

Power Reactor

Event # 51095

<b>Site:</b> BRUNSWICK		<b>Notification Date / Time:</b> 05/28/2015 13:18 (EDT)				
<b>Unit:</b> 1 2	<b>Region:</b> 2	<b>State :</b> NC	<b>Event Date / Time:</b> 05/26/2015 15:36 (EDT)			
<b>Reactor Type:</b> [1] GE-4,[2] GE-4		<b>Last Modification:</b> 05/28/2015				
<b>Containment Type:</b> MARK I MARK I						
<b>NRC Notified by:</b> MARK TURKAL		<b>Notifications:</b> KATHLEEN O'DONOHUE R2DO				
<b>HQ Ops Officer:</b> JOHN SHOEMAKER		PART 21/50.55 REACTOREMAIL				
<b>Emergency Class:</b> NON EMERGENCY						
<b>10 CFR Section:</b>						
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE						
Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mode
1	N	Yes	100	Power Operation	100	Power Operation
2	N	Yes	100	Power Operation	100	Power Operation

## PART 21 NOTIFICATION - ALLEN BRADLEY 700RTC RELAY CONFIGURATION

"This is a non-emergency notification, required by 10 CFR 21.21(d)(3)(i).

"Brunswick has determined that Allen Bradley relays, base model 700RTC, contain an unevaluated Complex Programmable Logic Device (CPLD). This was an unpublished design change that was implemented to replace an obsolete integrated circuit chip. The undocumented design change did not result in a part number change from Allen Bradley. There was no change to the external appearance of the relay that would indicate that a design change had been made to the relay configuration. Therefore, qualification/dedication of the modified relays have not included additional testing for the new CPLD component. Testing, performed by Duke Energy, has demonstrated that this CPLD can be affected by electrical noise from operation of nearby relays which can reset the timing of the relay. This condition was discovered as a result of a post-maintenance test of an emergency diesel generator. Additional details associated with the discovery of this condition are contained in Brunswick Licensee Event Report 1-2015-002, dated May 20, 2015.

"Brunswick purchased, as commercial grade, 25 of the modified Allen Bradley 700RTC relays beginning in October, 2008. Duke Energy dedicated these relays for use in safety related applications at Brunswick. The dedicated relays were not provided to any third party customers.

"The NRC Senior Resident Inspector has been notified."

Brunswick has taken applicable compensatory measures to insure no equipment is inoperable because of these relays.

This problem was previously reported in EN #51030.

JEI9  
NRL

\*\*\*\*\*

# Fax

**To:** NRC Operations Center

**From:** Mark Turkal - Brunswick

**Fax:** 301 816-5151

**Pages:** 2 (Cover plus 1)

**Phone:** 301 816-5100

**Date:** 5/28/15

**Re:** Part 21 - Allen Bradley Relays

**CC:** N/A

**NRC FORM 361**  
(12-2000)

**U.S. NUCLEAR REGULATORY COMMISSION**  
**OPERATIONS CENTER**

**REACTOR PLANT**  
**EVENT NOTIFICATION WORKSHEET**

EN #

NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3489\*, BACKUPS -- [1st] 301-951-0550 or 800-449-3694\*, [2nd] 301-415-0550 and [3rd] 301-415-0553  
\*Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME	FACILITY OR ORGANIZATION Brunswick	UNIT 1 & 2	NAME OF CALLER Mark Turkal	CALL BACK # (910) 457-3066
-------------------	---------------------------------------	---------------	-------------------------------	-------------------------------

EVENT TIME & ZONE 1536 EDT	EVENT DATE 05/26/2015	POWER/MODE BEFORE Unit 1 & 2 - 100% / Mode 1	POWER/MODE AFTER Unit 1 & 2 - 100% / Mode 1
-------------------------------	--------------------------	---	--

EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		60-Day Optional 10 CFR 50.73(a)(1)	
<input type="checkbox"/> GENERAL EMERGENCY	GEN/AAEC	<input type="checkbox"/> TS Deviation	ADEV	<input type="checkbox"/> (v)(A) Safe S/D Capability	AINA	<input type="checkbox"/> (v)(B) RHR Capability	AINB
<input type="checkbox"/> SITE AREA EMERGENCY	SIT/AAEC	<input type="checkbox"/> (i) TS Required S/D	ASHU	<input type="checkbox"/> (v)(C) Control of Rad Release	AINC	<input type="checkbox"/> (v)(D) Accident Mitigation	AIND
<input type="checkbox"/> ALERT	ALE/AAEC	<input type="checkbox"/> (iv)(A) ECCS Discharge to RCS	ACCS	<input type="checkbox"/> (xi) Offsite Medical	AMED	<input type="checkbox"/> (xii) Loss Comm/Asmt/Resp	ACOM
<input type="checkbox"/> UNUSUAL EVENT	UNU/AAEC	<input type="checkbox"/> (iv)(B) RPS Actuation (scream)	ARPS	<input type="checkbox"/> (xiii) Invald Specified System Actuation	AINV	<b>Other Unspecified Requirement (Identify)</b>	
<input type="checkbox"/> 50.72 NON-EMERGENCY	(see next columns)	<input type="checkbox"/> (xi) Offsite Notification	APRE	<input checked="" type="checkbox"/> 10 CFR 21.21 - Defects & Noncompliance	NONR		
<input type="checkbox"/> PHYSICAL SECURITY (73.71)	ODDD	<input type="checkbox"/> (ii)(A) Degraded Condition	ADEG	<input type="checkbox"/> (ii)(B) Unanalyzed Condition	AUNA		
<input type="checkbox"/> MATERIAL/EXPOSURE	B???	<input type="checkbox"/> (iv)(A) Specified System Actuation	AESF				
<input type="checkbox"/> FITNESS FOR DUTY	HFIT						
<input type="checkbox"/> OTHER UNSPECIFIED REQMT.	(see last column)						
<input type="checkbox"/> INFORMATION ONLY	NINF						

**DESCRIPTION**

Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)

**ALLEN BRADLEY 700RTC RELAY CONFIGURATION**

This is a non-emergency notification, required by 10 CFR 21.21(d)(3)(i).

Brunswick has determined that Allen Bradley relays, base model 700RTC, contain an unevaluated Complex Programmable Logic Device (CPLD). This was an unpublished design change that was implemented to replace an obsolete integrated circuit chip. The undocumented design change did not result in a part number change from Allen Bradley. There was no change to the external appearance of the relay that would indicate that a design change had been made to the relay configuration. Therefore, qualification/dedication of the modified relays have not included additional testing for the new CPLD component. Testing, performed by Duke Energy, has demonstrated that this CPLD can be affected by electrical noise from operation of nearby relays which can reset the timing of the relay. This condition was discovered as a result of a post-maintenance test of an emergency diesel generator. Additional details associated with the discovery of this condition are contained in Brunswick Licensee Event Report 1-2015-002, dated May 20, 2015.

Brunswick purchased, as commercial grade, 25 of the modified Allen Bradley 700RTC relays beginning in October, 2008. Duke Energy dedicated these relays for use in safety related applications at Brunswick. The dedicated relays were not provided to any third party customers.

The NRC Senior Resident Inspector has been notified.

<b>NOTIFICATIONS</b>	<b>YES</b>	<b>NO</b>	<b>WILL BE</b>	<b>ANYTHING UNUSUAL OR NOT UNDERSTOOD?</b>	<input type="checkbox"/> YES (Explain above)	<input checked="" type="checkbox"/> NO
NRC RESIDENT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DID ALL SYSTEMS FUNCTION AS REQUIRED?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO (Explain above)
STATE(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MODE OF OPERATION UNTIL CORRECTED:	N/A	ESTIMATED RESTART DATE: (MM/DD/YYYY)
LOCAL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		N/A	ADDITIONAL INFO ON BACK
OTHER GOV AGENCIES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MEDIA/PRESS RELEASE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			