Part 21 (PAR) Event # 51285

Rep Org:	UNITED CONTROLS INTERNATIONAL	**Notification Date / Time:**	08/04/2015 10:29 (EDT)
Supplier:	FERRAZ SHAWMUT/MERSEN	**Event Date / Time:**	06/05/2015 (EDT)
		Last Modification:	08/04/2015
Region:	1	**Docket #:**	
City:	NORCROSS	**Agreement State:**	Yes
County:		**License #:**	
State:	GA		

NRC Notified by:	KORINA LOOFT	**Notifications:**	ART BURRITT	R1DO
HQ Ops Officer:	HOWIE CROUCH		GEORGE HOPPER	R2DO
Emergency Class:	NON EMERGENCY		ROBERT DALEY	R3DO
10 CFR Section:			RAY AZUA	R4DO
21.21(d)(3)(i)	DEFECTS AND NONCOMPLIANCE		PART 21/50.55 REACTORS	EMAIL

PART 21 REPORT - FERRAZ SHAWMUT/MERSEN FUSES P/N: AJT25 AND AJT60

The following information was excerpted from the email provided by the reporting organization:

"On April 2015, United Controls International (UCI) performed dedication testing on time delay fuses AJT25 and AJT60 for First Energy - Perry Nuclear Power Plant under purchase orders 45469886 and 45469450, respectively. The subject fuses were being tested per United Controls Standard dedication testing which excludes seismic and environmental testing requirements. Both fuses, AJT25 and AJT60 opened during their current clearing tests at times that are within their respective clearing time tolerance ranges but their Smartspot labels did not change color, as required, to indicate the fuses cleared.

"For fuse AJT25, eight fuses have been tested, including one (1) fuse from the first lot which comprises 30 fuses (with manufacture date 09/15 [9th week of 2015]) and seven (7) fuses from the second lot which comprises 32 fuses (with manufacture date 10/15). Five (5) fuses were tested for current clearing at 135% of the fuse rated current, two (2) fuses were tested for current clearing at 200% of the fuse rated current and one (1) fuse was tested for current clearing at 500% of the fuse rated current.

"For fuse AJT60 with manufacture date 06/15, only one (1) fuse was tested from the received lot of fuses which comprises 24 fuses for current clearing time at 135% of the fuse rated current. Further testing of the AJT60 fuses was not performed since a trend was already observed in regard to the fuses AJT25 failure.

"UCI has returned all received fuses in the three (3) received lots. Mersen [Ferraz/Shawmut/Mersen] has then performed evaluation on the 30 AJT25 fuses with manufacture date of 9/15 (9th week of 2015), confirmed that the seven (7) fuses that UCI has tested were open and conducted testing on six (6) among the remaining 23 fuses. Testing by Mersen revealed that only two out of the six fuses had their Smartspot indicator that went off to

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indicate that the fuses cleared. Upon further examination by Mersen; it is believed that over tightening of the crimping jars during installation and crimping of the ferrule endcaps is the cause of the Smartspot indicator's malfunction.

"The fuses are Ferraz Shawmut/Mersen part numbers AJT25 and AJT60. UCI recommends the purchaser to include a requirement for suppliers to provide fuse with manufacture date after 6/30/15 where the manufacturer has performed corrective action to prevent this issue from recurring."

Point of Contact: Divya Paidy, Engineering Manager, dpaidy@unitedcontrols.com, (770) 496-1406, ext. 106,

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UNITED CONTROLS INTERNATIONAL

July 24, 2015

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington D.C. 20555-0001

Subject: 10CFR Part 21 Notification of Ferraz Shawmut/Mersen Fuses P/N: AJT25 & AJT60

The purpose of this letter is to provide the NRC with a report in general conformity of the requirements of 10CFR Part 21.21. On April 2015, United Controls International (UCI) has performed dedication testing on time delay fuses AJT25 and AJT60 for First Energy – Perry Nuclear Power Plant under purchase orders 45469886 and 45469450, respectively. The subject fuses were being tested per United Controls Standard dedication testing which excludes seismic and environmental testing requirements.
Both fuses, AJT25 and AJT60 opened during their Current Clearing tests at times that are within their respective clearing time tolerance ranges but their Smartspot labels did not change color, as required, to indicate the fuses cleared.

