



Commonwealth Edison

One First National Plaza, Chicago, Illinois

Address Reply to: Post Office Box 767
Chicago, Illinois 60690

September 7, 1983

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

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Supplemental Response to IE Bulletin No. 77-07
NRC Docket Nos. 50-454/455 and 50-456/457

References (a): IE Bulletin No. 77-07 - J. G. Keppler letter to
B. Lee, Jr. dated December 19, 1977

(b): D. E. O'Brien letter to J. G. Keppler dated
January 20, 1978

Dear Mr. Keppler:

Reference (a) requested that the Commonwealth Edison Company provide a written report regarding containment electrical penetration assemblies. Reference (b) provided that response. Our review of this response indicated that a supplemental response was necessary to accommodate design changes implemented since early 1978. The Attachment to this letter provides the results of our review, and where applicable provides a discussion of the requisite actions taken. Changes to the FSAR will be made as necessary.

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

Please address any questions that you or your staff may have concerning our supplemental response to IE Bulletin No. 77-07 to this office.

8309130016

IE 11/1
SEP 9 1983

One (1) signed original with Attachment is being sent directly to the USNRC Document Control Desk in Washington, DC for reproduction and distribution.

Respectfully,

P. L. Barnes

P. L. Barnes
Nuclear Licensing Administrator

Attachment

cc: US NRC, Document Control Desk
Washington, DC

RIII Inspectors - BY/BW

SUBSCRIBED and SWORN to
before me this 7th day
of September, 1983

Rosalie A. Picenta
Notary Public

7253N

Attachment

Byron Units 1 and 2
and
Braidwood Units 1 and 2

Supplemental Response to IE Bulletin No. 77-07

There has been a number of design changes in the installation of the electrical penetrations since our response to I.E. Bulletin 77-07 on January 20, 1978.

Our response identified the Bunker Ramo electrical penetrations as the only type being used at Byron and Braidwood Stations. However the present design includes a large number of electrical penetrations supplied by Conax Corporation.

Attachment "A" to this letter is a complete list of the electrical penetration assemblies at Byron/Braidwood Stations. You will note that (a) all of the Byron/Braidwood Unit 1 and some of the Unit 2 penetrations are manufactured by Bunker Ramo and (b) a large number of the Unit 2 Bunker Ramo low voltage penetration modules are being replaced with Conax Adapter Modules.

We have reviewed the Bulletin and our response and provide the following supplemental response:

- 1.0 The Byron/Braidwood penetrations manufactured by Bunker Ramo are similar in that they depend upon a glass epoxy sealant and a dry nitrogen pressure environment to ensure that the electrical and pressure characteristics are maintained so as to ensure the functional capability as required by the Plant's Safety Analysis Report; namely, (1) to insure adequate functioning of electrical safety-related equipment and (2) to ensure containment leak tightness. The model (type) is identified by the manufacturer as a Unitized Header Assembly.

The Byron/Braidwood penetrations manufactured by Conax (including the Adapter Modules) do not utilize an epoxy insulation system. The Conax penetration design utilizes solid copper conductors which pass through the assembly without any internal splices. The conductors are continuously insulated with a polyimide (kapton) film and mechanically sealed at both ends of the stainless steel tube (module) using thermoplastic (polysulfane) sealants. The modules are then mechanically sealed within the penetration's header plate. The model (type) is identified by the manufacturer as "The Penetration within a Penetration."

The Conax penetrations are designed with the provision of periodically monitoring the condition of all seals by internally pressurizing the assembly with nitrogen gas. However, the nitrogen gas does not contribute to the electrical function of these penetrations.

1.1 See Item 1.0 above.

1.2 The Bunker Ramo penetration transition connector pins imbedded in the epoxy, as discussed in Item 1.0 above, do not have an insulation jacket. The glass epoxy sealing material provides pin to pin insulation.

This question is not applicable to the Conax penetrations. See Item 1.0 above.

2.0 The dry nitrogen pressure, specified in Bunker Ramo's Instruction manual, has been maintained at all times during shipping, storage and installation of the electrical penetrations.

The Conax penetrations do not depend upon a dry nitrogen pressure environment to ensure that the electrical characteristics are maintained. (See Item 1.0 above.)

