Part 21 (PAR) Event # 51458

Rep Org: DRESDEN
Supplier: GENERAL ELECTRIC HITACHI
Notification Date / Time: 10/06/2015 22:06 (EDT)
Event Date / Time: 10/05/2015 12:00 (CDT)
Last Modification: 10/06/2015

Region: 3
City: MORRIS
County:
State: IL
Docket #:
Agreement State: Yes
License #:

NRC Notified by: AARON THOMPSON
HQ Ops Officer: JEFF HERRERA
Emergency Class: NON EMERGENCY
10 CFR Section:
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE

Notifications: ANN MARIE STONE R3DO
PART 21/50.55 REACTORS EMAIL

PART 21 REPORT - ELECTROMATIC RELIEF VALVE (EMRV) CUTOUT SWITCH

"Following the return of the actuator that failed bench testing to GEH, on 6/12/15 at 1804 [CDT], General Electric Hitachi (GEH) notified Dresden Station of a potential parts quality Potential Failure of the EMRV Cutout Switch. It has been determined the notification is applicable to DNPS [Dresden Nuclear Power Station], Units 2 and 3.

"The GEH investigation concluded that the EMRV actuator assemblies failed to change state because of the failure of the cutout switch to fully close and provide the appropriate current path. Multiple contributing factors were discovered which could have led to the presence of the gaps in the cutout switch. The most significant of these factors is a change in lever arm positioning causing increased forces in the tension spring which prevent proper closure of the cutout switch. Design changes to reduce wear caused by vibration on the actuators changed lever arm position and also allowed for additional dimensional tolerance which tended to increase force in the tension spring.

"Identification of Facility and Component: DNPS / EMRV Actuator, GEH Part Number 352B2632G001

"Safety Significance (e.g., substantial hazard that is or could be created): Identified condition is a Potential Substantial Safety Hazard since it could cause affected EMRVs to fail to operate as designed, which could result in a loss of safety function. Potential to affect the Minimum Critical Power Ratio (MCPR), Reactor Coolant System (RCS), Automatic Depressurization System (ADS), and Low Set Relief Function

"Plants with similar GEH cutout switches: Quad Cities Nuclear Power Station."

Part 21 Reference: EN #51386

IE19
NRR

The licensee notified the NRC Resident Inspector.

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NRC FORM 361
(12-2000)

U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

REACTOR PLANT
EVENT NOTIFICATION WORKSHEET

EN # 51458

NRC Operation Telephone Number: PRIMARY – 301-816-5100 or 800-532-3469*, 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	UNIT	NAME OF CALLER	CALL BACK #
2206 EDT	Dresden	2/3	Aaron Thompson	(815)942-0402

EVENT TIME & ZONE	EVENT DATE	POWER/MODE BEFORE	POWER/MODE AFTER
1200 CDT	10/05/2015	97% Mode 1 - Unit 2 100% Mode 1 - Unit 3	97% Mode 1 - Unit 2 100% Mode 1 - Unit 3

EVENT CLASSIFICATIONS			1-Hr. Non-Emergency 10CFR50.72(b)(1)					Safe S/D Capability	AINA
☐	GENERAL EMERGENCY	GEN/AAEC	☐	TS Deviation	ADEV	☐	(v)(A)		
☐	SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-emergency 10CFR50.72(b)(2)			☐	(v)(B)	RHR Capability	AINB
☐	ALERT	ALE/AAEC	☐	(i) TS Required S/D	ASHU	☐	(v)(C)	Control of Rad Release	AINC
☐	UNUSUAL EVENT	UNU/AAEC	☐	(iv)(A) ECCS Discharge to RCS	ACCS	☐	(v)(D)	Accident Mitigation	AIND
☐	50.72 NON-EMERGENCY	(see next columns)	☐	(iv)(B) RPS Actuation (scram)	ARPS	☐	(xii)	Offsite Medical	AMED
☐	PHYSICAL SECURITY (73.71)	DDDD	☐	(xi) Offsite Notification	APRE	☐	(xiii)	Lost Comm/Asmt/Resp	ACOM
☐	MATERIAL/EXPOSURE	B???	8-Hr. Non-emergency 10CFR50.72(b)(3)			60-DAY Optional10CFR50.73(a)(1)			
☐	FITNESS FOR DUTY	HFIT	☐	(ii)(A) Degraded Condition	ADEG	☐	Invalid Specified System Actuation		AINV
☒	OTHER UNSPECIFIED REQMT.	(see last column)	☐	(ii)(B) Unanalyzed Condition	AUNA	Other Unspecified Requirement (Identify)			
☐	INFORMATION ONLY	NNF	☐	(iv)(A) Specified System Actuation	ASEF	☒	10 CFR 21.21 (d)(3)(i) Defect		NONR
						☐			NONR

DESCRIPTION

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

PART 21 REPORT - ELECTROMATIC RELIEF VALVE CUTOUT SWITCH
"This is a non-emergency notification from Dresden Nuclear Power Station (DNPS) required under 10 CFR Part 21 concerning the design of Electromatic Relief Valve (EMRV) actuators Cutout Switches.

