

Part 21 (PAR)

Event # 48591

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

PART 21 REPORT INVOLVING NONCONFORMING WELDS ON A PELLETT HANDLING TRANSFER GLOVEBOX

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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Part 21 (PAR)

Event # 48591

(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 glovebox 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 weldjoint.

"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 glovebox 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 gloveboxes 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 glovebox 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."

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

# Fax

<b>To:</b> Ops Center	<b>From:</b> Doug Yates
<b>Fax:</b> 301.816.5151	<b>Pages:</b> 2 (excluding cover)
<b>Phone:</b> 301.816.5100	<b>Date:</b> 12-14-12
<b>Re:</b> Part 21	<b>CC:</b>

Urgent     For Review     Please Comment     Please Reply     Please Recycle

● **Comments:**

Douglas Yates  
Licensing  
Bldg 706-5F, #305  
Savannah River Site  
Aiken, SC 29808  
Tel: 803.819.8668  
[dayates@moxproject.com](mailto:dayates@moxproject.com)

DCS-NRC-000335

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.

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 glovebox 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 glovebox is 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.

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 glovebox 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 glovebox itself. Under this condition during a seismic event, the bosses could break away from the glovebox shell breaking the confinement boundary as well as the flanges on each end, possibly causing the box

DCS-NRC-000335

Enclosure  
Page 2 of 2

to fall which could affect its static confinement barrier safety function. An additional seventeen gloveboxes 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 glovebox 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.