3.0 There is a need to maintain the Bunker Ramo penetrations pressurized during normal operation to assure electrical functionability during a LOCA.

There is no need to maintain the Conax penetrations pressurized during normal operation to assure electrical functionability during a LOCA.

3.1 The functional requirements and the reference documents listed in the penetration procurement specifications identify the design reviews, analyses and tests required to ensure that the penetrations will perform their design function under LOCA conditions. The following is a partial list of the documents referenced in the procurement specification:

- IEEE-317 - Standard for Electrical Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations (1972).
- IEEE-323 - Standard for Qualifying Class 1E Electrical Equipment for Nuclear Power Generating Stations (1974).
- IEEE-344 - Guide for Seismic Qualification of Class 1 Electrical Equipment for Nuclear Power Generating Stations (1971).

IEEE-383 - Standard for Type Test of Class 1E Electric Cables, Field Splices and Connections for Nuclear Power Generating Stations (1974).

ASME - Boiler and Pressure Vessel code, Section III, Subsection NE for Class MC Components.

ANSI - Quality Assurance Program Requirements for
N-45-2 Nuclear Power Plants.

ANSI - Installation, Inspection and Testing for
N-45.2.4 Instrumentation of Electrical Equipment during the Construction of the Nuclear Power Generating Plants (IEEE-336).

3.2 The measures that provide this assurance (Item 3.1 above) are adequate to satisfy the Commission's regulations (General Design Criteria 4 - Appendix A to 10CFR50 and Quality Assurance Criteria - Appendix B to 10CFR50).

ATTACHMENT "A"

LIST OF ELECTRICAL PENETRATION ASSEMBLIES AT BYRON/BRAIDWOOD STATIONS

<u>S&L Spec. Item No.</u>	<u>Byron/Braidwood Unit 1 Equipment No.</u>	<u>Byron/Braidwood Unit 2 Equipment No.</u>
Item 1	1RC01E* 1RC02E* 1RC03E* 1RC04E*	2RC01E** 2RC02E** 2RC03E** 2RC04E**
Item 2	1VP01E* 1VP02E* 1VP03E* 1VP04E	2VP01E** 2VP02E** 2VP03E** 2VP04E**
Item 3	1AP84EA* 1AP84EB* 1AP84EC*	2AP84EA** 2AP84EB** 2AP84EC**
Item 4	1RY04E* 1RY05E* 1RY06E* 1RY07E*	2RY04E*** 2RY05E*** 2RY06E*** 2RY07E***
Item 5	1RD12E* 1RD13E* 1RD15E* 1RD16E* 1RD17E*	2RD12E*** 2RD13E*** 2RD15E*** 2RD16E*** 2RD17E***
Item 6	1SI01E* 1SI02E*	2SI01E*** 2SI02E***
Item 7	1AP85EA* 1AP85EB* 1AP85EC* 1AP85ED*	2AP85EA*** 2AP85EB*** 2AP85EC*** 2AP85ED***
Item 8a	1SI03E* 1SI04E*	2SI03E** 2SI04E**
Item 8b	1LV01E* 1LV02E* 1LV03E* 1LV04E*	2LV01E** 2LV02E** 2LV03E** 2LV04E**
Item 9a	1SI05E* 1SI06E* 1SI07E* 1SI08E*	2SI05E** 2SI06E** 2SI07E** 2SI08E**
Item 9b	1LV05E* 1LV06E*	2LV05E** 2LV06E**

<u>S&L Spec. Item No.</u>	<u>Byron/Braidwood Unit 1 Equipment No.</u>	<u>Byron/Braidwood Unit 2 Equipment No.</u>
Item 9c	1LV07E* 1LV08E*	2LV07E** 2LV08E**
Item 9d	1LV09E* 1LV10E*	2LV09E* 2LV10E*
Item 10	1NR01E* 1NR02E* 1NR03E* 1NR04E* 1IC19E*	2NR01E** 2NR02E** 2NR03E** 2NR04E** 2IC19E**
Item 12	1CQ01E* 1CQ02E*	2CQ01E** 2CQ02E**

- * - Manufactured by Conax
- ** - Manufactured by Bunker Ramo
- *** - Bunker Ramo Penetration with Conax Adapter Modules