- For fuse AJT25, eight fuses have been tested, including one (1) fuse from the first lot which comprises 30 fuses (with manufacture date 09/15) and seven (7) fuses from the second lot which comprises 32 fuses (with manufacture date 10/15). Five (5) fuses were tested for current clearing at 135% of the fuse rated current, two (2) fuses were tested for current clearing at 200% of the fuse rated current and one (1) fuse was tested for current clearing at 500% of the fuse rated current.
- For fuse AJT60 with manufacture date 06/15, only one (1) fuse was tested from the received lot of fuses which comprises 24 fuses for current clearing time at 135% of the fuse rated current. Further testing of the AJT60 fuses was not performed since a trend was already observed in regard to the fuses AJT25 failure.

UCI has returned all received fuses in the three (3) received lots. Mersen has then performed evaluation on the 30 AJT25 fuses with manufacture date of 9/15 (9th week of 2015), confirmed that the seven (7) fuses that UCI has tested were open and conducted testing on six (6) among the remaining 23 fuses. Testing by Mersen revealed that only two out of the six fuses had their Smartspot indicator that went off to indicate that the fuses cleared. Upon further examination by Mersen; it is believed that over tightening of the crimping jars during installation and crimping of the ferrule endcaps is the cause of the Smartspot indicator's malfunction.

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Required information as per 10CFR Part 21.21(d)(4) follows:

(i) ***Name and Address of the individual or individuals informing the Commission***
Rob Hale
President
United Controls International
205 Scientific Drive
Norcross, GA 30092

(ii) ***Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.***
The items are being supplied to First Energy - Perry Nuclear Power Plant under purchase orders 45469886 and 45469450.

(iii) ***Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.***
United Controls International
205 Scientific Drive
Norcross, GA 30092

(iv) ***Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.***
The specimen (qty. 8) selected from two lots (qty. 33 and qty. 32) of Mersen AJT25 fuses and one lot (qty. 24) of Mersen AJT60 fuses were tested by UCI for current clearing where the fuses opened within the required clearing time ranges but the Smartspot indicators did not change color to indicate that the fuses cleared. Upon evaluation of the fuses (including those tested by UCI), Mersen acknowledged that excess of tightening of the crimping jars during the installation and crimping of the ferrule endcaps caused a break or separation among the ends of the Mylar strip. Mersen stated that the break is deep enough to cause disconnection of the metalized strip from the rest, thus interrupting the functionality of the Smartspot indicator.
In such condition where the Smartspot indicator does not change color, these fuses would clear during overload or fault conditions to interrupt the current flow with no indication of their open state. Thus, there is no safety hazard associated with the fuses defect which prevents the fuse from opening or increases its opening time but this failure does not make troubleshooting and replacement of the fuse fast and easy.

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(v) ***The date on which the information of such defect or failure to comply was obtained.***

The initial testing failure occurred on March 27, 2015 during testing of a lot of AJT25 fuses. Following this failure, a new lot of AJT25 fuses along with a lot of AJT60 were tested to verify the testing method which resulted in a recurrence of the same failures on April 10, 2015. The manufacturer (Mersen) was notified of the initial failure on March 27, 2015. The initial lot of tested fuses were returned to the manufacturer for further evaluation and the manufactured identified that a defect may exist in the manufacturing process of these fuse on June 5, 2015.

(vi) ***In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured or being manufactured for one or more facilities or activities subject to the regulations in this Part.***

Part number	Utility	Purchase Order	Quantity
AJT25	First Energy - Perry	45469886	23
AJT60		45469450	18

(vii) ***The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.***

Mersen has performed a corrective action which ordered changes to the fuse design, to place the Smartspot indicator in front, limit the flange rod clamp by decreasing its size 0.010" on the tooling and adjusted the air pressure inlet from 90 PSI to 70 PSI.

(viii) ***Any Advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.***

UCI recommends the purchaser to include a requirement for suppliers to provide fuses with manufacture date after the date of 06/30/15 where the manufacturer has performed corrective action to prevent this issue from recurring.

(ix) ***In the case of an early site permit, the entities to whom an early site permit was transferred.***

Not Applicable.

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If you have any questions or wish to discuss this matter or this report, please contact:

Divya Paidy
Engineering Manager
dpaidy@unitedcontrols.com
770-496-1406 x 106

Sincerely,

Rob Hale

Rob Hale
President
United Controls International