Paragon

Date: 06/21/2024

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

**10CFR Part 21 Final Notification: P21-05242024-FN, Rev. 0**

**Subject: Defect with Emergency Diesel Generator Voltage Regulator Part Number NLI-3S7950GR751A1**

Pursuant to §10CFR 21.21(d)(3)(ii), Paragon is providing final notification of a defect associated with the Emergency Diesel Generator (EDG) Voltage Regulator as noted in the table in section (ii) below

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.**

| Plant | Client PO# | Part Number | Serial # | QTY |
|---|---|---|---|---|
| AEP DC Cook | 01600229 | NLI-3S7950GR751A1 | NLI-3S7950GR751A1-1007 | 1* |

*The unit listed above is currently in the possession of Paragon.

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

Components were originally supplied by:

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.**

The voltage regulator was refurbished under the customer purchase order noted above. Part of the refurbishment involved physical inspection, complete replacement of the units wiring, and testing of the unit to Paragon approved acceptance testing instructions. The refurbished unit was supplied to the customer in December 2023. Prior to installation (March 2024), the unit successfully passed bench testing at the plant. During post installation testing, EDG was started, and the output voltage pegged high and was not controllable. DC Cook subsequently removed the voltage regulator and documented the non-conformance. DC Cook troubleshooting determined the unit was mis-wired. The unit was returned to Paragon, and inspection confirmed the plant's diagnosis. The identified mis-wire affects the system circuitry by placing silicon-controlled rectifier 5CD in a reverse biased position. The reversed biased rectifier blocks the flow of current which creates an open circuit condition. This open circuit condition causes the output voltage of the EDG to max out and does not allow the output voltage to be adjusted to supply downstream loads. This condition, if left uncorrected could contribute to a substantial safety hazard and is reportable in accordance with 10CFR Part 21.

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

05/23/2024

**(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 section (ii) above.

**(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 entered this issue into our Corrective Action Program. Causal analysis concluded the mis-wire most likely occurred during deficiency correction and testing activities following the initial Quality Control inspection which had verified the wiring to be correct. The Paragon test procedure sequences testing the current control and automatic control circuitry of the voltage regulator individually necessitating wire disconnect and reconnect. While the procedure contained appropriate steps for the disconnect and reconnect, it could have been improved by adding Quality Control verification of proper reconnection. While this test method proves the functionality of the

Voltage Regulator, it inadvertently prevented identification of the open circuit condition described in section (iv) above. Corrective action to prevent recurrence includes:

1) The wiring for the voltage regulator will be corrected to match the schematic and wire list and the wiring will be relabeled so that the wire ends are labeled with where they land. (Paragon – Completion Date: 8/23/2024)

2) The applicable acceptance test procedure will be revised to allow the integrated testing of the voltage regulator circuitry and clarify steps related to any wire disconnect and reconnect to include Quality Control inspection steps to verify proper reconnection of wiring lifted. (Paragon Engineering – Completion Date: 8/16/2024)

3) Informational Briefing on this issue will be provided to I&C and Electrical Engineering, I&C and Electrical Lab, and Quality Control Inspectors.
(Paragon Training Manager – Completion Date: 7/12/2024)

**(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.**

Since the unit described above is the only unit containing the identified defect, no additional action is required by DC Cook.

Sincerely,

Richard Knott
Vice President Quality Assurance
Paragon Energy Solutions LLC
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rknott@paragones.com

cc: Douglas VanTassell - CEO
Daniel Dale – COO