

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555

July 26, 1989

NRC INFORMATION NOTICE NO. 89-57: UNQUALIFIED ELECTRICAL SPLICES IN  
VENDOR-SUPPLIED ENVIRONMENTALLY  
QUALIFIED EQUIPMENT

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees to a potential problem involving unqualified electrical splices in vendor-supplied environmentally qualified (EQ) equipment. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On June 5, 1989, the licensee for the Cooper Nuclear Station (CNS) reported to the NRC the finding of unqualified splices within conduits on vendor-supplied instrument racks. The racks contain wire junction boxes and Barton differential pressure indicating switches (DPISs). A piece of flexible conduit runs between the junction box and a condulet mounted on the DPIS (See Attachment 1). The flexible conduits vary in length from 2 to 10 feet. The unqualified splices consisted of wirenuts, insulated butt crimps, or Scotch tape splices. This problem was discovered during an unrelated walkdown inspection that was being performed as part of an instrument upgrading process for Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." The racks were manufactured by HUICO Incorporated of Pasco, Washington, and supplied as a unit by the General Electric Company during initial plant construction.

Discussion:

The only wiring performed by the licensee during initial plant construction was that from the field to the rack-mounted junction boxes. During previous EQ walkdown inspections of plant equipment, the licensee inspected the junction boxes only to verify the existence of qualified wiring. The licensee did not inspect the cable terminations in the DPISs because such an inspection would

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have affected the EQ integrity of the DPISs and because only a short run of wire was involved. It was assumed that the qualified wire in the junction boxes continued to the DPIS terminal strips, but unqualified splices were found instead. These splices were not indicated on any plant drawings.

The licensee performed a 100-percent walkdown inspection of all instrument racks and believes that the problem is confined to approximately seven racks. A review of maintenance records indicated that about four of the DPIS instruments were replaced. As this replacement only involved disconnection of leads at the terminal strip located inside the instrument, the unqualified splices remained undetected. The results of the licensee's investigation indicate that the unqualified splices are restricted to the specific instrument racks manufactured by HUICO. The investigation also indicates that the unqualified splices existed in the conduits when the racks were delivered to CNS.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the technical contact listed below or the Regional Administrator of the appropriate regional office.

*Charles E. Rossi*

Charles E. Rossi, Director  
Division of Operational Events Assessment  
Office of Nuclear Reactor Regulation

Technical Contact: Thomas F. Stetka, Region IV  
(817) 860-8247

Attachments:

