

**Roberta Chandler**

**From:** Roberta Chandler on behalf of Colbert Turney  
**Sent:** Friday, May 13, 2011 3:27 PM  
**To:** 'mshd.resource@nrc.gov'  
**Cc:** Joel Bradley; Joe Modig; Bert Benton; Ben Harper  
**Subject:** SOR Event 46821 Evaluation of Deviation for Defect

**Attachments:** SOR Part 21 Eval of Dev.pdf

This Evaluation of Deviation for Defect is being sent as a follow up to a call made to Steve Pannier, Eric Thomas and Jessie Robles of the NRC on May 12, 2011.

We look forward to the NRC's closure of this Part 21 Non-Emergency Event. Please email or call me if you need additional information or if there are any questions.



SOR Part 21 Eval of  
Dev.pdf (2...

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JE19  
ARR



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## Evaluation of Deviation for Defect Report

See SOR Procedure 8303-110 Reporting of Deviations for Defects per NRC 10CFR Part 21

Documented on: RMA 30503

NCR

CSS

### Event

DESCRIPTION: \*\*\* THIS PRODUCT RETURN OR COMPLAINT IS NUCLEAR FACILITY RELATED\*\*\*  
 IF COMMERCIAL GRADE PRODUCT, DOES THE CONTRACT INVOKE 10CFR50 APP. B OR 10CFR  
 PART 21? YES

Q.A. TO REVIEW PER NUCLEAR PROCEDURE 8303-110 EVALUATION OF DEVIATION FOR DEFECT. YES

MODEL NUMBER: 9013737 (201RT-B125-U9-C7A-TTNQ)

SERIAL NUMBER OR SALES ORDER NUMBER: 100901789

DESCRIPTION OF PROBLEM: CONDUCTOR IS NOT VISIBLE IN END OF TERMINAL NO.1 LUG.

INITIALS & DATE: JJ 2/9/11

PROCESS MEDIA (OPT.): N/A

CONTACTS EMAIL ADDRESS (OPT.):

CHARGES QUOTED (OPT.): N/A

ADVANCE REPLACEMENT SENT (YES or NO): NO

CREDIT FREIGHT? (NO or YES & \$): NO WILL RETURN ON SOR UPS ACCOUNT

RESOLUTION: UNIT GAVE TO JOE MODIG FOR EVALUATION. CP 02-17-11

1ea #9013737 / S/N#100901789 ON THE "NO" WIRE THE CONDUCTOR IS NOT VISIBLE ON THE LUG.  
 WARRANTY REPAIR. PER JOE WE WILL NEED TO

This is the RMA with the improper wire crimp. It also appears there is a chip on the  
 corner of the terminal block where it is fastened to the bracket. I propose we do the  
 following.

1. Disconnect all three wires from the terminal block.
2. Remove the terminal block.
3. Remove the terminal block bracket.
4. Cut off the bad lug and install new lug. Record traceability.
5. Clean all internal and external threads from of any Loctite residue.
6. Scrap the old terminal block and replace it with a new one. Record traceability.
7. Re-install all parts per standard nuclear procedures, recording traceability on  
 Loctites used.
8. Document all assembly steps on the appropriate nuclear assembly procedures.
9. Make sure to verify that the wires are connected to the appropriate terminals.
10. Re-do final cal and document on test data sheet. CP 02-18-11

### Evaluation:

Deviation only  Defect

### Evaluation of Deviation

The returned unit, serial number 100901789, from Duane Arnold Nuclear Power Plant passed all internal  
 testing prior to leaving SOR. This verified that there was conductivity between the wire and the terminal lug.  
 After the unit was returned to SOR, evaluation of the terminal lug in question by the customer showed that  
 while the stripped wire was not easily visible at the ring side of the lug, the wire was secure in the crimp. The  
 unit was re-tested, once again verifying the conductivity of the wire to the terminal lug.

Follow up evaluation of our internal production process verified that the correct hand crimper as specified by  
 the terminal lug manufacturer was used. It was found that the terminal lug manufacturer recommends a .219  
 +/- .016 in. wire strip length and our internal process instructions call for a slightly shorter strip dimension of  
 3/16 in. (.1875). Regardless, the conductivity of the wire to the terminal lug is still established using the shorter  
 strip dimension. To verify that the current strip length would be visible when inserted properly, a new sample  
 wire was prepared with the 3/16 in. strip length. When this sample wire was fully inserted into the terminal lug,  
 conductor strands were visible on the lug side of the terminal crimp barrel. This meets the generally accepted



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workmanship standards for this type of wire termination. However, as a continuous improvement, the internal process instructions have since been changed to agree with the manufacturer's recommended length.

The evaluation conclusion is that a random operator error resulted in the wire not being fully inserted into the terminal lug prior to crimp termination thus resulting in the wire conductors not being visible. Because it was a random error and because conductivity was still present even under this condition, a Part 21 is not required.

Name, Title	Signature	Date
Bert Benton Vice President, Manufacturing		3/25/11
John Fortino Vice President, Engineering		3-25-11
Colbert Turney Vice President, Quality		March 25-2011

See 8303-117. Approved Personnel List

**If Evaluated as Defect per NRC 10CFR Part 21:**

Preliminary notification issued on (date)
Notification of Defect per 10CFR21 Requirements issued on (date)
Notification rescinded on (date)

If Defect, see CAR
Retain per 094-129 Procedure for Controlling Quality Records: L:\\$Quality\Nuclear\10CFR Pt 21 - Evaluation of Deviations & Defects

TOP

**Part 21**

Rep Org: SOR INC PROCESS INSTRUMENTATION  
Licensee: SOR INC PROCESS INSTRUMENTATION  
Region: 4  
City: LENEXA State: KS  
County:  
License #:  
Agreement: Y  
Docket:  
NRC Notified By: COLBERT TURNEY  
HQ OPS Officer: BILL HUFFMAN

Emergency Class: NON EMERGENCY  
10 CFR Section:  
21.21 - UNSPECIFIED PARAGRAPH

Event Number: 46821

Notification Date: 05/04/2011  
Notification Time: 12:14 [ET]  
Event Date: 05/04/2011  
Event Time: [CDT]  
Last Update Date: 05/04/2011

Person (Organization):  
DAVID PROULX (R4DO)  
PART 21 GROUP ()  
MARK RING (R3DO)

**Event Text**

**PRESSURE SWITCH WITH POSSIBLE SUB-STANDARD ELECTRICAL LEAD TERMINATIONS**

SOR Process Instruments has determined that certain model pressure switches it has manufactured may have leads attached to the terminal blocks that are not in conformance with good manufacturing practice. The pressure switches in question may have lead wire attached to the terminal block in which the connection between the stripped, stranded wire and a crimped terminal may not be flush with the terminal end. SOR states that there have been no known field problems associated with this issue.

This condition applies to SOR model switches with terminal block "X" options 9013-737, 9013-747, 9013-7674. SOR has provided this information to those customers that purchased these switches. The U.S. plants that received these switches are Braidwood and Duane Arnold.