

Part 21 (PAR)

Event # 52867

Rep Org: SUSQUEHANNA NUCLEAR LLC	Notification Date / Time: 07/21/2017 10:40 (EDT)
Supplier: EATON/CUTLER HAMMER	Event Date / Time: 07/14/2017 16:46 (EDT)
	Last Modification: 07/21/2017
Region: 1	Docket #:
City: BERWICK	Agreement State: Yes
County:	License #:
State: PA	
NRC Notified by: JASON JENNINGS	Notifications: ANNE DeFRANCISCO R1DO
HQ Ops Officer: VINCE KLCO	PART 21/50.55 REACTORS EMAIL
Emergency Class: NON EMERGENCY	
10 CFR Section:	
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE	

PART 21 NOTIFICATION - EATON/CUTLER HAMMER A200 SERIES STARTER

The following information was received by the licensee via email:

"Pursuant to 10 CFR 21, this is a non-emergency notification by Susquehanna Nuclear, LLC concerning a defect in an Eaton/Cutler Hammer A200 series starter that failed while in service at Susquehanna Steam Electric Station. The failed starter was manufactured by Eaton Corporation in 2014 and purchased by Susquehanna from AZZ/NLI as part of an MCC bucket assembly. The starter failed with its contacts stuck in the energized state when it was de-energized. A failure analysis identified the contactor sticking to be due to the pole faces of the coil laminations and those of the armature laminations adhering to one another at normal operating temperatures. There was residue/material on the pole faces which closely matched Polydimethylsiloxane (PDMS) and silicone grease. One of the characteristics of PDMS is that at cooler temperatures it is more of a solid consistency, and at higher temperatures it becomes more viscous and tacky.

"A previous Part 21 report submitted by Curtiss-Wright QualTech NP (Event Notification Number 51611) in December 2015 provided notification of Eaton/Cutler Hammer A200 series starters failures due to silicon based mold release that remained on the molded parts and would come between the moving (magnet) and fixed armatures. The Part 21 stated that when heated for extended period of time, the material would become sticky causing anywhere from a minor delay in opening to a frozen closed condition. Eaton/Cutler Hammer determined that the silicone mold release was first introduced into the manufacturing facility in May 2008 and used periodically until October 2012. According to Eaton/Cutler Hammer, any starters manufactured after January 1, 2013 should be silicon mold release free.

"Following the failure of the 2014 starter at Susquehanna, Eaton Corporation performed an investigation and reconfirmed that silicon mold release was banned from molding production in October 2012 and has not been used

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since that time. Eaton concluded that the contamination does not appear to be systemic, but rather random and intermittent and that the contamination was most likely introduced either by operators and assemblers on the manufacturing lines, or by others who disassemble and inspect the product after shipment from their plant. Susquehanna does not take the components apart during receipt for testing or visual inspection. Eaton concluded that there is no evidence that the issue is systemic and considers it a random event. Susquehanna has evaluated the condition and has concluded that the condition could create a substantial safety hazard."

The licensee notified the NRC Resident Inspector.

From: [Jennings, Jason](#)
To: [Hoc, HOO X](#)
Cc: [Hood, Tanya](#); [Micewski, Laura](#)
Subject: [External_Sender] Susquehanna Part 21 Notification
Date: Friday, July 21, 2017 10:35:50 AM
Attachments: [Susquehanna Part 21.pdf](#)

Please see attached for Part 21 Initial Notification from Susquehanna. I will follow up with a phone call shortly. Thank you –

Jason Jennings
Nuclear Regulatory Affairs Manager
Susquehanna Nuclear, LLC
(570)542-3155

~~The information contained in this message is intended only for the personal and confidential use of the recipient(s) named above. If the reader of this message is not the intended recipient or an agent responsible for delivering it to the intended recipient, you are hereby notified that you have received this document in error and that any review, dissemination, distribution, or copying of this message is strictly prohibited. If you have received this communication in error, please notify us immediately, and delete the original message.~~

