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Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

March 13, 1985

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Mr. J. G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
799 Roosevelt Road - Region III
Glen Ellyn, IL 60137

Subject: Dresden Station Unit 2
125 Volt Battery
NRC Docket No. 50-237

Dear Mr. Keppler:

During a recent visual inspection, deterioration of the Dresden Unit 2 125 volt battery was found. Although the existing battery is still considered operable today, Commonwealth Edison (CECo) has taken steps to replace it with a new lead calcium battery of a larger capacity in approximately 6 months. In the interim, CECO plans, pursuant to 10 CFR 50.59, to use an alternate safety related battery already on site until the permanent replacement is installed.

Because of questions raised by both Region III personnel and other members of the staff, CECO is enclosing our safety evaluation for the temporary modification and a summary of other engineering findings and considerations involving the temporary replacement.

If you have any question regarding this matter, please contact this office.

One signed original and forty (40) copies of this letter are enclosed for your use and review.

Very truly yours,

Greg Alexander

for B. Rybak

Nuclear Licensing Administrator

lm

cc: Messrs. N. Chrissotimos
R. Gilbert - NRR
Region III Inspector - Dresden

Enclosure

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Temporary 125V DC Feed
M12-2-85-31
Station 12, Dresden

During the refueling outage surveillances on the Unit 2 125 volt station battery, visual degradation was observed on the hanger and plate lugs of the positive plates. This battery is a Gould FPR-13, 60 cell Plante battery. The manufacturer's representative reinspected the battery and described the degradation as plate-lug corrosion. The representative recommended replacing fourteen cells.

The battery successfully demonstrated all requirements of the refueling outage surveillance. These are a discharge test to prove the battery's rated eight hour capacity of 498 ampere hours, the specific gravity of each cell and the voltage of each cell. Weekly surveillances record the specific gravity and voltage of the pilot cell and the temperature of the adjacent cells, and the electrolyte level of all cells. Quarterly surveillance records the voltage, specific gravity and temperature of all cells. Any cell previously found unacceptable has been replaced. No cell was found unacceptable during the latest surveillance. No unfavorable trends have been noted. Records of these surveillances are available from the Station.

Spare cells for this battery are not stored on site. The spare cells were damaged while being transported to the station. These cells are obsolete. No other appropriate cells are available.

The manufacturer was contacted to provide quantitative operability criteria for cells showing signs of physical degradation. They were unable to provide this information.

At this time, a replacement battery was ordered. This is a GNB 58 cell, 125 volt lead calcium battery of larger capacity. This battery will not be available during the current refueling outage. The installation of the lead calcium battery is now scheduled for September during a two unit outage.

There are two 125 volt batteries on site which are not in use at this time. These are Gould FPS-23, 60 cell batteries also of the Plante type. They were purchased as class 1E for a unit 1 modification to install a High Pressure Coolant Injection system (HPCI). These batteries have been kept on float per the manufacturer's recommendations. They have been discharge tested to prove the original capacity of 917 ampere hours at the eight hour rate.

There are two options for using one of these batteries to supply station 125 volt loads (Division I 125 volt DC power for unit 2, and Division II power for unit 3). The battery and rack could be moved to the unit 2 battery room or it could be used in place by utilizing existing cable.

The FPS-23 batteries are much larger than the existing FPR-13's. However, floor loading is acceptable with this larger size cell. Note that FPS-23 cells would not fit in the rack used for the FPR-13. The fault current is higher and would require installing 150 feet of cable. A unit 3 shutdown would be required as the battery could not be installed during the seven day LCO. The determining factor, however, was the need to relocate the unit 2 24/48 volt batteries. The 60 cell FPS-23 battery is so large that all three batteries could not fit in the room and still allow surveillances.

The decision was made to use the HPCI 1C battery in place. The existing connections to the battery will not be disturbed by this modification. The battery will be electrically isolated from the existing loads on 125 volt DC Distribution Panel #5, which it is connected to. The battery charger in the HPCI building will also be isolated. The existing FPR-13 battery in the unit 2 battery room is to be disconnected. It will remain in place until the new battery is installed in the fall.

The FPS-23 battery will be connected to 125 volt Main Bus 2A-1 by using two existing three conductor, 500 kcmil, 5KV qualified cables for the majority of the run. These cables will be spliced to new single conductor 500 kcmil 600V qualified cables. Three sets of single conductor cable will be used at each end of each of the three conductor cables. Raychem splice kits, purchased as safety related, commercial grade items, will be used to splice the cables in existing cable pans. Splicing the cables in the cable pans is acceptable as all other cable in these pans are not in service and will never be used.

