ENGINE SYSTEMS, INC.
175 Freight Road
Rocky Mount, NC 27804
Telephone: 252/977-2720
Fax: 252/446-1134

April 15, 2008

U.S. Nuclear Regulatory Commission
Document Control Desk
Mail Stop 03H8
Washington, DC 20555

Subject: 10CFR21 Reporting of Defects and Non-Compliance -
Engine Systems, Inc. Report No. 10CFR21-0094, Rev. 0

Plunger and Barrel Assembly, Fuel Injection Pump
Haynes P/N 9041367

Dear Sir:

The enclosed report addresses a reportable notification for plunger and barrel assemblies used in the diesel engine fuel injection pump.

A copy of the report has also been sent to our only affected user, Duke Energy – McGuire Nuclear Plant.

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.

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ENGINE SYSTEMS, INC.
175 Freight Road, Rocky Mount, NC 27804
Telephone: 252/977-2720
Fax: 252/446-1134

Report No. 10CFR21-0094
Rev. 0: 04/15/08

10CFR21 REPORTING OF DEFECTS AND NON-COMPLIANCE

COMPONENT: Plunger and barrel assembly, fuel injector pump
Haynes P/N 9041367

SYSTEM: Emergency Diesel Generator – fuel system

CONCLUSION: Reportable in accordance with 10CFR21.

Prepared By: _____ Date: 4/15/08
Engineering Manager

Reviewed By: _____ Date: 4/15/08
Quality Assurance Manager

REV	DATE	PAGE	DESCRIPTION
0	04/15/08		Initial issue.

COMPONENT:

Plunger and barrel assembly, fuel injector pump: Haynes part number 9041367

DISCUSSION:

Engine Systems Inc. (ESI) began a 10CFR21 evaluation on 3/14/08 after receiving a recall notification from Haynes Corporation. The notification advised ESI that part number 9041367 plunger and barrel assemblies supplied in December 2007 did not meet functional requirements and should be returned. The evaluation was concluded on 4/14/08 and determined this issue to be a reportable defect as defined by 10CFR21.

The pump barrels (Haynes P/N 9041375) were manufactured with only 2 drilled ports instead of 3 drilled ports as required by the final configuration print for this part number barrel. The notification also states that use of the supplied barrels in a fuel injector pump would result in the pump not passing functional calibration requirements.

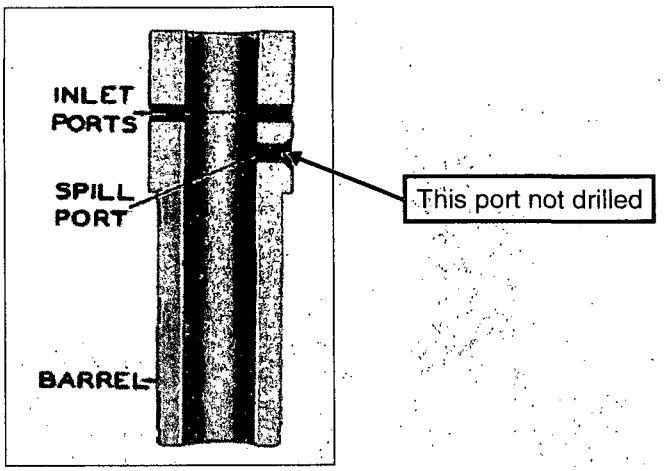

Figure 1: Typical pump barrel

(see references on page 3)

Haynes supplied 62 of the recalled plunger and barrel assemblies to ESI on two (2) separate purchase orders as identified in Table 1 below.

ESI P.O. No.	Haynes P/N	Barrel material lot	Barrel heat lot	Received quantity.	ESI receipt date
79959	9041367	LCH 1057	HLO 455	37	Dec. 27, 2007
78521	9041367	LCH 1057	HLO 455	25	Jan. 02, 2008

Table 1: Recalled plunger& barrel assy's received from Haynes

FUNCTION: (see references on page 3)

The plunger and barrel assembly is a sub-component of the Haynes (Bendix) type FDX fuel injector pump utilized on diesel engines by various manufacturers (Enterprise, CES, Worthington, Nordberg). Fuel injection is accomplished by the barrel's inlet and spill ports working in conjunction with a helix (passage) in the plunger. Basic theory of operation is as follows: With the plunger at its lowest position, fuel enters the barrel from the pump inlet chamber through the inlet ports (INTAKE). The fuel in the chamber also enters the plunger helix which extends to the top of the plunger. As the plunger rises, it eventually covers the barrel inlet ports and the area within the barrel bore above the plunger becomes a pressure chamber. Pressure continues to rise as the plunger continues upward. High pressure fuel is forced through the pump delivery valve to the fuel injector (INJECTION). Fuel injection continues until the plunger rises high enough for the helix to reach the spill port. When this occurs, the high pressure fuel in the barrel chamber is released (spills) into the inlet chamber via the plunger helix; fuel pressure drops and injection stops (END OF INJECTION).

