



Date: 10/5/2023

To: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555
Fax Number (301) 816-5151

10CFR Part 21 Final Notification: P21-09062023-FN, Rev. 0

Subject: Potential Defect with Eaton JD and HJD Series Molded Case Circuit Breakers (MCCBs)

Pursuant to §10CFR 21.21 (d)(3)(ii), Paragon Energy Solutions, LLC is providing this final notification of a potential defect with Eaton/Cutler Hammer JD and HJD Series circuit breakers that have OEM installed terminal lugs on the line and load connections. These MCCBs may have been supplied integral to a motor control center (MCC) cubicle or as spare parts. This condition, if left uncorrected, could potentially cause a substantial safety hazard.

The following information is required per §10CFR 21.21 (d) (4).

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

Richard Knott, Vice President Quality Assurance
Paragon Energy Solutions, LLC
7410 Pebble Drive
Ft. Worth, TX 76118

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

Eaton JD and HJD Series Molded Case Circuit Breakers with OEM supplied terminal lugs (part number TA250KB) installed:

In both cases of failure reported below, the breaker line and load side terminals did not have markings typically indicating the screws holding the terminal lug had been torqued to the required value (6 to 8 ft/lbs) by the OEM. Paragon has inspected our inventory and identified breakers with date codes between the years 2017 and 2021 that do not have the OEM torque marks. Paragon is working to bound the extent of condition, and an initial list of potentially affected facilities is attached.

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

Components were originally supplied by:

Nuclear Logistics, LLC, AZZ Nuclear, or Paragon Energy Solutions, LLC
7410 Pebble Drive, Fort Worth Texas 76118

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

Paragon has been informed of two recent failures of Eaton JD/HJD series circuit breakers. In both cases, troubleshooting identified an OEM terminal lug (part number TA250KB) installed on the breaker line side connection point was loose creating a high resistance connection leading to breaker damage and interruption of power to the connected load. These lugs come supplied as part of the complete breaker assembly from the OEM. The OEM technical information specifies the screw, holding the terminal lug to the breaker connection bar, is installed with a torque value of 6 to 8 ft-lbs. In both reported cases, the breakers did not have marks on the terminal lug hold down screws to indicate they had been torque checked by the OEM, and Paragon's dedication testing process for these components did not require torque verification of these screws.

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

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(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.

See attached list.

(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.

Paragon has taken action to identify and quarantine in-process work on these breakers until appropriate inspections can be performed.

Paragon is working with the breaker manufacturer (Eaton) to help in determination of cause and formal corrective action to prevent recurrence. Initial review has identified this issue may be

bounded to breakers supplied from a specific Eaton facility. Paragon expects Eaton to provide the results of their review by 31 October 2023.

Paragon will conduct torque checks of all breaker lugs installed on J Frame MCCBs currently in inventory. This action will complete prior to supply or 31 October 2023.

Paragon has completed testing to determine if the TA250KB terminal lug can be inadvertently loosened during normal breaker installation/replacement into its associated motor control center cubicle. Results indicated the lug remains tight to the required torque value during removal and installation.

To mitigate potential for recurrence regardless of what Eaton determines as the cause, Paragon Electrical Engineering group will conduct training on this issue and will revise commercial grade dedication plans (CGDs) for J frame MCCBs containing these lugs to include a torque check. The necessary training and CGD revisions will be complete by 31 October 2023. Additionally, we have captured this operating experience for inclusion into new CGDs for new customer orders.

(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.

These reported failures are the first reported to Paragon. For breakers installed prior to 2017 it is likely routine surveillance or preventive maintenance activities on the motor control centers containing this series of MCCBs would have identified overheating conditions or nuisance tripping. Paragon recommends purchasers and licensees included in the attached list perform inspections of affected motor control center cubicles containing the JD/HJD series MCCBs and any spares contained in plant inventory. Additionally, the hold down screws for the terminal lugs should be checked for tightness during breaker replacement activities.

Sincerely,



Richard Knott
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Paragon Energy Solutions LLC
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cc: Douglas VanTassell - CEO
Daniel Dale – COO

Plant Name	Customer PO Number	Part Number	Quantity	Serial Number(s)
Energy Harbor - Beaver Valley	45667338	JD3090	4	010605-01-00001 thru 010605-01-00004
Constellation - Limerick	628122	JD3200	1	351027129-BK-01
Dominion Energy - North Anna	70381436	HJD3200	1	008090-01-00001
		HJD3125	6	007037-10-00001 thru 007037-10-00006
		HJD3175	4	007037-42-00001 thru 007037-42-00004
		HJD3150	1	007037-41-00001
		HJD3200	2	007037-14-00001 thru 007037-14-00002
	70312473	HJD3200	2	87833-026-00001 thru 87833-026-00002
	70363514	HJD3225	1	107762-20-00001
	70337904	HJD3090	1	99298-025-00001
		HJD3090	1	99298K2-01-0001
Fluor Marine Propulsion, LLC	141549	JD3125	2	004389-09-00002 thru 004389-09-00003
		JD3150	2	004389-10-00001 thru 004389-10-00002
		JD3175	2	004389-11-00001 thru 004389-10-00002
		JD3125	1	008880-01-00001
	135926	JD3125	2	106057-36-00001 thru 106057-36-00002
		JD3150	2	106057-37-00001 thru 106057-37-00002
		JD3125	1	106057K5-01-001
TVA - Sequoyah Nuclear	2894371	JD3200	1	85077-001-00001
Talen Energy - Susquehanna	21035403	HJD3100	1	87824-001-00002