

October 3, 2013

To: Document Control Desk  
United States Nuclear Regulatory Commission  
Washington, DC 20555

Dear Sir or Madam:

In accordance with Title 10, Code of Federal Regulations, Part 21, Baldor Electric is making final notification as required by 10CFR21.21 for event #49302.

**A. Name and address of the individual informing the NRC.**

James Thigpen  
Quality Assurance Manager  
Baldor Electric/Gainesville Motor Plant  
4349 Avery Drive  
Flowery Branch, Georgia 30506

**B. Identification of Basic Component being Supplied.**

AC Motor

**C. Name of firm supplying basic component.**

Baldor Electric/Gainesville Motor Plant  
4349 Avery Drive  
Flowery Branch, Georgia 30506

**D. Nature of the defect, deviation, or failure to comply.**

Subject: Nuclear Nonconformance Event Number 49302

This is a reportable 10CFR21 notification because we believe it is possible that some 1E motors in frame sizes 360, 400, and 440 may have been shipped by Baldor Electric, which contain an entry point for blast media to enter the motor during post shipment paint treatment preparations.

During a recent inspection of a returned motor some foreign materials were discovered inside the motor which appeared to consist of two types of blast media.

One type of blast media found is used during the manufacturing process to clean the rotor end ring area before applying an end ring coating. This media is non-conductive and is typically cleaned away as part of the treatment process. The presence of blast media is a key inspection point at rotor final inspection. In mid 2008 this type of blast media was eliminated from Baldor processes and substituted with CO2 blast media.

The other blast media found inside the motor is not used during the motor manufacturing process at Baldor. It was a metallic bead media and used during a paint preparation process after leaving Baldor. The entry point of this material was found to be through a small window in the frame casting that normally is closed with

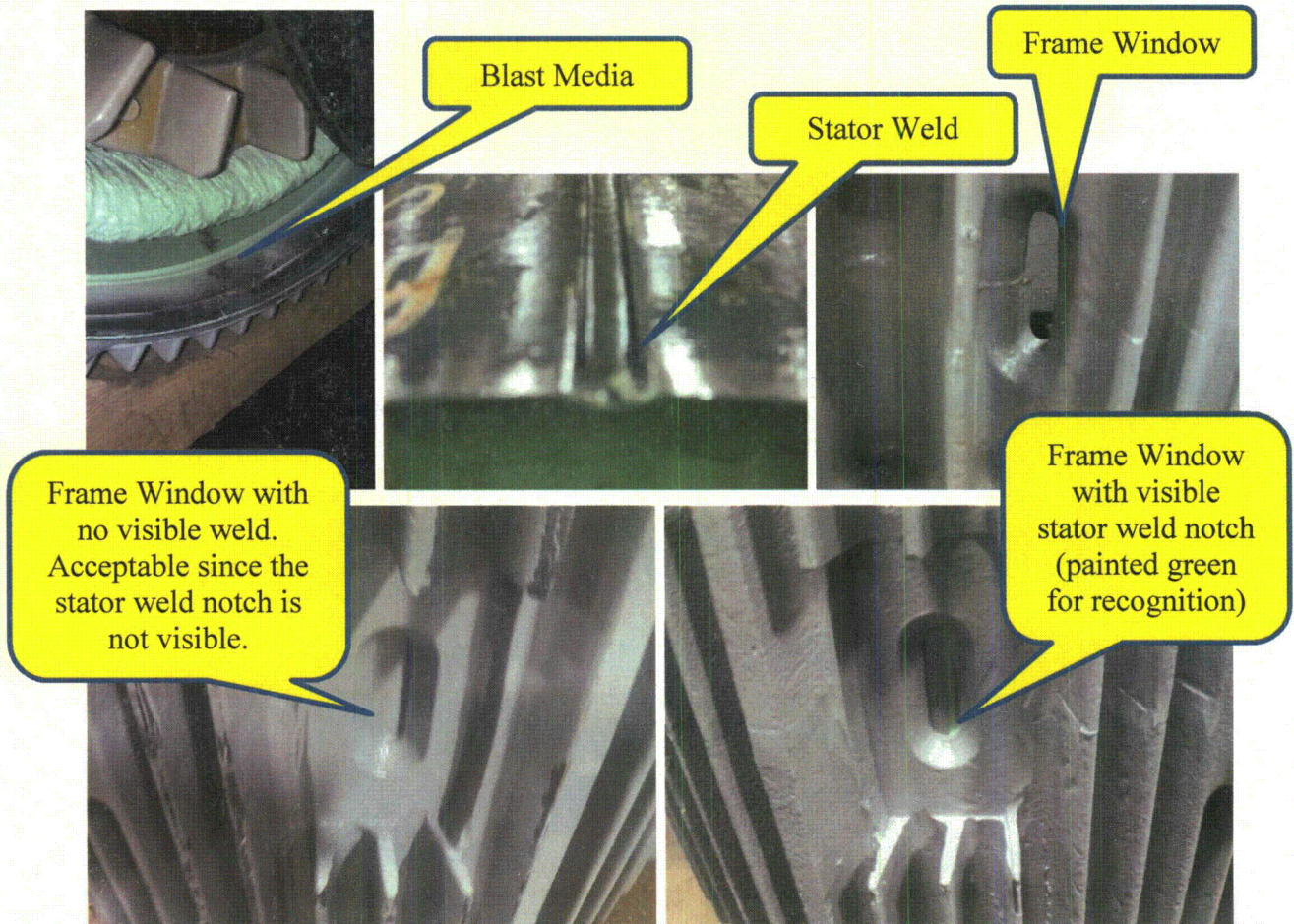
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weld after the stator is assembled into the frame. In this instance, one of the stator weld notches was aligned with one (of the two) small windows in the frame casting. This allowed the blast media to enter and travel along the OD of the stator core weld notch and into the motor.

