



Commonwealth Edison  
1400 Opus Place  
Downers Grove, Illinois 60515

January 27, 1992

Dr. Thomas E. Murley, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Attn: Document Control Desk

Subject: Commonwealth Edison Response to Generic Letter  
91-11 for Quad Cities Station

Quad Cities Units 1 and 2  
NRC Docket Numbers 50-254 and 50-265

Reference: Generic Letter 91-11, "Resolution of Generic Issues 48,  
LCOs for Class 1E Vital Instrument Buses, and 49,  
Interlocks and LCOs for Class 1E Tie Breakers",  
dated July 18, 1991

Dear Dr. Murley:

Generic Letter 91-11 was issued as part of the resolution of Generic Issues 128, "Electrical Power Reliability". The Generic Issues (GI-48 and GI-49) addressed by this letter involve vital AC buses and tie breakers. Specifically the Generic Letter recommends that nuclear plants ensure that procedures are in place that include time limitations and surveillance requirements for: vital instrument buses (VIBs), inverters to VIBs, and tie breakers that can connect redundant Class 1E buses (AC or DC) at one unit or that can connect Class 1E buses between units at the same site.

Commonwealth Edison (CECo) has reviewed Generic Letter 91-11 and has determined that Quad Cities Station is in compliance with the Letter's recommendations.

The following evaluates the Generic Letter issues against Quad Cities' 1E AC and DC electrical distribution system.

Time Limitations and Surveillances for Vital Instrument Buses (VIBs) and Inverters or Other Onsite Power Sources to the VIBs.

The Quad Cities design incorporates two 120/240 VAC buses per unit that can be considered "Vital Instrument Buses" (VIBs). These are the Essential Service Bus and the Instrument Bus.

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The Essential Service (ESS) Bus has two power supplies. The normal power supply is an Uninterruptable Power Supply (UPS) from bus 18 (28 for Unit 2). The alternate AC supply is from bus 17 (26 for Unit 2). If during the course of operation the normal UPS supply to the ESS bus is lost, automatic transfer to alternate AC source takes place. The loss of the UPS supply is immediately indicated in the control room. In responding to these control room alarms, the operator is required by administrative procedure QOA 6800-3 to verify that the shared emergency diesel generator (1/2 DG) is available. This is to assure that power is available to the ESS bus in the event of a Loss of Offsite Power (LOOP) coupled with an inoperable UPS. Technical Specifications section 3.9.E.1 limits unit operation to a maximum of seven days with the 1/2 DG inoperable.

The other VIB; the 120/240 VAC Instrument Bus, is normally powered by Motor Control Center (MCC) 18-2, (28-2 for Unit 2), with an alternate supply from MCC 15-2 (25-2 for Unit 2). A control room alarm indicates there is an MCC transfer. Subsequent operator actions defined by QOA 6800-1 can include unit shutdown if power cannot be restored to the bus.

For both these VIBs, proper breaker lineups are verified at the end of every refuel outage, prior to start-up, by the Operations Department. In addition, the Technical Staff verifies breaker line-up weekly for the ESS and Instrument Buses per Procedure QTP 400-1.

#### Time Limitations and Surveillance for Tie Breakers Connecting Common Unit 1E Buses (AC or DC).

The Quad Cities design incorporates common unit tie breakers in two 480 VAC situations. In both these cases, adequate controls exist to satisfy the recommendations of the Generic Letter. Also included under this common unit cross-tie situation, is a discussion of two DC battery sources which are normally cross-unit connected. The common unit linking of the batteries creates a limiting condition. For the DC power off-normal line-up, adequate procedural controls exist to limit the time this situation is allowed.

