

June 9, 1989

Docket Nos. 50-454, 50-455, 50-456, and 50-457

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Mr. Thomas J. Kovach  
Nuclear Licensing Manager  
Commonwealth Edison Company  
Post Office Box 767  
Chicago, Illinois 60690

Dear Mr. Kovach:

SUBJECT: USE OF FUSES FOR ELECTRICAL ISOLATION AT BYRON/BRAIDWOOD  
(TAC NOS. 72847, 72848, 72849, AND 72850)

By letter dated March 29, 1989, you requested approval to use fuses for electrical isolation of non-class 1E dc power systems at Byron/Braidwood. Enclosed is our Safety Evaluation which concludes that your proposal is acceptable provided that the circuit breaker which is in parallel to the two fuses is locked open. An acceptable alternative is to physically remove this breaker.

This completes action on TAC Numbers 72847, 72848, 72849, and 72850.

151

Leonard N. Olshan, Project Manager  
Project Directorate III-2  
Division of Reactor Projects III,  
IV, V, and Special Projects

Enclosure:  
As stated

cc w/enclosure:  
See next page

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

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Nuclear Licensing Manager  
Commonwealth Edison Company  
Post Office Box 767  
Chicago, Illinois 60690

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This completes action on TAC Numbers 72847, 72848, 72849, and 72850.

A handwritten signature in cursive script, reading "Leonard N. Olshan".

Leonard N. Olshan, Project Manager  
Project Directorate III-2  
Division of Reactor Projects III,  
IV, V, and Special Projects

Enclosure:  
As stated

cc w/enclosure:  
See next page

Mr. Thomas J. Kovach  
Commonwealth Edison Company

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Units 1 and 2

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Mr. Thomas J. Kovach  
Commonwealth Edison Company

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Byron/Braidwood

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Commonwealth Edison Company  
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USE OF FUSES FOR ELECTRICAL ISOLATION  
COMMONWEALTH EDISON  
BYRON I&2, BRAIDWOOD I&2  
DOCKET NOS. 50-454/455/456/457

1.0 INTRODUCTION:

In the existing 125V dc design, the separation of non-Class 1E circuits from Class 1E system is provided by two Class 1E breakers. These breakers are coordinated with their upstream breaker and are periodically tested to verify coordination. In order to eliminate the periodic testing required to verify coordination, the licensee, by letter dated March 29, 1989, has proposed modification to install two fuses (in series) connected in parallel with the main feed breaker.

2.0 EVALUATION:

Commonwealth Edison has proposed a design modification to the 125V dc system that utilizes fuses for isolation of the non-Class 1E loads from the Class 1E buses. In the proposed modification, two fuses (in series) will be connected in parallel with the main feed breaker servicing the non-safety loads. The licensee states that this main feed breaker would then be normally operated in the open (N.O.) position. This operation of breaker would be controlled by administrative procedure allowing it to be closed only when necessary for maintenance, inspection, replacement of the fuses. The licensee will provide two Class 1E fuses connected in series and coordinated with their upstream breaker. Periodic testing of fuses in dc power circuits, to verify coordination is not required provided that each fuse is tested (for example, resistance measurement) to verify overcurrent protection as designed. In lieu of periodic testing, a documented periodic inspection and maintenance procedure shall be implemented which will ensure:

- a) that the proper size and type of fuse is installed,
- b) that the fuse shows no physical sign of deterioration, and
- c) that the fuse connections are tight and clean.

We have reviewed the licensee's submittal and have found that a fuse will provide power circuit isolation reliability which may be higher than that for a circuit breaker tripped by fault current as supported by the data on fuses and breakers in IEEE Std. 500-1977 for low voltage (up to 1000V) power systems. Therefore, it is acceptable to use two fuses in series for electrical isolation in dc power circuits. However, the circuit breaker across which the fuses will be installed should be locked open.

### 3.0 CONCLUSION:

We have reviewed the licensee's submittal and have concluded that a fuse will provide power circuit isolation reliability which may be higher than for a circuit breaker as supported by the data on fuses and breakers in IEEE Std. 500-1977 and, therefore, the use of two fuses as isolation device for dc circuits is acceptable. However, the breaker across which these fuses will be installed should be locked open.