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 800-532-3469*, 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 #:
	SUSQUEHANNA NUCLEAR LLC		2	Jason Jennings	570-542-3155
EVENT TIME & ZONE	EVENT DATE	POWERMODE BEFORE		POWERMODE AFTER	
1646 EDT	7/14/2017	U1: 100% / Mode 1 / U2: 100% / Mode 1		U1: 100% / Mode 1 / U2: 100% / Mode 1	
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		(v)(A)	Safe S/D Capability AINA
GENERAL EMERGENCY	GEN/AAEC	TS Deviation ADEV		(v)(B)	RHR Capability AINB
SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		(v)(C)	Control of Rad Release AINC
ALERT	ALE/AAEC	(i)	TS Required S/D ASHU	(v)(D)	Accident Mitigation AIND
UNUSUAL EVENT	UNU/AAEC	(iv)(A)	ECCS Discharge to RCS ACCS	(xii)	Offsite Medical AMED
50.72 NON-EMERGENCY	(see next columns)	(iv)(B)	RPS Actuation (scram) ARPS	(xii)	Loss Comm/Asmt/Resp ACOM
PHYSICAL SECURITY (73.71)	DDDD	(xi)	Offsite Notification APRE	60-Day Optional 10 CFR 50.73(a)(1)	
MATERIAL/EXPOSURE	B???	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		Invalid Specified System Actuation AINV	
FITNESS FOR DUTY	HFIT	(ii)(A)	Degraded Condition ADEG	Other Unspecified Requirement (Identify)	
OTHER UNSPECIFIED REQMT	(see last column)	(ii)(B)	Unanalyzed Condition AUNA	x	10 CFR 21.21(d)(3)(i) NONR
INFORMATION ONLY	NNF	(iv)(A)	Specified System Actuation AESF		NONR
DESCRIPTION					
Include: Systems affected, actuations & their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)					
Part 21 Notification – Eaton/Cutler Hammer A200 Series Starter					
<p>Pursuant to 10 CFR 21, this is a non-emergency notification by Susquehanna Nuclear, LLC concerning a defect in an Eaton/Cutler Hammer A200 series starter that failed while in service at Susquehanna Steam Electric Station. The failed starter was manufactured by Eaton Corporation in 2014 and purchased by Susquehanna from AZZ/NLI as part of an MCC bucket assembly. The starter failed with its contacts stuck in the energized state when it was de-energized. A failure analysis identified the contactor sticking to be due to the pole faces of the coil laminations and those of the armature laminations adhering to one another at normal operating temperatures. There was residue/material on the pole faces which closely matched Polydimethylsiloxane (PDMS) and silicone grease. One of the characteristics of PDMS is that at cooler temperatures it is more of a solid consistency, and at higher temperatures it becomes more viscous and tacky.</p> <p>A previous Part 21 report submitted by Curiss-Wright QualTech NP (Event Notification Number 51611) in December 2015 provided notification of Eaton/Cutler Hammer A200 series starters failures due to silicon based mold release that remained on the molded parts and would come between the moving (magnet) and fixed armatures. The Part 21 stated that when heated for extended period of time, the material would become sticky causing anywhere from a minor delay in opening to a frozen closed condition. Eaton/Cutler Hammer determined that the silicone mold release was first introduced into the manufacturing facility in May 2008 and used periodically until October 2012. According to Eaton/Cutler Hammer, any starters manufactured after January 1, 2013 should be silicon mold release free.</p> <p>Following the failure of the 2014 starter at Susquehanna, Eaton Corporation performed an investigation and reconfirmed that silicon mold release was banned from molding production in October 2012 and has not been used since that time. Eaton concluded that the contamination does not appear to be systemic, but rather random and intermittent and that the contamination was most likely introduced either by operators and assemblers on the manufacturing lines, or by others who disassemble and inspect the product after shipment from their plant. Susquehanna does not take the components apart during receipt for testing or visual inspection. Eaton concluded that there is no evidence that the issue is systemic and considers it a random event. Susquehanna has evaluated the condition and has concluded that the condition could create a substantial safety hazard.</p>					
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD? <input type="checkbox"/> YES (Explain above) <input checked="" type="checkbox"/> NO	
NRC RESIDENT	X				
STATE(s)		X		DID ALL SYSTEMS FUNCTION AS REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO (Explain above)	
LOCAL		X			
OTHER GOV AGENCIES		X		MODE OF OPERATION: UNTIL CORRECTED N/A	
MEDIA/PRESS RELEASE		X		ESTIMATED RESTART DATE: N/A	ADDITIONAL INFO ON BACK? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

