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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 1, 1980

Docket No. 50-10

Mr. D. Louis Peoples
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Peoples:

RE: SEP TOPIC VIII-3.B D C POWER SYSTEM BUS VOLTAGE MONITORING AND
ANNUNCIATION

Enclosed is a copy of our evaluation of Systematic Evaluation Program Topic VIII-3.B, D C Power System Bus Voltage Monitoring and Annunciation. This assessment compares your facility, as described in Docket No. 50-10 with the criteria currently used by the regulatory staff for licensing new facilities. Please inform us if your as-built facility differs from the licensing basis assumed in our assessment.

We have discussed this assessment with your staff and believe the facts concerning your plant are correct. Therefore, our review of this topic is complete and this evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. This topic assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

Sincerely,

Dennis M. Crutchfield
Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Enclosure:
Completed SEP
Topic VIII-3.B

cc w/enclosure:
See next page

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SEP TECHNICAL EVALUATION
TOPIC VIII-3.B

DC POWER SYSTEM BUS VOLTAGE
MONITORING AND ANNUNCIATION

DRESDEN UNIT 1

1.0 INTRODUCTION

The objective of this review is to determine if the DC power system bus voltage monitoring and annunciation are in compliance with current licensing criteria for Class IE DC power systems.

The specific requirements for DC power system monitoring derive from the general requirements embodied in Sections 5.3.2(4), 5.3.3(5), and 5.3.4(5) of IEEE Standard 308-1974¹, and in Regulatory Guide 1.47². In summary, these general requirements simply state that the DC system (batteries, distribution systems, and chargers) shall be monitored to the extent that it is shown to be ready to perform its intended function.

2.0 CRITERIA

As a minimum, the following indications and alarms of the Class IE DC power system(s) status shall be provided in the control room:³

- Battery current (ammeter-charge/discharge)
- Battery charger output current (ammeter)
- DC bus voltage (voltmeter)
- Battery charger output voltage (voltmeter)
- Battery high discharge rate alarm
- DC bus undervoltage and overvoltage alarm
- DC bus ground alarm (for ungrounded system)
- Battery breaker(s) or fuse(s) open alarm

- Battery charger output breaker(s) or fuse(s) open alarm
- Battery charger trouble alarm (one alarm for a number of abnormal conditions which are usually indicated locally).

3.0 DISCUSSION AND EVALUATION

3.1 Discussion. Dresden Unit 1 has three Class IE DC power systems. The oldest system is composed of one 125 V battery, two chargers, and a DC bus; the two new systems are each comprised of a 125 V battery, a charger, and a DC bus. Control room indication for the old system consists of a "125 Volt DC System" trouble alarm which provides an alarm of DC ground; local (charger room) indication consists of charger current ammeters and a switchable voltmeter which can read battery voltage or either charger voltage.⁴ Control room indication for the new systems consist of bus voltmeters, battery and charger breaker open alarms, and charger trouble alarms; local indication consists of battery and charger voltmeters and ammeters.^{5,6,7}

3.2 Evaluation. The Dresden Unit 1 control room has no indication of battery current, charger output current, bus voltage (old system), charger output voltage, battery high-discharge rate, bus under/over-voltage, or battery and charger breaker/fuse status (old system). Therefore, the Dresden Unit 1 DC power system monitoring is not in compliance with current licensing criteria.

4.0 SUMMARY

Of 11 parameters required to be indicated or alarmed in the control room, one is alarmed for the old system and four are indicated or alarmed for the new systems. Therefore, the Dresden Unit 1 DC power systems are not monitored in compliance with current licensing criteria.

5.0 REFERENCES

1. IEEE Standard 308-1974, "Standard Criteria for Class IE Power Systems for Nuclear Power Generating Stations."
2. Regulatory Guide 1.74, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems."
3. NRC Memorandum, PSB (Rosa) to SEPB (Crutchfield), "DC System Monitoring and Annunciation," dated October 16, 1979.
4. Letter, Commonwealth Edison (Janecek) to DOR (Ziemann), "Dresden Units 1 and 2, Systematic Evaluation Program, Topic VIII-3.B", dated July 25, 1979.
5. Dresden Unit 1 drawing 12E-1396, Revision E, dated 8-6-79.
6. Dresden Unit 1 drawing 12E-1397, Revision E, dated 8-6-79.
7. Dresden Unit 1 drawing 12E-1485F, Revision A, dated 7-20-79.