

70-3098

Part 21 (PAR)

Event # 48591

Rep Org: SHAW/AREVA MOX SERVICES, LLC		Notification Date / Time: 12/14/2012 09:18 (EST)	
Supplier: FLANDERS CSC		Event Date / Time: 10/18/2012 (EST)	
Last Modification: 01/07/2016			
Region: 1	Docket #:		
City: AIKEN	Agreement State:		Yes
County:	License #:		
State: SC			
NRC Notified by: DOUG YATES		Notifications: ALAN BLAMEY R2DO	
HQ Ops Officer: STEVE SANDIN		PART 21 MATERIALS EMAIL	
Emergency Class: NON EMERGENCY			
10 CFR Section:			
21.21(d)(3)(i) DEFECTS AND NONCOMPLIANCE			

PART 21 REPORT INVOLVING NONCONFORMING WELDS ON A PELLETT HANDLING TRANSFER GLOVE BOX

The following information was provided by Shaw/AREVA via fax:

(i) Name and address of the individual or individuals informing the Commission.

"Kelly D. Trice
 President and Chief Operating Officer
 Shaw AREVA MOX Services
 Savannah River Site
 P.O. Box 7097
 Aiken, SC 29804-7097

(ii) Identification of the facility, the activity, or the basic component supplied for such facility which fails to comply or contains a defect.

"The Mixed Oxide Fuel Fabrication Facility is addressing nonconforming welds and a weld process associated with the procurement of a pellet handling transfer glove box PML*GB100C.

(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

"The pellet handling glove box is being supplied to MOX Services as a basic component by Flanders CSC.

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(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.

"PML*GB100C has a total of 32 welds that will need repair which will require adding additional fillet welds on top of the current weld such that the weld is large enough to satisfy structural requirements. Each weld will have to have at least a 3mm fillet weld added. Adding these additional welds will most likely have to be applied in two or three weld passes per location to create the needed weld dimension.

"The boss was attached to the glove box using a fillet weld on top (Outer) and a single bevel weld on the inside. This does not allow for complete joint penetration between the fillet and bevel welds resulting in a weld with incomplete fusion, weakening the joint significantly and creating the possibility for high stress concentration areas in the weld joint.

"Furthermore, using the GMAW (Gas Metal Arc Welding) short circuit arc process in this joint design produces a joint that cannot be counted on to carry load. When the GMAW short circuit arc weld process is used on material of 1/4" or less in thickness, it allows for adequate heat to be transferred into the material to provide proper fusion of the filler material into the base material. When using the GMAW short circuit arc weld process on material over 1/4", the mass of the base material results in a heat sink that is too large for the process to adequately fuse the filler material with the base material creating a weld that looks acceptable but could fail under small loads. In the PML boxes, these bosses support internal equipment and also support the glove box itself. Under this condition during a seismic event, the bosses could break away from the glove box shell breaking the confinement boundary as well as the flanges on each end, possibly causing the box to fall which could affect its static confinement barrier safety function. An additional seventeen glove boxes previously received are being reviewed for similar issues.

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

"The deviation was identified in a non-conformance report on October 18, 2012.

(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.

"MOX Services does not possess information as to whether other facilities have been supplied a similar basic component by Flanders CSC.

(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.

"Non-Conformance Report NCR 12-4583 will disposition the repairs associated with Flanders glove box PML* GB100C. MOX Services will ensure repairs are performed by either the vendor, MOX Services or a third party. These repairs will be performed in support of the construction schedule.

(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.

"None.

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

"This is not an early site permit concern."

*** UPDATE ON 1/7/16 AT 0921 EST FROM DOUG YATES TO DONG PARK ***

The following information was provided by CB&I AREVA MOX Services via fax:

(i) Name and address of the individual or individuals informing the Commission.

"David Del Vecchio
President and Project Manager
CB&I AREVA MOX Services
Savannah River Site
P.O. Box 7097
Aiken, SC 29804-7097

(ii) Identification of the facility, the activity, or the basic component supplied for such facility which fails to comply or contains a defect.

"The Mixed Oxide Fuel Fabrication Facility is addressing the discovery of foreign liquid within the structural tube steel frames of ball milling gloveboxes NBX*GB1000 and NBY*GB1000.

(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

"Ball milling gloveboxes NBX*GB1000 and NBY*GB1000 were being supplied to MOX Services as a basic component by Flanders CSC.

(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.

"Ball milling gloveboxes NBX*GB1000 and NBY*GB1000 were two of the seventeen additional gloveboxes that were identified in a December 14, 2012 Part 21 Report issued by MOX Services due to use of an incorrect welding process (Gas Metal Arc Welding) for certain welded connections during glovebox fabrication.