Engineering and Quality reviewed all nuclear orders to verify the frame sizes that may have used the weld slot construction. The frames were determined to be 360, 400, and 440 during the time frame when the welds may not have been verified. The date range was established as 2002 thru 2013.

Nuclear Motor Assembly Checklist RGGFCD-00004, used as part of the dedication of Class 1E motors, was reviewed and found not to have a verification check for the stator/ frame welds. The puddle welds were not required to be verified as part of the documented dedication characteristics by Quality personnel. Therefore we believe it is possible that other 1E motors in frame sizes 360, 400, and 440 may have been shipped with this same entry point for blast media.



Engineering reviewed and confirmed for 360,400, and 440 frame sizes, the stator/frame assembly mechanical construction without the welds present was adequate to meet torsional or axial loads for motor performance and seismic loads.

A review of reported quality issues found no winding failures have ever been reported for FME (blast media) in any of the 360, 400, or 440 frame sizes.



This is a reportable 10CFR21 notification because there is a possibility that other Nuclear Class 1E motors have shipped with both the following:

- a. The frame weld window on identified 360, 400, or 440 frame motors shows no weld.
- b. The stator core weld notch is visible in at least one (of the two) frame weld windows.

The combination of both these items would allow an entry point for external conductive blast media (FME) to enter the motor.

### STEPS TAKEN TO PREVENT FUTURE OCCURRENCES

#### Containment:

All in process and on the dock motors were inspected to verify the welds were in place. No motors were found without the proper weld during this inspection. Engineering and Quality reviewed all nuclear orders to verify the frame sizes that may have used the weld slot construction. The frames were determined to be 360, 400, and 440 during the time frame when the welds may not have been verified. The date range was established as 2002 thru 2013.

Nuclear Motor Assembly Checklist RGGFCD-00004 used as part of the dedication of Class 1E motors was reviewed and found not to have a verification check for the stator/ frame welds.

Engineering reviewed and confirmed for 360,400, and 440 frame sizes, the stator/frame assembly mechanical construction without the welds present was adequate to meet torsional or axial loads for motor performance and seismic loads.

A review of reported quality issues found no winding failures have ever been reported for FME (blast media) in any of the 360, 400, or 440 frame sizes.

#### CONCLUSION

The problem is the possibility that motors shipped with a path thru a stator weld notch into the motor. The possibility of this happening is confined to the specific sales orders identified.

#### **D. The Discovery Date.**

June 24, 2013.

