



ENGINE SYSTEMS, INC.

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June 5, 2019

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. 10CFR21-0125-INT, Rev. 0

Signal Converter Transmitter
P/N SCT/4-20MA/4-20MA/24DC/-LIM-TA[DCM]

Dear Sir:

The enclosed report addresses an on-going evaluation regarding a signal converter transmitter, P/N SCT/4-20MA/4-20MA/24DC/-LIM-TA[DCM].

The evaluation is expected to be completed no later than July 31, 2019.

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 Coordinator

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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Report No. 10CFR21-0125-INT

Rev. 0: 06/05/19

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

COMPONENT: Signal Converter Transmitter
P/N SCT/4-20MA/4-20MA/24DC/-LIM-TA[DCM]

SYSTEM: Steam Turbine Control

CONCLUSION: Not yet completed

Prepared By: *Justin*
Engineering Manager

Date: 6/5/19

Reviewed By: *Don Robert*
Quality Assurance Manager

Date: 6/5/19

REV	DATE	PAGE	DESCRIPTION
0	06/05/19		Initial issue.

COMPONENT:

Signal converter transmitter, P/N SCT/4-20MA/4-20MA/24DC/-LIM-TA[DCM]

PURPOSE:

This interim report is issued because Engine Systems, Inc. (ESI) has not been able to complete the evaluation of a failure within the 60-day requirement of 10CFR21.21. The evaluation is expected to be completed no later than July 31, 2019.

SUMMARY:

ESI was notified on April 6, 2019 of a fault within the RCIC turbine control system supplied to Cooper Nuclear Station. The turbine control displayed a loss of remote speed input alarm ("Remote Spd Input Failed") indicative of a loss of the 4-20mA input signal. Troubleshooting performed by the site determined the cause was most likely due to the signal converter (also called signal conditioner) or associated power supply. The signal converter is used to sense the customer's remote speed setpoint 4-20 mA input signal and convert the signal to an isolated 4-20 mA output signal which is transmitted to the turbine control. The transmitter includes a limiting function where if the input signal is below 4 mA, the minimum output is limited to 2.7 mA and if the input signal is above 20 mA, the maximum output is limited to 21.3 mA. The power supply is used to step down system voltage from nominal 120 VDC to 24 VDC to power the current loop.

ESI has performed testing on both the signal converter and power supply. To date, the power supply has tested satisfactorily with no anomalies or indications of failure. Initial testing of the signal converter found the device to produce an output current approximately proportional to the input; however, when attempts were made to adjust the device it was determined the converter could not be adjusted. Subsequent internal inspection revealed an overheated resistor. The converter is currently at the manufacturer's facility for more detailed analysis.

Since the signal converter transmits the customer's remote speed setpoint input to the turbine control, operability of the device is critical to operation of the RCIC turbine control system. Therefore, a failure of the signal converter would adversely affect the RCIC turbine control system and thus may affect the safe shutdown of the reactor.

ESI is in the process of performing additional testing and analysis at the manufacturer's facility. ESI is unable to complete an evaluation within the 60-day requirement.

EXTENT OF CONDITION / INTERIM CONTAINMENT

ESI has supplied this component to one customer, Cooper Nuclear Station. Qty 2 signal converters were purchased for this batch, one for the customer and the other was used as a destructive test specimen. Therefore, there are no additional components from this same lot in safety-related applications. ESI will withhold shipment of any signal converters until the evaluation is complete.

ESI Sales Order	End User	End User P.O.	Qty	C-of-C Date	Mfg Serial Number
8001553	Cooper Nuclear Station (supplied through Dresser-Rand)	Contract 09-69A 200441 (D-R)	1	09/28/2015	2379741

Note: The signal converter was installed in a control panel assembly P/N 8001553-01 (qty 1 per panel).