

General Information or Other (PAR)

Event # 46296

<b>Rep Org:</b> ABB, INC.	<b>Notification Date / Time:</b> 09/30/2010 17:35 (EDT)
<b>Supplier:</b> ABB, INC.	<b>Event Date / Time:</b> 09/09/2010 (EDT)
	<b>Last Modification:</b> 09/30/2010
<b>Region:</b> 1	<b>Docket #:</b>
<b>City:</b> CORAL SPRINGS	<b>Agreement State:</b> Yes
<b>County:</b>	<b>License #:</b>
<b>State:</b> FL	
<b>NRC Notified by:</b> CHAD BUCKWALTER	<b>Notifications:</b> THOMAS FARNHOLTZ R4DO
<b>HQ Ops Officer:</b> HOWIE CROUCH	MARK LESSER R2DO
<b>Emergency Class:</b> NON EMERGENCY	PART 21 GROUP
<b>10 CFR Section:</b>	
21.21 UNSPECIFIED PARAGRAPH	

PART 21 REPORT ON SOLID STATE RELAYS

ABB, Inc. notified the NRC of solid state relays that failed to comply with ABB manufacturing specifications. Subject relays are 27H catalog numbers 411R0175-DP-1E and 411R0175-1E. The failure to comply is in regard to improper installation of a jumper on the main printed circuit board (PCB) of the relay. Manufacturing specifications require the jumper leads to extend far enough beyond the surface plane of the PCB to ensure proper connection. The jumper enables the relay to provide high-speed, instantaneous trip capability. If the jumper were not installed properly, the trip function may be erratic. The subject relays were manufactured between October 1, 2009 and September 9, 2010.

Two safety-related versions of this relay have been purchased by South Texas Project. ABB, Inc. is investigating whether any nuclear plants have purchased the affected relays for use in non safety-related applications.

ABB will be notifying South Texas Project of this defect.

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September 30, 2010

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
FAX 301-816-5151

Subject: 10CFR Part 21 Notification of Potential Defect, 27H Relay, 411R0175-DP-1E and 411R0175-1E

Dear Sir or Madam:

This letter is submitted in accordance with 10 C.F.R § 21.21(d)(3)(ii) with respect to a failure to comply with the specifications associated with the Type 27H 411R0175-DP-1E and 411R0175-1E relays.

The notifying individual is Mr. Pat Wilkinson, General Manager, ABB Inc. (Distribution Automation), 4300 Coral Ridge Rd, Coral Springs FL, 33065.

The identification of the subject relay is as follows: 27H 411R0175-DP-1E and 411R0175-1E relays. The failure to comply centers around the improper installation of a jumper installed at location R38 (H) on the relay's main printed circuit board ("PCB"). The jumper leads did not extend far enough beyond the plane of the board to ensure proper connection. The jumper enables the relay to provide a high-speed, instantaneous trip. If there is an improperly installed jumper, the input value of an operational amplifier is unpredictable and may possibly cause unexpected target and trip.

North Central Electric notified ABB on August 23, 2010 and stated that the 27H relay (catalog number 411R0175) trip indication flags were set on the relays after they were powered up for some time. After return of the relays to ABB, our inspection indicated that eleven of the twelve relays exhibited improper jumper installation. On September 9, 2010, the ABB technician concluded that the failures were likely due to the improper installation of the jumper leads. The manufacturing timeframe of these suspect relays occurred between October 1, 2009 to September 9, 2010. The timeframe was determined based on when the jumpers were installed at ABB's Coral Springs facility. The installation of suspect jumpers did not follow the guidelines set forth in IPC-A-610, paragraph 7.5.3, which requires the lead to protrude beyond the land within the specified minimum and maximum length. The printed circuit board assemblies ("PCBAs") were manufactured for ABB by an outside supplier; however, those PCBAs did not include any jumpers. The root cause of this issue was determined to result from inadequate guidance on the part of the ABB assemblers for the position of the jumper, insufficient direction on the PCB drawing for the location of the jumper, and inadequate guidance for inspectors with respect to the inspection of jumpers. ABB has completed a draft of an Engineering Change Request ECR 2010-1624 to aid our supplier on the correct positioning of the jumpers. The jumpers will be installed by our supplier in accordance with ECR 2010-1624 once it is approved by our Engineering Manager.

**ABB Inc.**



ABB is taking, or has taken, the following corrective actions:

- Notification of the potential existence of this deviation to affected customers (to complete by October 1, 2010).
- Reviewed all shop floor open orders to ensure product was inspected prior to shipment. (completed on September 9, 2010)
- Revise production testing form to include inspection of leads per IPC-A-610 paragraph 7.5.3. (complete by September 30, 2010)
- Provide training to inspectors and testers on the additional inspection requirements (to be complete by October 4, 2010)
- The two solder operators for the solid state product line will complete the J-STD-001 solder training. (to be completed by October 4, 2010)
- Receiving inspection test plans updated to inspect jumpers (completed on September 13, 2010)
- Conduct training with entire shop floor personnel on PC Board Assembly Standards (to complete on September 29, 2010)
- Work Instruction to be generated on how to inspect for correct installation of the jumper (to be complete by October 1, 2010)

The customers and their affected purchase orders affected are listed below:

ABB Inc. Florence, SC – Purchase orders 4500180141 (1 each, serial number: 19458) and 4500183444 (1 each, serial number: 19427)

- End User : STP Nuclear Operating Company

ABB Korea, 513 Sungsung Dong – Purchase Order 4500112151 (9 each, serial numbers 19382, 19388, 19389, 19392 Thru 19397)

- End User: KHNP Shinwolsung NPP

ABB will provide written guidance on how to inspect for a properly installed jumper with the customer notification. If defects are found, the units can be returned to ABB Coral Springs for repair and recertification.

If you have any questions regarding this notice, please contact the Quality Manager, Mr. Chad Buchwalter, directly at (954) 825-0604.

Very truly yours,

Pat Wilkinson  
General Manager

**ABB Inc.**