Seismically supported aluminum conduit is used in the unit 2 turbine building to route the new cables to an existing cable pan and then to Main Bus 2A-1. The cables in the HPCI building are routed through cable pan for the entire length of the run. The conduit and supports are being purchased as safety related commercial grade items. A structural review has shown the adequacy of the supports and the walls that the supports are attached to. No structural review of the floor loading in the battery rooms was required as the batteries will not be moved at this time.

Testing requirements will include verifying continuity and no degradation of the insulation on the existing 5kv cables. Continuity is checked by lamping. This consists of connecting a low voltage source to one end of the cable and verifying the presence of this voltage at the other. The insulation is tested by meggering, which consists of impressing a high voltage dc voltage on an open cable and measuring the current flow.

The cable and splices will be additionally tested by using a current source connected to one end of the cable and shorting the other. The temperature of the splices is to be monitored during this test.

As noted above, the FPS-23 battery is much larger than the existing battery in capacity as well as physical size. This battery can maintain the Technical Specification limit at the bus for a longer time than the existing battery could at the battery terminals given the same load profile and including the voltage drop in the cable. The effect of equalizing the battery through such a long cable has also been addressed. The manufacturer has stated that a fully charged Plante battery requires 27mA per 100 Ampere hours of capacity. Therefore, voltage drop during equalizing is not of concern.

The cables are sized to maintain 105 volts at Main Bus 2A-1 for the highest current required. This occurs at the beginning of the load profile due to circuit breaker tripping. The cables have enough resistance to lower the fault current to within the interrupting rating of Main Bus 2A-1.

The duct run, battery rack, cable pans and the HPCI building have been seismically designed. All equipment and structures are adequate for the FSAR stated required response spectrum.

The fire detection in the HPCI building has been reviewed and accepted by the station fire marshal. The cable runs through two fire zones, 8.2.5A and 8.2.6A. The HPCI building and duct run will be incorporated into zone 8.2.5A. The Appendix R analysis will be affected by the use of this battery. Whenever there is a fire in the HPCI building or the duct run, Turbine Building Eastern Zone Group shutdown path B1 will be used to bring the units to a safe condition.

An alarm will be installed on the north door of the HPCI IC switchgear room, which contains the HPCI IC battery room. An alarm and a security card reader will be installed on the south door of this room. All other openings to this room will be covered with sheet metal and tack welded in place. The riser containing the cables entering the HPCI building will also be covered with sheet metal and tack welded. The covers to the HPCI duct run manholes are very large and cannot be lifted without using a crane. No additional security measures are required for the duct run.



Commonwealth Edison

10CFR50.59 FORMAT FOR SAFETY EVALUATION

STATION Dresden UNIT 2

SYSTEM _____ MODIFICATION No. M12-2-85-31

EQUIPMENT NAME 125V Battery

EQUIPMENT No. _____

DESCRIPTION OF MODIFICATION:

Connect 125V DC Distribution Panel #5 Compt. B1 to Turbine Building 125V DC Main Bus 2A-1 cub. B01. This will enable the unused, class 1E Gould FPS-23 125 volt battery to supply Bus 2A-1 loads.

SAFETY EVALUATION: Answer the following questions with a "yes" or "no", and provide specific reasons justifying the decision:

1. Is the probability of an occurrence or the consequence of an accident, or malfunction of equipment important to safety as previously evaluated in the Final Safety Analysis Report increased? _____ Yes X No, Because: The HPCI battery is a larger capacity battery than the existing 125 volt battery and can supply all loads listed in the FSAR for the time periods indicated. The battery was purchased as class 1E and is seismically qualified. The duct run, conduit supports and cable pans are designed to withstand the required response spectrum.
2. Is the possibility for an accident or malfunction of a different type than any previously evaluated in the Final Safety Analysis Report created? _____ Yes X No, Because: Although the cable run is longer, an analysis of the voltage drop has shown the cables used are of adequate size to maintain 105 volts at maximum discharge current. The rated fault current of the HPCI battery is greater than the existing battery. The length of cable reduces the fault current to within the rating of Main Bus 2A-1. The HPCI building has been incorporated into station security. The station fire marshal has determined fire detection is adequate. The cable run (continued on back of page)
3. Is the margin of safety, as defined in the basis for any Technical Specification, reduced? _____ Yes X No, Because: The available voltage will remain above 105 volts at Main Bus 2A-1 for the design basis load profile, which is from section 8.2.3 of the FSAR. The battery differs only in that it has more plates and therefore, higher capacity. The design and construction are otherwise identical. The HPCI building and duct run have been incorporated into the station security and fire protection procedures. Battery surveillance procedures are now applicable to the HPCI 1C battery. Therefore, all Technical specification bases are unchanged.

Performed By M. Stuber Date 3/12/85

Approved By J.E. Hausman Date 3/12/85