

Part 21 (PAR)

Event # 49911

Rep Org: WATERFORD STEAM ELECTRIC STATION		Notification Date / Time: 03/13/2014 14:46 (EDT)	
Supplier: QUALTECH NP		Event Date / Time: 03/12/2014 16:00 (CDT)	
Last Modification: 03/13/2014			
Region: 4	Docket #:		
City: KILONA	Agreement State:		Yes
County:	License #:		
State: LA			
NRC Notified by: JOHN JARRELL	Notifications: MARC FERDAS	R1DO	
HQ Ops Officer: DONG HWA PARK	KATHLEEN O'DONOHUE	R2DO	
Emergency Class: NON EMERGENCY	DAVE PASSEHL	R3DO	
10 CFR Section:	THOMAS FARNHOLTZ	R4DO	
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE	PART 21 GROUP	EMAIL	

PART 21 - ALLEN BRADLEY TYPE 700RTC RELAY SPURIOUSLY DE-ENERGIZING

"This is a non-emergency notification from Waterford 3 required under 10 CFR PART 21 concerning an apparent deviation from dedicated manufacturing specifications.

"On 10/17/2013, it was determined that there have been multiple inadvertent actuations of Engineered Safety Features Actuation Signal (ESFAS) equipment over the previous seven months. These equipment inadvertent actuations are occurring due to Allen Bradley type 700RTC relays spuriously de-energizing. The failure mode causes the relays to intermittently de-energize causing the associated equipment to perform its ESFAS function, not adversely impacting steady state plant operations.

"The failed relays have been sent to the qualifying vendor and two other failure analysis laboratories for testing. The results were reviewed by Waterford 3 engineers and although the failure mode could not be repeated in the laboratory, the laboratories identified less than adequate solder joints on the relay control circuit and a failed capacitor. The cause of the failed capacitor was identified as less than adequate installation practices during manufacturing. Engineering has determined that effects of these deviations, combined with installation in an application near the qualifying vendor's maximum specified environmental conditions, relevant to elevated voltage and ambient temperatures, has resulted in accelerated aging effects on the sub-components of the relays. The failures have been observed on relays that have been in-service greater than three years.

"Entergy concluded that for the applications for which the failure mode has been observed, and for other applications where these relays have been installed for more than 3 years, the failures did not result in a substantial safety hazard. However, on 3/12/2014, Entergy completed an evaluation concluding that, had this relay type been installed in other safety related normally energized applications for greater than 3 years, it could have resulted in a substantial safety hazard. Compensatory measures to preclude the malfunction of these relays, until

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long-term corrective actions are completed, have been implemented. As an interim measure the installed time for these relays is limited to 3 years or less, The Waterford 3 Site VP was informed the same day, 3/12/2014.

"Waterford 3 has determined that the only other Entergy nuclear facility utilizing these Allen Bradley relay types, possibly in a safety related application, is at James A. Fitzpatrick, to which this condition has been communicated."

The licensee has notified the NRC Resident Inspector.