#### **E. The Quantity and Location of Motors Affected.**

**Quantity On Hand: 0      Shipped: 63**

**PART/COMPONENT NUMBER:**

# BALDOR

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Baldor Electric Co  
P. O. Box 250, 4349 Avery Drive  
Flowery Branch, GA 30542 USA  
Tel 678.947.7350

	Customer Name	Customer PO #	Motor Serial #	End User / Location	Status
A	AREVA NP, INC.	1007010502	7405444-001 T1	Mark For: P/N 1706512-007 JOB NAME: 2362 ISA	Contacted 'anthony.zusinas@areva.com'
B	DAVID BROWN UNION PUMPS CO.	168038	7280451-001 T1 7280451-001 T2 7280451-002 T1 7280451-002 T2	South Korea, Shin-Kori Unit 1, Tag # 1-451-M-PP03 Pump Serial # RI05136AN-1 Motor Serial # 7280451-001-T1  Shin-Kori Unit 2, Tag # 2-451-M-PP03 Pump Serial # RI05136BN-1 Motor Serial # 7280451-002-T1  Shin-Wolsong Unit 1 Tag # 1-451-M-PP03 Pump Serial # RI05137AN-1 Motor Serial # 7280451-001-T2  Shin- Wolsong Unit 2 Tag # 2-451-M-PP03 Pump Serial # RI05137BN-1 Motor Serial # 7280451-002-T2	Contacted <a href="mailto:istout@clydeunion.com">istout@clydeunion.com</a> and Leslie, Bryan <a href="mailto:bryan.leslie@spx.com">bryan.leslie@spx.com</a>  End User notified by Leslie, Bryan <a href="mailto:bryan.leslie@spx.com">bryan.leslie@spx.com</a>
C	DUKE ENERGY CORP	DP3894, ITEM 0010	6503869 T1	Mark For: STK COD 560661-1 CATAWBA AUX BLDG FILTERED FAN	Contacted Mike.Bouknight@duke-energy.com
		NE23183, ITEM	7189552-001 T1	Ship to	Contacted

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		0010	7189552-001 T2	Catawba Site, Mark For: Stock Code 595706-1	Mike.Bouknig ht@duke- energy.com
		NE23183, ITEM 0020	7189552A-001 T1	Ship to Catawba Site, Mark For: Stock Code 560661-1	Contacted Mike.Bouknig ht@duke- energy.com
		78439, ITEM 0001	7259472-001 T1	Ship to Catawba Site, Mark For: Stock Code 560661-1 AUX BLDG FILT EXH FAN MOTOR	Contacted Mike.Bouknig ht@duke- energy.com
		P83059	7314258-001 T1	Ship to Catawba Site, Mark For: Stock Code 560661-1	Contacted Mike.Bouknig ht@duke- energy.com
		50624 L/I 002	7242046-001 T1	Ship to Catawba Site, Mark For: STOCK CODE 858815-1	Contacted Mike.Bouknig ht@duke- energy.com
		81537 L/I 002	7306866-001 T1	Ship to Catawba Site, Mark For: STOCK CODE 858815-1	Contacted Mike.Bouknig ht@duke- energy.com
		00114161 L/I 0001	B464441-010 T1	Oconee Nuclear Station SSF RC MAKEUP PUMP MOTOR Catalog ID 864584	Contacted <u>Mike.Bouknig</u> <u>ht@duke-</u> <u>energy.com</u> and 'donnie.jarrett <u>@duke-</u> <u>energy.com</u> '
		00131213	B604345-010 T1	Ship to Catawba Site Catalog ID 858815-1	Contacted Mike.Bouknig ht@duke- energy.com
D	ENERTECH	615544	6933365-001 T1	sold to Entergy @ Grand Gulf Plant their PO# to Enertech was 10105466	Contacted <u>RDeKleine@c</u> <u>urtisswright.c</u> <u>om</u>  End User notified by <u>RDeKleine@c</u>



