



ENGINE SYSTEMS, INC.

175 Freight Road
Rocky Mount, NC 27804

Telephone: 252/977-2720
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September 12, 2018

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. 10CFR21-0122, Rev. 0

Motor Operated Potentiometer
P/N 72-07900-100-ESI

Dear Sir:

The enclosed report addresses a reportable notification on a Motor Operated Potentiometer, P/N 72-07900-100-ESI.

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
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.

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RECEIVED: _____

DATE: _____

IE79
NRR



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Report No. 10CFR21-0122

Rev. 0: 09/12/18

**10CFR21 REPORTING OF DEFECTS
AND NON-COMPLIANCE**

COMPONENT: Motor Operated Potentiometer
P/N 72-07900-100-ESI

SYSTEM: Emergency Diesel Generator

CONCLUSION: Reportable in Accordance With 10CFR21

Prepared By: _____

Jim Lin
Engineering Manager

Date: _____

9/12/18

Reviewed By: _____

Dan Roberts
Quality Manager

Date: _____

9/12/18

REV	DATE	PAGE	DESCRIPTION
0	09/12/18		Initial issue.

Pursuant to 10 CFR 21.21(d)(4), ESI is presenting the required information as follows:

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

<i>Dan Roberts</i>	<i>John Kriesel</i>
<i>Quality Manager</i>	<i>Engineering Manager</i>
<i>Engine Systems Inc.</i>	<i>Engine Systems Inc.</i>
<i>175 Freight Rd.</i>	<i>175 Freight Rd.</i>
<i>Rocky Mount, NC 27804</i>	<i>Rocky Mount, NC 27804</i>

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

Motor Operated Potentiometer, P/N 72-07900-100-ESI.

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

Engine Systems Inc.

(iv) 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 batch of Motor Operated Potentiometers (MOPs) supplied by ESI were found to contain motors that, as they accumulate run time, exhibit increasing current draw and eventually exceed the MOP circuit allowance. Consequently, the motor operation becomes erratic which leads to a sluggish MOP. The MOP is used in a safety-related system to control emergency diesel generator (EDG) output voltage. Failure of the MOP to operate properly can negatively affect the EDG output voltage which affects associated components required to safely shutdown the nuclear reactor.

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

July 19, 2018

(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.

<i>Part Number</i>	<i>Customer</i>	<i>Customer PO</i>	<i>Qty</i>	<i>ESI Serial Number</i>	<i>MOP Serial Number</i>	<i>C-of-C Date</i>
<i>72-07900-100-ESI</i>	<i>Duke Energy Catawba</i>	<i>196046</i>	<i>6</i>	<i>3013905-1.1-1 thru 6</i>	<i>H01931980 H01995585 H01995582 H01995586 H01995584 H01995587</i>	<i>5/30/2015</i>

(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.

ESI will revise the test procedure to incorporate an extended run time while trending the motor for any adverse changes. This will be completed within 30 days and will prevent reoccurrence.

For Catawba, any MOPs from this batch are considered suspect and may be returned to ESI for rework or replacement. For units installed, the motor performance should be assessed prior to continued use. The voltage measured across terminals 3(-) and 4(+) while the MOP is operating should remain steady within a range of 22.8 to 25.2 VDC. Any step change or reduction in voltage is an indication of motor deterioration.

(viii) Any advice related to the potential 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 root cause of the excessive current draw was found to be build-up of carbonaceous deposits between the commutator sections of the motor either from the carbon brushes, contamination, or a combination of the two. As the motor accumulated run time, the deposits propagated to the point of a low resistance path between commutator sections which are wired to the armature poles. This affected the magnetic field within the motor which had a direct impact on motor performance. ESI has limited the issue to a single date code of motors supplied within a single batch of MOPs, as listed in the table above.