NRC FORM 361 (12-2000)		REACTOR PLANT EVENT NOTIFICATION WORKSHEET			U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER	
EN #						
NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACKUPS -- [1st] 301-851-0550 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 Waterford	UNIT 3	NAME OF CALLER John Jarrell		CALL BACK # 504-739-6685	
EVENT TIME & ZONE 1600 CDT	EVENT DATE 03/12/2014	POWER/MODE BEFORE 100% / MODE 1		POWER/MODE AFTER 100% / MODE 1		
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		<input type="checkbox"/> (v)(A) Safe S/D Capability AINA		
<input type="checkbox"/> GENERAL EMERGENCY GEN/AAEC		<input type="checkbox"/> TS Deviation	ADEV	<input type="checkbox"/> (v)(B) RHR Capability AINB		
<input type="checkbox"/> SITE AREA EMERGENCY SIT/AAEC		4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		<input type="checkbox"/> (v)(C) Control of Rad Release AINC		
<input type="checkbox"/> ALERT ALE/AAEC		<input type="checkbox"/> (I) TS Required S/D	ASHU	<input type="checkbox"/> (v)(D) Accident Mitigation AIND		
<input type="checkbox"/> UNUSUAL EVENT UNU/AAEC		<input type="checkbox"/> (iv)(A) ECCS Discharge to RCS	ACCS	<input type="checkbox"/> (xI) Offsite Medical AMED		
<input type="checkbox"/> 50.72 NON-EMERGENCY (see next columns)		<input type="checkbox"/> (iv)(B) RPS Actuation (scram)	ARPS	<input type="checkbox"/> (xii) Loss Comm/Asmt/Resp ACOM		
<input type="checkbox"/> PHYSICAL SECURITY (73.71) DDDD		<input type="checkbox"/> (xi) Offsite Notification	APRE	60-Day Optional 10 CFR 50.73(a)(1)		
<input type="checkbox"/> MATERIAL EXPOSURE B???		8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		<input type="checkbox"/> Invalid Specified System Actuation AINV		
<input type="checkbox"/> FITNESS FOR DUTY HFIT		<input type="checkbox"/> (ii)(A) Degraded Condition	ADEG	Other Unspecified Requirement (Identify)		
<input checked="" type="checkbox"/> OTHER UNSPECIFIED REQMT. (see last column)		<input type="checkbox"/> (ii)(B) Unanalyzed Condition	AUNA	<input checked="" type="checkbox"/> 10 CFR 21.21(d)(3)(i) Defect NONR		
<input type="checkbox"/> INFORMATION ONLY NNF		<input type="checkbox"/> (iv)(A) Specified System Actuation	AESF	<input type="checkbox"/> NONR		
DESCRIPTION						
This is a <u>non</u> -emergency notification from Waterford 3 required under 10 CFR PART 21 concerning an apparent deviation from dedicated manufacturing specifications.						
On 10/17/2013, it was determined that there have been multiple inadvertent actuations of Engineered Safety Features Actuation Signal (ESFAS) equipment over the previous seven months. These equipment inadvertent actuations are occurring due to Allen Bradley type 700RTC relays spuriously de-energizing. The failure mode causes the relays to intermittently de-energize causing the associated equipment to perform its ESFAS function, not adversely impacting steady state plant operations.						
The failed relays have been sent to the qualifying vendor and two other failure analysis laboratories for testing. The results were reviewed by Waterford 3 engineers and although the failure mode could not be repeated in the laboratory, the laboratories identified less than adequate solder joints on the relay control circuit and a failed capacitor. The cause of the failed capacitor was identified as less than adequate installation practices during manufacturing. Engineering has determined that effects of these deviations, combined with installation in an application near the qualifying vendor's maximum specified environmental conditions, relevant to elevated voltage and ambient temperatures, has resulted in accelerated aging effects on the sub-components of the relays. The failures have been observed on relays that have been in-service greater than three years.						
Entergy concluded that for the applications for which the failure mode has been observed, and for other applications where these relays have been installed for more than 3 years, the failures did not result in a substantial safety hazard. However, on 3/12/2014, Entergy completed an evaluation concluding that, had this relay type been installed in other safety related normally energized applications for greater than 3 years, it could have resulted in a substantial safety hazard. Compensatory measures to preclude the malfunction of these relays, until long-term corrective actions are completed, have been implemented. As an interim measure the installed time for these relays is limited to 3 years or less. The Waterford 3 Site VP was informed the same day, 3/12/2014.						
Waterford 3 has determined that the only other Entergy nuclear facility utilizing these Allen Bradley relay types, possibly in a safety related application, is at James A. Fitzpatrick, to which this condition has been communicated.						
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?		<input type="checkbox"/> YES (Explain above) <input checked="" type="checkbox"/> NO
NRC RESIDENT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
STATE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DID ALL SYSTEMS FUNCTION AS REQUIRED?		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO (Explain above)
LOCAL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

ADDITIONAL INFORMATION

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)						
<input type="checkbox"/> LIQUID RELEASE	<input type="checkbox"/> GASEOUS RELEASE	<input type="checkbox"/> UNPLANNED RELEASE	<input type="checkbox"/> PLANNED RELEASE	<input type="checkbox"/> ONGOING	<input type="checkbox"/> TERMINATED	
<input type="checkbox"/> MONITORED	<input type="checkbox"/> UNMONITORED	<input type="checkbox"/> OFFSITE RELEASE	<input type="checkbox"/> T. S. EXCEEDED	<input type="checkbox"/> RM ALARMS	<input type="checkbox"/> AREAS EVACUATED	
<input type="checkbox"/> PERSONNEL EXPOSED OR CONTAMINATED	<input type="checkbox"/> OFFSITE PROTECTIVE ACTIONS RECOMMENDED	*State release path in description				
	Release Rate (Ci/sec)	% T. S. LIMIT	HOO GUIDE	Total Activity (Ci)	% T. S. LIMIT	HOO GUIDE
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 uCi/sec			0.01 Ci
Particulate			1 uCi/sec			1 mCi
Liquid (excluding tritium and dissolved noble gases)			10 uCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
Total Activity						
	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER	
RAD MONITOR READINGS						
ALARM SETPOINTS						
% T. S. LIMIT (if applicable)						
RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS: (specific details/explanations should be covered in event description)						
LOCATION OF THE LEAK (e.g., SG #, valve, pipe, etc.)						
LEAK RATE	UNITS: gpm/gpd	T. S. LIMITS	SUDDEN OR LONG-TERM DEVELOPMENT			
LEAK START DATE	TIME	COOLANT ACTIVITY AND UNITS:	PRIMARY	SECONDARY		
LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL						
EVENT DESCRIPTION (Continued from front)						

OTHER GOV AGENCIES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MODE OF OPERATION UNTIL CORRECTED: N/A	ESTIMATED RESTART DATE: N/A	ADDITIONAL INFO ON BACK <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MEDIA/PRESS RELEASE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

NRC FORM 361 (12-2000)