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					<a href="mailto:urtisswright.com">urtisswright.com</a>
		114835	7296045-001 T1	sold to Detroit Edison @ Fermi Plant their PO# to Enertech was NR-418336	Contacted RDeKleine@urtisswright.com  End User notified by RDeKleine@urtisswright.com
		114835-2 ITEM#30	7398284-001 T1	was sold to Detroit Edison @ Fermi Plant their PO# to Enertech was NR-418336	Contacted RDeKleine@urtisswright.com  End User notified by RDeKleine@urtisswright.com
E	FIRST ENERGY	45349776, L/I 00002	B655271-010 T1 B655271-010 T2 B655271-010 T3	Ship to: Perry Main Warehouse, Perry Nuclear Power Plant, 10 CENTER ROAD, PERRY OH 44081	
		45374079, L/I 00001	B809528-010 T1 B809528-010 T2	Ship to: Perry Main Warehouse, Perry Nuclear Power Plant, 10 CENTER ROAD, PERRY OH 44081	
		45390853, L/I 00001	B869861-010 T1	Ship to: Perry Main Warehouse, Perry Nuclear Power Plant, 10 CENTER ROAD, PERRY OH 44081	
F	FIRST ENERGY SERVICE CO.	45192009	7163989-001 T1	Ship to Perry Nuclear Power Plant. Mark	

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				For: MAT#9695339 5 PO#45192009	
		45303885, L/I 00001	B502150-010 T1	Ship to 10 CENTER ROAD PERRY, OH 44081 Mark for: MAT # 96953395 PO # 45303885	
G	FLOWSERVE PUMP DIVISION- SPAIN	HEL-013995	3769966A-001 T1 3769966A-001 T2 3769966A-001 T3 3769966A-001 T4	Ship to FLOWSERVE PUMP DIVISION Flowserve Spain Avd Fuentemar, 26-28 COSLADA, MADRID Motors are related to the Vandellós II job.	Contacted grevenga@flo wserve.com
H	GEORGIA POWER CO	7051394, ITEM 001	1KXV60398 T1		Verified OK MSKINNER@ southernco.co m
		7051394, ITEM 002	2KXV60398 T1		Verified OK MSKINNER@ southernco.co m
I	HOWDEN BUFFALO INC	17156	1KXV60503 T1	Exelon Generation Company LLC, Dresden Warehouse, 6500 North Dresden Rd, Morris, ,IL 60450-9765	Contacted <u>Jim.Elco@ho wden.com</u> , and end user 'kurt.kalenak @exeloncorp. com' and 'scott.senffner @exeloncorp. com'
		17578	1KXV60514 T1	Electronuclear PO450003923 rev 1 (UCI SO: 948), shipped to Rio de Janero, Brazil 20030-021. Project Angra	Contacted <u>Jim.Elco@ho wden.com</u> and Korina Looft <KLooft@unit edcontrols.co m>

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			Unit 1	
	25947	6869298-001 T1 6869298-001 T2	Southern California Edison / P.O.Box 128 / San Clemente, CA 92674-0128	Contacted Jim.Elco@hoden.com
	26942	6982377-001 T1	KHNP / 167 Samsung-Dong, Gangnam-Gu / Seoul 135-791 / Republic of Korea	Contacted Jim.Elco@hoden.com
	27592	7164652-001 T1	First Energy / Beaver Valley Power Station / P.O.Box 4 / Shippingport, PA 15077	Contacted Jim.Elco@hoden.com
	29445	7221083-001 T1	KHNP / 167 Samsung-Dong, Gangnam-Gu / Seoul 135-791 / Republic of Korea	Contacted Jim.Elco@hoden.com
	29619	7251392-001 T1	First Energy / Beaver Valley Power Station / P.O.Box 4 / Shippingport, PA 15077	Contacted Jim.Elco@hoden.com
	40294	B523030-010 T1	Southern California Edison / P.O.Box 128 / San Clemente, CA 92674-0128	Contacted Jim.Elco@hoden.com
	40796	B534396-010 T1	First Energy / Beaver Valley Power Station / P.O.Box 4 / Shippingport, PA 15077	Contacted Jim.Elco@hoden.com
	40869	B536076-010 T1 B536076-010 T2 B536076-010 T3	Trentec, A Business Unit of Curtiss-Wright Flow Control	Contacted Jim.Elco@hoden.com and RDeKleine@c