1. Figure 1, "Typical Junction Box and Barton Switch Arrangement"
2. List of Recently Issued NRC Information Notices

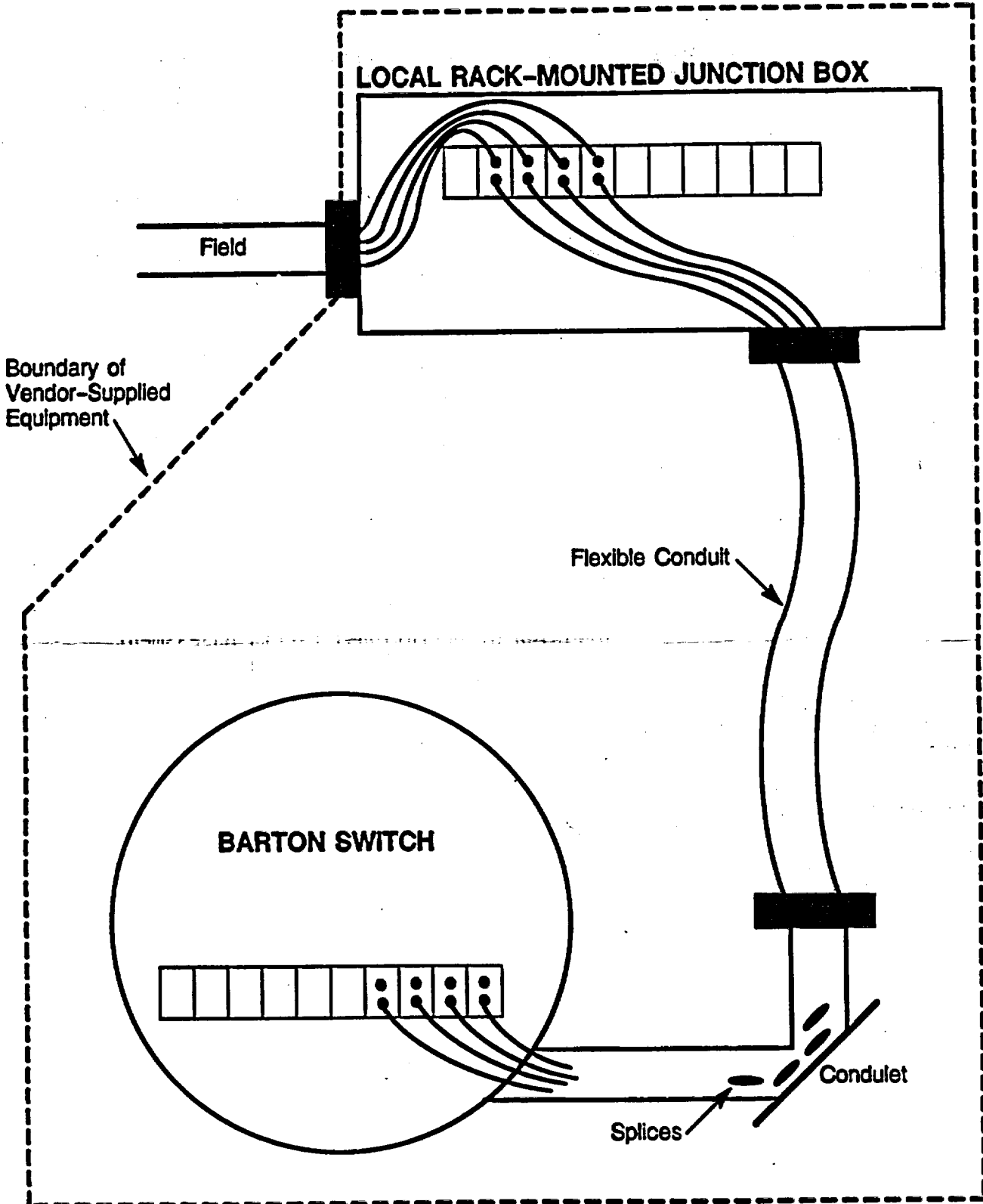


Figure 1 Typical Junction Box and Barton Switch Arrangement

LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
89-56	Questionable Certification of Material Supplied to the Defense Department by Nuclear Suppliers	7/20/89	All holders of OLs or CPs for nuclear power reactors.
89-45, Supp. 1	Metallized, Low-Voltage Power Circuit Breakers Refurbished With Substandard Parts	7/6/89	All holders of OLs or CPs for nuclear power reactors.
89-55	Degradation of Containment Isolation Capability by a High-Energy Line Break	6/30/89	All holders of OLs or CPs for nuclear power reactors.
89-54	Potential Overpressurization of the Component Cooling Water System	6/23/89	All holders of OLs or CPs for nuclear power reactors.
89-53	Rupture of Extraction Steam Line on High Pressure Turbine	6/13/89	All holders of OLs or CPs for nuclear power reactors.
88-46, Supp. 3	Licensee Report of Defective Refurbished Circuit Breakers	6/8/89	All holders of OLs or CPs for nuclear power reactors.
89-52	Potential Fire Damper Operational Problems	6/8/89	All holders of OLs or CPs for nuclear power reactors.
89-51	Potential Loss of Required Shutdown Margin During Refueling Operations	5/31/89	All holders of OLs or CPs for nuclear power reactors.
88-88, Supp. 1	Degradation of Westinghouse ARD Relays	5/31/89	All holders of OLs or CPs for nuclear power reactors.
89-50	Inadequate Emergency Diesel Generator Fuel Supply	5/30/89	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
CP = Construction Permit

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have affected the EQ integrity of the DPISs and because only a short run of wire was involved. It was assumed that the qualified wire in the junction boxes continued to the DPIS terminal strips, but unqualified splices were found instead. These splices were not indicated on any plant drawings.

The licensee performed a 100-percent walkdown inspection of all instrument racks and believes that the problem is confined to approximately seven racks. A review of maintenance records indicated that about four of the DPIS instruments were replaced. As this replacement only involved disconnection of leads at the terminal strip located inside the instrument, the unqualified splices remained undetected. The results of the licensee's investigation indicate that the unqualified splices are restricted to the specific instrument racks manufactured by HUICO. The investigation also indicates that the unqualified splices existed in the conduits when the racks were delivered to CNS.

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2. List of Recently Issued NRC Information Notices

\*SEE PREVIOUS CONCURRENCES

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TFStetha  
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\*SC/SPLB:DEST:NRR  
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GERossi  
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CEMcCracken  
07/11/89

\*C/OGCB:DOEA:NRR  
CHBerlinger  
07/13/89  
\*RPB:ARM  
TechEd  
07/11/89

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