10 CFR 21.21(d)(4) Report

This written notification (report) is being made in accordance with 10 CFR 21.21, "Notification of failure to comply or existence of a defect and its evaluation," particularly sections 10 CFR 21.21(d)(3)(ii) and 10 CFR 21.21(d)(4). This written notification is being sent within thirty days of an initial notification that was made by telephone call and email to the NRC Operations Center on December 2, 2021 (Ref.: EN# 55620).

Name and address of the individual or individuals informing the Commission:

Stephanie Banker
(573) 864-1323
Ameren Missouri
Callaway Plant
8315 County Road 459
Steedman, MO 65077

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

NLI-STM15-15M20 (15-VDC Power Supply)
NLI-STM48-14M20 (48-VDC Power Supply)

Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect:

Nuclear Logistics, Inc (NLI) (which was later purchased by Paragon Energy Solutions, LLC (Paragon))

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:

A condition(s) was identified at Callaway Plant on September 23, 2021 and on October 14, 2021, in which two different in-service, instrument/relay cabinet power supplies failed. These power supplies were identified as NLI-STM15-15M20 (15-VDC) and NLI-STM48-14M20 (48-VDC), which were manufactured by NLI (now Paragon). When these failures occurred, each power supply had been in service for approximately 2.5 years. Paragon was informed, and subsequently, the two failed power supplies were sent to them for evaluation and failure analysis.

In a letter dated November 10, 2021, Paragon notified Callaway Plant that it had determined that a deviation existed, and indicated that the DC/DC Converter, Murata P/N: NKE1212SC, Date code: G1511 had failed in each of the two examined power supplies. This notification also informed Callaway Plant that Paragon does not have the capability to perform the evaluation to determine whether this deviation could create a substantial safety hazard, if left uncorrected. This placed responsibility for that determination on Callaway Plant.

Callaway Plant has determined that there are eight affected 15-VDC or 48-VDC power supplies (that contain the DC/DC converter described above) currently in use at the Callaway plant. The affected power supplies are utilized in either of three Balance-of-Plant Engineered Safety Feature Actuation System

(BOP-ESFAS) cabinets or two Load Shed and Emergency Load Sequencer (LSELS) cabinets. Callaway Plant determined that a failure of any one of the 15-VDC power supplies would render the entire cabinet non-functional for all of its associated safety-related functions. Furthermore, a failure of any one of the 48-VDC power supplies would render portions of the cabinet's safety-related functions non-functional, potentially defeating most of the output relay actuations.

Callaway Plant performed the evaluation required per 10 CFR 21.21(a) and determined that the identified deviation was a defect and could create a substantial safety hazard, if left uncorrected. The responsible Ameren Missouri Callaway Plant officer was notified on December 1, 2021, and the initial ENS notification (EN# 55620) was made on December 2, 2021.

The date on which the information of such defect or failure to comply was obtained:

As described above, Callaway Plant completed the evaluation required per 10 CFR 21.21(a) and determined that a defect existed, on December 1, 2021.

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:

Callaway Plant has determined that there are eight affected 15-VDC or 48-VDC power supplies which are used in either of three BOP-ESFAS cabinets or two of the LSELS cabinets. Each of these cabinets has one 15-VDC logic power supply and one or two 48-VDC power supplies primarily used for output relay actuations.

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:

Callaway Plant is removing all eight of the affected power supplies and replacing them with spares, in a phased approach in accordance with the Corrective Action Program. The removed power supplies are being returned to Paragon for repair to replace the DC/DC converter (Murata P/N: NKE1212SC, Date code: G1511) and the power supply will be subsequently tested. Once the repair is complete, the power supplies will be returned to the Callaway plant, where they will be tested before being reinstalled in the plant.

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:

The power supplies described above were designed specifically for and believed to have only been supplied to the Callaway plant; therefore, no other plants should be affected.