Following the return of the actuator that failed bench testing to GEH, on 6/12/15 at 18:04, General Electric Hitachi (GEH) notified Dresden Station of a potential parts quality Potential Failure of the EMRV Cutout Switch. It has been determined the notification is applicable to DNPS, Units 2 and 3.

The GEH investigation concluded that the EMRV actuator assemblies failed to change state because of the failure of the cutout switch to fully close and provide the appropriate current path. Multiple contributing factors were discovered which could have led to the presence of the gaps in the cutout switch. The most significant of these factors is a change in lever arm positioning causing increased forces in the tension spring which prevent proper closure of the cutout switch. Design changes to reduce wear caused by vibration on the actuators changed lever arm position and also allowed for additional dimensional tolerance which tended to increase force in the tension spring.

Identification of Facility and Component: DNPS / EMRV Actuator, GEH Part Number 352B2632G001

Identification of Component Manufacturer and/or Supplier: GE-Hitachi Nuclear Energy.

Nature of Defect: Cutout switch fails to close.

Safety Significance (e.g., substantial hazard that is or could be created): Identified condition is a Potential Substantial Safety Hazard since it could cause affected EMRVs to fail to operate as designed, which could result in a loss of safety function. Potential to affect the Minimum Critical Power Ratio (MCPR), Reactor Coolant System (RCS), Automatic Depressurization System (ADS), and Low Set Relief Function

NOTIFICATIONS	YES	NO	WILL BE
NRC Resident	x		
State(s)		X	
Local		X	
Other Gov Agencies		X	
Media/Press Release		x	

ANYTHING UNUSUAL OR NOT UNDERSTOOD?	☐ YES (Explain above)	☒ NO	
DID ALL SYSTEMS FUNCTION AS REQUIRED?	☒ YES	☐ NO (Explain above)	
MODE OF OPERATION UNTIL CORRECTED: Mode 1	ESTIMATED RESTART DATE: (MM/DD/YY) N/A	ADDITIONAL INFO ON BACK ☒ Yes ☐ No	

NRC FORM 361
(12-2000)

REACTOR PLANT
EVENT NOTIFICATION WORKSHEET (CONTINUED)

ADDITIONAL INFORMATIONS

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)

	LIQUID RELEASE		GASEOUS RELEASE		UNPLANNED RELEASE		PLANNED RELEASE		ONGOING		TERMINATED
	MONITORED		UNMONITORED`		OFFSITE RELEASE		T. S. EXCEEDED		RM ALARMS		AREAS EVACUATED
	PERSONNEL EXPOSED OR CONTAMINATED				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 µCi/sec**			**0.01 Ci**
Particulate			**1 µCi/sec**			**1 mCi**
Liquid *(excluding tritium & dissolved noble gas)*			**10 µCi/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 the event description)*

LOCATION OF 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 & UNITS	PRIMARY	SECONDARY

LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL

EVENT DESCRIPTION (continued from front)

Date of Discovery of Initial Condition (taken from the IR): 06/12/15

Date of Discovery of the Substantial Safety Hazard (date of approval of the technical evaluation): 10/05/15

Recommended Actions: Perform inspection at the next available opportunity to verify that proper over travel exists on the cutout switch and that the associated EMRV actuates properly.
"Number and Locations of All Defective Components: 1 - EMRV Unit 5 (SN 15433-5) was in Inventory.

"Any Advice Related to the Defect: Perform inspection at the next available opportunity to verify that positive over travel exists on the EMRV cutout switch.

"Contacts (Name, Title, Location, Phone Number, etc): Daniel Sipple, Sr Staff I&C Design Engineer, Dresden Nuclear Power Station, daniel.sipple@exeloncorp.com, (815) 416-3631 "

The licensee notified the NRC Resident Inspector.

Plants with similar GEH cutout switches: Quad Cities Nuclear Power Station.