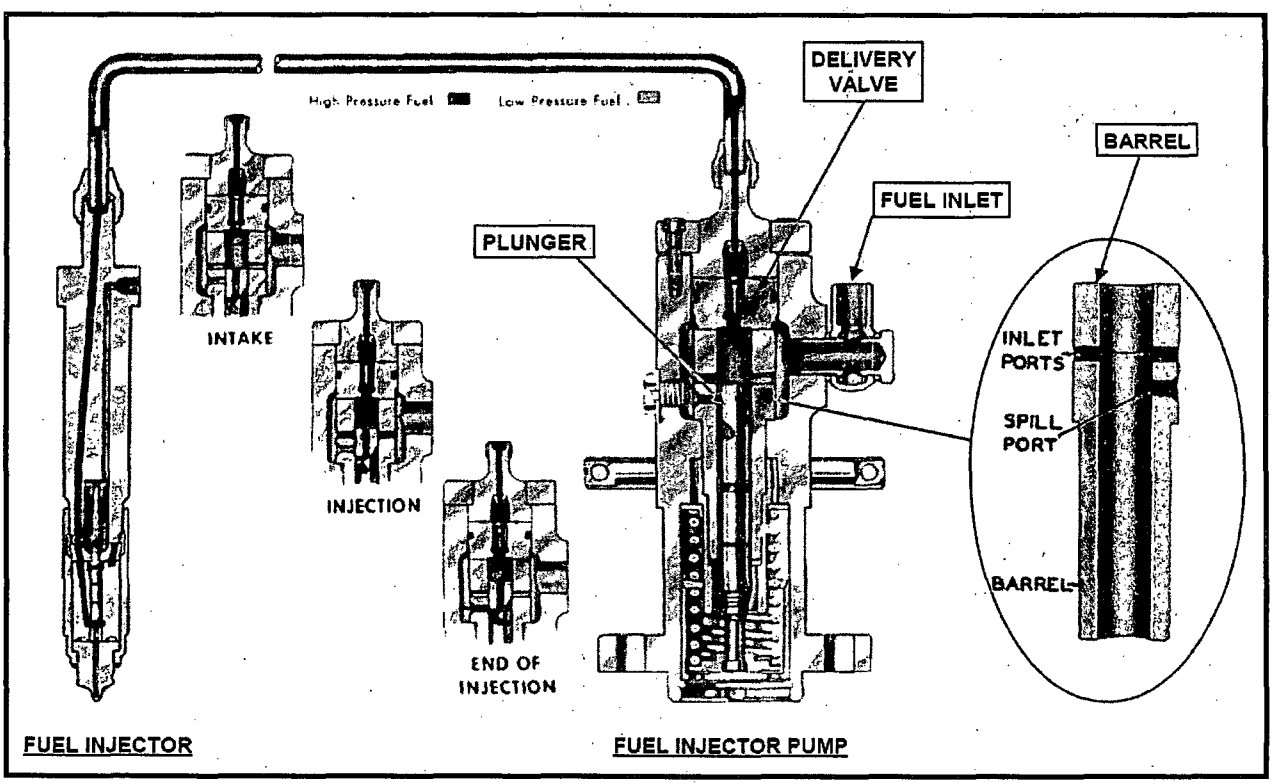

Figure 2: Typical plunger & barrel application

(see references on page 3)

AFFECTED USERS:

Shipments of part number 9041367 plunger and barrel assemblies affected by this notification are shown in Table 2 below.

ESI S.O. No.	Customer	Customer P.O. No.	ESI P.O. No.	Haynes P/N	Ship qty.	ESI ship date
3003324	Duke – McGuire	00089732	79959	9041367	36	Feb. 26, 2008
3002554	Duke – McGuire	00085589	78521	9041367	24	Jan. 15, 2008

Table 2: Recalled plunger & barrel assy's shipped to customers

CORRECTIVE ACTION:

The customer has returned all 36 assemblies from order 3003324 to ESI. 23 assemblies have also been returned to ESI from order 3002554 (the remaining assembly was utilized by the customer for material testing).

CONCLUSION:

The fuel pump plunger and barrel assembly recall is limited to assemblies with barrels having both material lot LCH 1057 and heat lot HLO 455. ESI shipped 60 assemblies from this lot to Duke – McGuire Nuclear Plant on ESI sales orders 3002554 & 3003324 (the remaining 2 assemblies were ESI material test specimens). The machining error was discovered prior to installation of any of the assemblies in fuel injector pumps. Had any been installed, the corresponding fuel injection pumps would not have operated properly. This would have resulted in inoperability of the installed EDG during site post-maintenance testing.

REFERENCES:

The functional description, Figure 1 and Figure 2 were obtained from: Installation, Maintenance and Overhaul Instructions for Diesel Fuel Injection FDX Series Flange Type Pumps, Form L-549, The Bendix Corporation, printed March 1967,