



**ENGINE SYSTEMS, INC.**

175 Freight Road  
Rocky Mount, NC 27804

Telephone: 252/977-2720  
Fax: 252/446-1134

April 3, 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. 10CFR21-0121, Rev. 0  
  
Refurbished Pressure Regulator Assembly, P/N 1776 506

Dear Sir:

The enclosed report addresses a reportable notification on a refurbished pressure regulator assembly, P/N 1776 506.

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

IE19  
NRR

**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: \_\_\_\_\_



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Report No. **10CFR21-0121**

Rev. 0: 03/30/18

## 10CFR21 REPORTING OF DEFECTS AND NON-COMPLIANCE

COMPONENT: Pressure Regulator Assembly - Component Omitted During Refurbishment  
P/N 1776 506

SYSTEM: Emergency Diesel Generator

CONCLUSION: Reportable in Accordance With 10CFR21

Prepared By:

*Ju Lin*

Engineering Manager

Date:

*3/30/18*

Reviewed By:

*Dan Roberts*

Quality Manager

Date:

*3/30/18*

REV	DATE	PAGE	DESCRIPTION
0	03/30/18		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.

*Pressure Regulator Assembly, P/N 1776 506.*

(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.

*ESI supplied a refurbished pressure regulator assembly, P/N 1776 506, S/N 20776487, to Brunswick Nuclear Plant in August 2017. ESI later determined that two components of the assembly, an upper and lower diaphragm plate, were omitted during reassembly of the refurbished regulator. Reference item 8 on Figure 1 for location of the diaphragm plates within the pilot valve portion of the regulator assembly. These metal diaphragm plates distribute load and retain the associated rubber diaphragm. Omission of the metal plate may not initially affect operation of the pilot valve and therefore may not be detected during functional testing; however over repeated cycles there is a strong possibility that the rubber diaphragm would tear or rupture without the benefit of load distribution and support provided by the metal diaphragm plate.*

*The regulator assembly is used in the safety-related air start system of the emergency diesel generators (EDGs) at Brunswick Nuclear Plant. Failure of the regulator to function properly due to the omission of a component within the pilot valve portion of the assembly could adversely affect the starting capability of the EDG. Since the EDG is a safety system used to ensure the safe shutdown of the nuclear reactor, this issue is considered to be a reportable defect as defined by 10CFR-part 21.*

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

*February 1, 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.

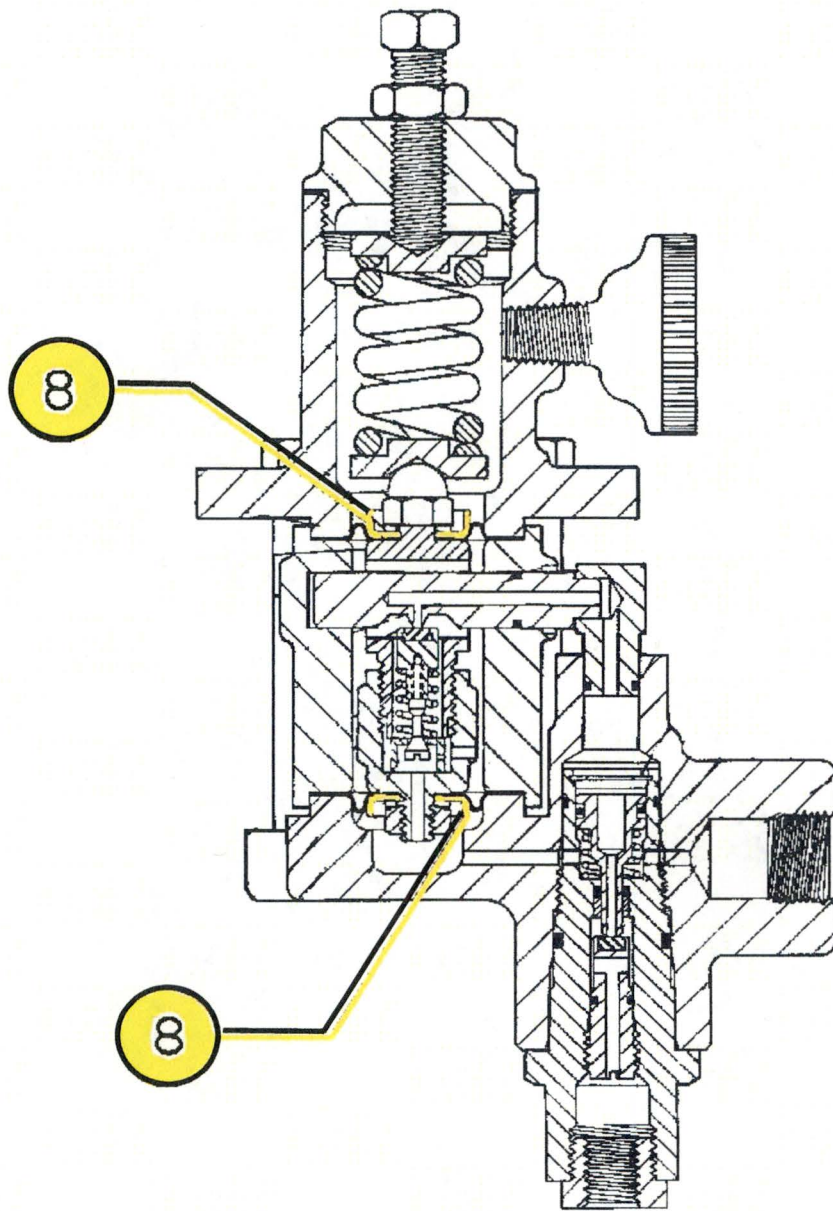
<b>ESI Sales Order</b>	<b>Customer</b>	<b>Customer P.O.</b>	<b>Qty</b>	<b>C-of-C Date</b>	<b>ESI Serial Number</b>	<b>Mfg Serial Number</b>
8002796	Duke Energy - Brunswick Nuclear Plant	03048459	1	08/24/2017	8002796-5.1-1	20776487

(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.

*The assembly has been recalled and will be reworked by ESI using a new, dedicated repair kit and re-assembled and tested per approved procedures. An additional QA inspection will be performed to ensure presence of the diaphragm plates. This activity will be completed within the next 30 days.*

(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.

*N/A*



Item 8 is the diaphragm plate

**Figure 1: Outline Dwg of Pilot Valve Portion of Regulator Assembly**