			Corporation, 4600 East Tech Drive, Cincinnati, OH 45245	urtisswright.c om
	40869	B536220-020 T1	Trentec, A Business Unit of Curtiss- Wright Flow Control Corporation, 4600 East Tech Drive, Cincinnati, OH 45245	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a> and <a href="mailto:RDeKleine@curtisswright.com">RDeKleine@curtisswright.com</a>
	41391	B549766-010 T1 B549766-010 T2	Southern California Edison / P.O.Box 128 / San Clemente, CA 92674- 0128	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>
	43094	B612674-010 T1	First Energy / Beaver Valley Power Station / P.O.Box 4 / Shippingport, PA 15077	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>
	42700	B619134-010 T1	TVA Nuclear / Nuclear Assurance and Licensing / 1101 Market St / Chattanooga, TN 37402- 2801	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>
	42978	B605377-010 T1 B605377-010 T2	TVA Nuclear / Nuclear Assurance and Licensing / 1101 Market St / Chattanooga, TN 37402- 2801	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>
	PO011990	B944153-010 T1 B944153-010 T2	Ergytech, Inc. / 2400 Augusta , Suite 310 / Houston, TX 77057	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>
	PO 010456	B792616-010 T1	Ergytech, Inc. / 2400 Augusta , Suite 310 /	Contacted <a href="mailto:Jim.Elco@hoden.com">Jim.Elco@hoden.com</a>

				Houston, TX 77057	
J	LIMITORQUE	125024	6504992 T1 6504992 T2	Limitorque PN R-608-F04- 0800. Located @ TVA Browns Ferry, installed on (2) SMB-5T actuators on Flowserve order 33365 *009 and *010.	Contacted <jmccconkey@fl owserve.com>
K	SPENCER TURBINE CO	97716, L/I 1	B658247-010 T1 B721200-020 T1 B721200-020 T2 B721200-020 T3	River Protection Project- Waste Treatment Plant, PROJECT# 209355, DOE Cont # DE- AC27- 01RV14136	Contacted 'jpresbie@spe ncer-air.com'
L	TAIWAN POWER COMPANY	8911120165 008971120105, ITEM 006	8KXV60501 T1 B446279-010 T1		
M	WESTINGHO USE ELECTRIC COMPANY	4500199978 L/I 1	7192126-001 T1	Mark for: PO#45001999 78 SO#05A01820 CUST PO#1772211 MAT#7650458	Contacted ellismr@westi nghouse.com
		4500336630 L/I 1	B588514-010 T1	Ship to FLORIDA P&L, 6501 S. OCSAN DRIVE, JENSEN BEACH, FL 34957	Contacted ellismr@westi nghouse.com

**F. The Corrective Action which has been completed.**

Baldor initiated corrective action per Baldor CAR-00409 on July 10, 2013 which was completed and received final approval by James Thigpen QA manager Baldor. Final verification of actions will be verified for effectiveness by 11/19/2013.

a. Manufacturing, Quality and Design Engineering personnel were made aware of the issue through an employee communication posting. RGGWI-00002 Frame Assembly



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and Weld Procedure was revised to detail the 360 ,400, and 440 frames with weld slots must always be welded and verified as welded as part of the operator final inspection.

b. Nuclear Motor Assembly Checklist RGGFCD-00004 was revised to include a quality verification that all 360, 400, or 440 stator/frame assemblies are verified to be welded if the design requires this process. Note: Many of 360 frame motors do not have the frame weld slots as part of the design.

#### **G. Other Information.**

We suggest the motors identified as possibly having this non-conformance, be inspected for the following.

- a. The frame weld windows on identified 360,400 or 440 frame motors show no weld.  
and
- b. The stator core weld notch is visible in at least one (of the two) frame weld windows.

If both these issues are present then we recommend the following:

1. Remove the motor from service
2. Remove the brackets from the motor
3. Inspect for FME (blast media) and if found vacuum it off the windings and inside the frame and brackets.
4. Verify the winding integrity through use of meggar, hypot, resistance and surge test.
5. Re-assemble motor.
6. Grind off any paint from the weld slot area and puddle weld to fill the bottom of the window.
7. Perform routine test to verify the motor meets requirements.

Sincerely,

Mr. James Thigpen  
Quality Assurance Manager, Gainesville Motor Plant  
Baldor Electric Co.