1, Operation Numbers 2, 18, 19, 20, 33, 34. The following tests were to be performed, based on the requirements of IEEE 422-1977.

- (1) 2500 V DC megger test, phase to phase and phase to ground, on the 5 KV cables. Minimum acceptable reading 3.75 mega ohms. Test performed and accepted May 31, 1985.
- (2) 500 V DC megger test, phase to phase and phase to ground, on the entire spliced 5 KV and 600 V run. Minimum acceptable reading - 1.5 mega ohm.
- (3) Continuity testing of all cables by lamping out cables end to end.
- (4) Measurement of splice temperatures during a special battery discharge test No. M12-2-85-31, at 123 ± 10 amps for 3 hours.

Based on the observed protection, redundancy and low voltage of these circuits, these tests are considered adequate for demonstrating that these cables will perform satisfactorily. This item is closed.

- h. (Closed) Noncompliance (237/85014-08): This item of noncompliance referred to a failure to translate design basis requirements, identified by the licensee's March 13, 1985, safety evaluation/design summary into specifications or instructions associated with the battery modification. These instructions required all cables running in the same cable pan as the field cable splices to be placed out of service, as stated in the March 13, 1985, summary. This statement was characterized by the NRC as a false statement.

The licensee responded to this item in their May 29, 1985, letter to the NRC and in this letter the licensee corrected the false statement by eliminating the requirement to place cables associated with the splices out of service. In lieu of this requirement the licensee committed to locating the splices in metal enclosures. The NRC did not consider splicing of cables in the previous specific locations of this modification to be a noncompliance; however, the noted as-built configuration did not agree with all of the licensee's commitments. The use of splice boxes to contain the subject cable splices is a more conservative approach and resolves the initial concern. The licensee has translated requirements for placing the

splices in a metal enclosure to proper design documents by means of Engineering Change Notice ECN D-85E-02 dated April 2, 1985. Based on the above licensee actions this item is closed.

3. Exit Interview

The inspector met with the licensee's representatives (denoted under paragraph 1) on May 14 and June 4, 1985, and summarized the scope and findings of the inspection. The licensee acknowledged the information.

The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.