FAX

DATE February 1, 2019

TO US Nuclear Regulatory Commission (301.816.5151)

FROM Melanie Dirks

SUBJECT Notice of Deviation SOR R-Series Housing with Terminal Block

No. Pages 5
(Including Cover)

SOR
MEASUREMENT AND CONTROL

Please reference the notification of deviation regarding the installation of SOR R-series switches with terminal blocks.

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MEASUREMENT AND CONTROL

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February 1, 2019

Attn: Document Control Desk
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Notification of Deviation SOR R-Series Housing with Terminal Block

SOR is providing this report in accordance with 10CFR Part 21.21(d)(4).

(i) Name and address of individual informing the NRC:

Melanie Dirks
Director of Quality
SOR Inc.
14685 West 105th Street
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(ii) Identification of the activity which fails to comply or contains a defect:

Installation or wiring method of SOR R-series nuclear housings with terminal blocks.

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

SOR Inc., 14685 West 105th Street, Lenexa, Kansas 66215.

(iv) Nature of the potential failure to comply and the safety hazard which is created or could be created by such defect or failure to comply:

Exelon Limerick generating station notified SOR on December 8, 2018 via email regarding corrective action needed for the R-series housing on two of their emergency diesel engines. Limerick reported that the field wire lugs were in close contact with the switch cover gasket and had degraded the EPR (Ethylene Propylene Rubber) housing cover material enough to short to the cover which, in turn, tripped the 1A control fuse. Limerick reported that the uninsulated terminals and wiring were already available at the switch location during installation and used without modification. Limerick's immediate corrective action was to land the field wiring on the bottom tier of the terminal block and insulate the lugs.

EPR is known to be an effective electrical insulator, and is used as insulation for many electrical cables. For this reason, the EPR cover gasket was used on the SOR R-series nuclear housing to offer sufficient electrical insulation. Due to the failure at the Limerick generating station and subsequent evaluation at SOR, the EPR gasket alone does not provide sufficient electrical insulation between the terminal block connections and the metallic housing cover when uninsulated terminals are installed. This direct connection will cause heating of the gasket and eventual direct short through the EPR material.

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

February 1, 2019

(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, or may be supplied for, manufactured or being manufactured for one or more facilities or activities subject to the regulations in this part.

SOR does not have the capability to perform further evaluations to determine if a safety hazard exists as the specific customer installation practices is unknown. The end user must confirm for each application the wire installation applied with this specific model string.

The following customers are potentially affected by this deviation based on the nuclear qualified models procured. In accordance with the requirements of 10 CFR Part 21.21, the customers listed in the tables on the following pages are in the process of being notified by email and/or postal letter regarding this issue to allow them to evaluate this deviation and its potential safety hazard.

Company	Plant	PO	SOR Order	Model
Ameren	Callaway	847726SR Rev 1	L3891	20XRX-WX125-U9-C7A-TTNQX
Electrabel	Doel, Belgium	P004_9900077799	519607	6RX-WX5-U8-C2A-TTNQX 5RX-WX5-U8-C2A-TTNQX 9RX-WX5-U8-C2A-TTNQX 54RX-WX118-M4-C2A-TTNQX 12RX-WX4-U8-C2A-TTNQX 4RX-WX4-U8-C2A-TTNQX
		P004_9900181246	542843	4RX-WX4-U8-C2A-TTNQX
		P004_9900192746	545647	6RX-WX5-U8-C2A-TTNQX
		P004_9900251618	561044	205RX-WX125-U9-C7A-TTNQX
		P004_9900286032	564553	203RX-WX115-U9-C7A-TTNQX
		P004_9900297113	575293	201RX-BX125-U9-C7A-TTNQ
		9900325190	585651	203RX-BX125-U9-C7A-TTNQ 20XRX-BX125-U9-C7A-TTNQ 6RX-BX5-U8-C2A-TTNQ 9RX-BX45-U1-C2A-TTNQ 201RX-WX12X-U9-C7A-TTNQ 4XRX-BX5-U8-C2A-TTNQ 203RX-BX12X-U9-C7A-TTNQ
		9900378482	606519	205RX-WX125-U9-C7A-TTNQX
		9900377685	606164	6RX-WX5-U8-C2A-TTNQX
		9900384939	609382	201RX-BX125-U9-C7A-TTNQ
		9900386602	609508	4RX-WX4-U8-C2A-TTNQX
		9900413855	619038	54RX-WX118-M4-C2A-TTNQX
		9900417768	620386	5RX-WX5-U8-C2A-TTNQX 9RX-WX5-U8-C2A-TTNQX
		9900424232	622682	6RX-WX5-U8-C2A-TTNQX 4RX-WX4-U8-C2A-TTNQX 201RX-BX125-U9-C7A-TTNQ
		9900428329 Rev 2	624046	205RX-WX125-U9-C7A-TTNQX
		9900441664	629177	6RX-WX5-U8-C2A-TTNQX