First a discussion of the AC power configuration. The 480 VAC buses 18 and 19 on Unit 1 (28 and 29 for Unit 2) are capable of being cross-tied. Typically these buses are cross-tied for maintenance during refuel outage but can be cross-tied during emergency situations. If the cross-tie is engaged, the 18-19 (or 28-29) bus tie alarm actuates in the control room. Also, the bus line-ups are recorded daily in surveillance procedure QOS 005-1. The use of the 18-19 (or 28-29) tie breakers is limited by Technical Specification 3.9.A.4.b to 72 hours during power operation. If the cross-ties are not restored to proper alignment during this 72 hour LCO the unit must be brought to Cold Shutdown within 24 hours.

480 VAC MCC 18/19-5 (28/29-5 for Unit 2) is a single MCC which is split into MCC 18-5 and 19-5 (28-5 and 29-5) sections in order to supply loads on each of their respective divisions. However, the combined MCC has a permanent cable connection and is fed from only one division at a time, normally bus 19 (29). If power is lost from the preferred bus for more than 15 seconds the supply will automatically switch to bus 18 (28). This arrangement is allowed at Quad Cities due to an exemption from QDC 17. MCC 18/19-5 (28/29-5) feeds the motor operated valves required for proper operation of the Low Pressure Core Injection (LPCI) system. The swing bus arrangement is mandated by the LPCI Loop Selection scheme, and is unique to the BWR/3 design.

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Also included under common unit cross connections are the 250 VDC Reactor Building MCCs and the 125 VDC Reactor Building MCCs and the 125 VDC Battery cross-ties. The normal line-up for the 125 VDC system is for the Unit 1 battery to feed Unit 1 Division 1 and Unit 2 Division 2 loads. Conversely the Unit 2 battery feeds Unit 2 Division 1 and Unit 1 Division 2 loads. This Divisional separation is defeated if the reserve feed for the Turbine Building reserve bus 1B-1 for Unit 1 (2B-1 for Unit 2) is closed. These bus line-ups are checked weekly during system walkdowns. Technical Specification 3.9.C.3 places both Units in a three day LCO if the battery divisional separation is not maintained.

In the case of the 250 VDC Reactor Building MCCs, the normal line-up is for the Unit 1 250 V battery to provide for the Unit 1 1A MCC and the Unit 2 2B MCC with the Unit 2 250 V battery feeding the Unit 2 2A MCC and the Unit 1 1B MCC. If both MCCs on a unit (1A and 1B or 2A and 2B) are cross-tied to their respective unit's battery, both units are placed in a three day LCO by Technical Specification 3.9.C.3. Proper alignment of these tie breakers is verified during weekly system walkdowns.

Tie Breakers Connecting Unit 1E Buses (AC or DC) Between Units.

The set of cross-tie breakers between 4KV bus 14-1 in Unit 1 and bus 24-1 in Unit 2 is used during situations when off-site power sources are not available to one of the units. The cross-tie arrangement allows supplying one unit's shutdown loads and the other unit's LOCA loads, thus meeting the intent of GDC 17 with one reserve auxiliary transformer per unit. This cross-tie is not generally used during plant operation and its status is checked every shift. When used, the cross-tie load is limited to 600 amps and the time allowed for its use is limited to seven days by Technical Specification 3.9.C.1.

Based on the above information, CECO concludes that Quad Cities' Technical Specifications for AC and DC distribution systems along with existing administrative controls assure the recommendations of Generic Letter 91-11 are met.

To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respect these statements are not based on my personal knowledge, but on information furnished by other CECO employees, contractor employees, and consultants. Such information has been reviewed in accordance with Company practice, and I believe it to be reliable.

If there are any questions or comments, please contact me at (708) 515-7292.

Sincerely,

State of Ill. County of Cook

Signed before me on this

of January 1992 by David J. Chrzanowski

Notary Public [Signature]

[Signature]

David J. Chrzanowski  
Nuclear Licensing Administrator  
Generic Issues

cc: A. Bert Davis, Regional Administrator-RIII  
L. Olshan, Project Manager-NRR/PDIII-2  
R. Elliott, Project Engineer-NRR/PDIII-2  
T. Taylor, Senior Resident Inspector-Quad Cities

