ENGINE SYSTEMS, INC.
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Rocky Mount, NC 27804
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June 8, 2015

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Subject: 10CFR21 Reporting of Defects and Non-Compliance -
Engine Systems, Inc. Report No. 10CFR21-0112, Rev. 0

Incorrect Relay Installed in Governor Control Panel
P/N 8002096-PANEL

Dear Sir:

The enclosed report addresses a reportable notification on an incorrect relay installed in a governor control panel, ESI P/N 8002096-PANEL, supplied to Duke Energy Progress-Brunswick Nuclear Plant.

A copy of the report has been mailed to our affected nuclear customer.

Please sign below, acknowledging receipt of this report, and return a copy to the attention of Document Control at the address above (or, fax to number 252/446-1134) within 10 working days after receipt.

Yours very truly,

ENGINE SYSTEMS, INC.

Susan Woolard

Susan Woolard
Document Control

Please let us know if ANY of your mailing information changes - name of recipient, name of company/facility, address, etc. Mark the changes on this acknowledgment form and send to us by mail or FAX to the number above.

RECEIVED: _____

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ENGINE SYSTEMS, INC.
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Report No. 10CFR21-0112
Rev. 0: 06/05/15

10CFR21 REPORTING OF DEFECTS AND NON-COMPLIANCE

COMPONENT: Incorrect Relay Installed in Governor Control Panel P/N 8002096-PANEL

SYSTEM: Emergency Diesel Generator

CONCLUSION: Reportable in Accordance With 10CFR21

Prepared By: _____ Engineering Manager Date: 6/5/15

Reviewed By: _____ Quality Manager Date: 6-5-15

REV	DATE	PAGE	DESCRIPTION
0	06/05/15		Initial issue.

Component:

Incorrect relay within governor control panel P/N 8002096-PANEL

Summary:

Engine Systems Inc. (ESI) began a 10CFR21 evaluation on 04/13/15 upon discovery that governor control panels shipped to Brunswick Nuclear Plant contained an incorrect part number relay. The evaluation was concluded on 06/05/15 and it was determined that this issue is a reportable defect as defined by 10CFR Part 21. Under certain adverse conditions, a panel with the incorrect part number relay may lose power thereby resulting in inoperability of the electronic control portion of the control system. This could prevent the emergency diesel generator set from performing its safety-related function during an emergency event.

Discussion:

The relay in question is the Governor Control At Setpoint (GCASP) relay installed in the governor control panel assembly P/N 8002096-PANEL. The panel provides speed control functions for the emergency diesel generator (EDG). In the original panel design the part number specified was 219XBX282NE. During the course of EMC testing, it was determined that the EMI suppression diode within in the GCASP relay must be removed in order for the EUT to comply with the requirements of IEC 61000-4-5. When the diode was installed and the negative polarity portion of surge testing forward biased the diode, this resulted in a short circuit connection between the supply and return conductors of the control panel's power. This caused the fuses designed to protect the panel from overcurrent conditions to fail open; resulting in a loss of power to the control panel.

In place of the EMI suppression diode, an MOV (P/N V150LA10AP) was added across terminals 6 & 7 of the GCASP relay socket. The MOV provides similar EMI suppression to the removed diode and responds appropriately to either polarity of surge waveform. The MOV is external to the relay and is considered a separate component. The MOV is not affected by this notification.

Removal of the internal EMI suppression diode for the GCASP relay resulted in a part number change. The relay part number that should have been installed is P/N 219XBX283NE. The part number of the relay actually installed was P/N 219XBX282NE. The difference between the two relays is that P/N 219XBX282NE contains an internal suppression diode whereas 219XBX283NE does not.

Impact on Operability:

During normal operating conditions, the EDG will perform its safety related function with the incorrect GCASP relay installed in the governor control panel. Both relays provide the same switching function.

However, if a negative polarity surge similar to the requirements of IEC 61000-4-5 were to occur on the 125 VDC bus with the incorrect relay installed, the control panel may lose power. The 27GP relay would de-energize, alerting plant personnel of an under-voltage condition within the governor control panel. The EDG would remain operable on the mechanical governor though the electronic control portion would be inoperable.

Root cause evaluation:

An error by a technician in conjunction with a lapse in oversight allowed this problem to occur. Contributing to the issue was that only one digit differentiates the two part number relays and both have the same overall appearance (size, shape, case style, etc).

Evaluation of previous shipments:

This issue only affects one part number (qty 4) supplied on one customer purchase order:

ESI Sales Order	Part Number	Customer	Customer P.O.	ESI Serial Number	C-of-C Date	Qty
8002096	8002096-PANEL	Duke Energy Progress - Brunswick Nuclear Plant	00655050	8002096-1.1-1 8002096-1.1-2 8002096-1.1-3 8002096-1.1-4	10/14/14	4

Corrective Action:

The customer was advised of the situation via letter "Notice of GCASP Relay Discrepancy - Governor Control Panel" sent on 04/15/15. The correct relays were then supplied to the customer as dedicated, safety-related replacements on ESI IWO 8002474 (Brunswick PO 00786240) for installation in the panels. There are four panels affected, each containing one of these relays. ESI supplied four replacement relays which were C-of-C'd and shipped on 04/17/15. These are plug-in style relays and to replace the relay only requires pulling out the old relay and plugging in the new relay. No special tools or instructions are necessary.