Company	Plant	PO	SOR Order	Model
Electrabel (continued	Doel, Belgium	9900479388 Rev 1	641672	9RX-WX5-U8-C2A-TTNQX 201RX-BX125-U9-C7A-TTNQ 6RX-WX5-U8-C2A-TTNQX 4RX-WX4-U8-C2A-TTNQX
		9900480032 Rev 1	641753	29RX-BX4-U1-C2A-TTNQ
		9900483443 Rev 1	642558	9RX-WX5-U8-C2A-TTNQX
		9900479388	642566	9RX-WX5-U8-C2A-TTNQX
		9900486750 Rev 1	643711	6RX-WX5-U8-C2A-TTNQX
		9900520317 Rev 1	L2451	201RX-BX125-U9-C7A-TTNQ
	Tihange, Belgium	9900385976	609401	20XRX-BX125-U9-C7A-TTNQ
		9900405409	616605	9RX-BX45-U1-C2A-TTNQ
Exelon	Braidwood	00468909 Rev 2	530094	20XRX-BX125-U9-C7A-TTNQ
			5300112	
		00594543 Rev 2	629853	20XRX-BX125-U9-C7A-TTNQ
	Byron	00476910 Rev 1	538880	20XRX-BX125-U9-C7A-TTNQ
			538607	
	Limerick	00631358 Rev 3	L315	20XRX-BX125-U9-C7A-TTNQ
			L324	9014230
	Quad Cities	00493757 Rev 1	557657	12RX-BX4-U8-C1A-TTNQ
		538070	597429	9RX-BX5-U1-C2A-TTNQ
		00561117	611373	9RX-BX5-U1-C2A-TTNQ
		00572387	617065	9RX-BX5-U1-C2A-TTNQ
First Energy	Davis Besse	45431738	573533	6RX-WX2-U8-C1A-TTNQX
Florida Power & Light	St. Lucie	002291883 Rev 3	535754	203RX-BX125-U9-C7A-TTNQ
Konan	KHNP Kori Unit 1	KPOS-110509-C KHNP K110281010	536122	201RX-WX125-U9-C7A-TTNQ
Korea Hydro & Nuclear Power	Kori 2	K120467451 Rev 1	559717	201RX-WX115-U9-C7A-TTNQ
Progress Energy (Duke)	H.B. Robinson	670929	566570	20XRX-BX115-U9-C7A-TTNQ

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

SOR has completed or is implementing the following corrective actions:

- Completed the identification of the customers potentially affected by this deviation within this notification
- Initiated customer complaint 21 and corrective action (CAR) 1003
- Released ECO 5443 to add 3.5" wide Nomex insulation paper to the terminal block units
- Created a modified cover gasket with a Kapton insulation piece for field units
- Revision to SOR General Instruction to require customers to use insulated terminal connections targeting completion by February 28, 2019
- Investigate modification to SOR insulation resistance and dielectric tests targeting completion by February 28, 2019

(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 the purchasers or licensees.

See Item (iv) above. For end users who have purchased the R-series housing with the terminal block first released in 2010, must confirm their wire installation practices. If insulated terminals have been installed, likely no further action is necessary. If uninsulated terminals have been installed, the customer can choose to replace the terminals with insulated terminals or SOR will offer a replacement gasket cover, insulator and replacement instructions.

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

Not Applicable to this Part 21.

Should you have any additional questions regarding this matter, please contact:

For general inquiries:

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Sincerely,
SOR, Inc.

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