"During weld repairs associated with the earlier Part 21 report, MOX Services' third party vendor discovered foreign liquid trapped within a portion of the tube steel frames of the NBX and NBY gloveboxes. The foreign liquid and dried substances (remnants of the original fabrication processes) were determined to contain contaminants not allowed to be present during welding operations. Due to the presence of contaminants potentially in the vicinity of most of the structural weld heat affected zones, MOX Engineering determined it necessary to metallurgically examine, through additional sampling, some of these welds in order to obtain reasonable assurance the welds can perform their design function. However, MOX Services has concluded that removal of these welds as part of the sampling process would damage the structure of these GBs beyond practical repair. Therefore the decision was made to rebuild these gloveboxes rather than sample the welds to determine their adequacy.

"Although the NBX and NBY gloveboxes were part of the earlier 2012 Part 21 report, they are being reported as a defect herein because of the indeterminate nature of the glovebox welds and associated potential degradation of the gloveboxes confinement function. This functional degradation would not result from use of an improper weld process as identified in the earlier report but instead would result from the lack of maintaining cleanliness controls during fabrication.

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

"Information related to the foreign liquid sampling was provided to MOX Services on November 12, 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.

"MOX Services does not possess information as to whether other facilities have been supplied a similar basic component by Flanders CSC.

(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.

"It is anticipated that ball milling gloveboxes NBX*GB1000 and NBY*GB1000 will be rebuilt rather than continuing

with repairs by MOX Services' third party vendor. MOX Services anticipates that rebuild of the NBX and NBY glove boxes will be completed during fiscal year 2018.

(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.

"None at this time.

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

"Not applicable."

Notified R2DO (Masters) and Part 21 Group via Email.



803-819-8668 (voice)
Email: dayates@moxproject.com

Fax

To: Ops Center **From:** Doug Yates

Fax: 301.816.5151 **Pages:** 2 (excluding cover)

Phone: 301.816.5100 **Date:** 1-7-2016

Re: Part 21 Report – Flanders CSC **CC:**

Urgent **For Review** **Please Comment** **Please Reply** **Please Recycle**

● **Comments:**

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DCS-NRC-000413

Enclosure
Page 1 of 2**Report Notification Information per §21.21(d)(4)****(i) Name and address of the individual or individuals informing the Commission.**

David Del Vecchio
President and Project Manager
CB&I AREVA MOX Services
Savannah River Site
P.O. Box 7097
Aiken, SC 29804-7097

(ii) Identification of the facility, the activity, or the basic component supplied for such facility which fails to comply or contains a defect.

The Mixed Oxide Fuel Fabrication Facility is addressing the discovery of foreign liquid within the structural tube steel frames of ball milling gloveboxes NBX*GB1000 and NBY*GB1000.

(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

Ball milling gloveboxes NBX*GB1000 and NBY*GB1000 were being supplied to MOX Services as a basic component by Flanders CSC.

(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.

Ball milling gloveboxes NBX*GB1000 and NBY*GB1000 were two of the seventeen additional gloveboxes that were identified in a December 14, 2012 Part 21 Report issued by MOX Services due to use of an incorrect welding process (Gas Metal Arc Welding) for certain welded connections during glovebox fabrication.

During weld repairs associated with the earlier Part 21 report, MOX Services' third party vendor discovered foreign liquid trapped within a portion of the tube steel frames of the NBX and NBY gloveboxes. The foreign liquid and dried substances (remnants of the original fabrication processes) were determined to contain contaminants not allowed to be present during welding operations. Due to the presence of contaminants potentially in the vicinity of most of the structural weld heat affected zones, MOX Engineering determined it necessary to metallurgically examine, through additional sampling, some of these welds in order to obtain reasonable assurance the welds can perform their design function. However, MOX Services has concluded that removal of these welds as part of the sampling process would damage the structure of these GBs beyond practical repair. Therefore the decision was made to rebuild these gloveboxes rather than sample the welds to determine their adequacy.

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Although the NBX and NBY gloveboxes were part of the earlier 2012 Part 21 report, they are being reported as a defect herein because of the indeterminate nature of the glovebox welds and associated potential degradation of the gloveboxes confinement function. This functional degradation would not result from use of an improper weld process as identified in the earlier report but instead would result from the lack of maintaining cleanliness controls during fabrication.

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

Information related to the foreign liquid sampling was provided to MOX Services on November 12, 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.

MOX Services does not possess information as to whether other facilities have been supplied a similar basic component by Flanders CSC.

- (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.

It is anticipated that ball milling gloveboxes NBX*GB1000 and NBY*GB1000 will be rebuilt rather than continuing with repairs by MOX Services' third party vendor. MOX Services anticipates that rebuild of the NBX and NBY gloveboxes will be completed during fiscal year 2018.

- (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.

None at this time.

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

Not applicable.