

Medium Heavy Vehicle–Diesel Engine

Student/intern information:

Name _____ Date _____ Class _____

Vehicle used for this activity:

Year _____ Make _____ Model _____

Odometer _____ VIN _____

Learning Objective / Task (Electronic Fuel Management System)	2007 NATEF Reference Number	2007 NATEF Priority Level
<ul style="list-style-type: none"> Inspect and test power and ground circuits and connections; measure and interpret voltage, voltage drop, amperage, and resistance readings using a digital multimeter (DMM); determine needed action. 	G2-1	P-1
<ul style="list-style-type: none"> Interface with vehicle's on-board computer; perform diagnostic procedures using recommended electronic diagnostic equipment and tools (to include PC-based software and/or data scan tools); determine needed action. 	G2-2	P-1
<ul style="list-style-type: none"> Check and record electronic diagnostic codes and trip/operational data; monitor electronic data; clear codes; determine further diagnosis. 	G2-3	P-1
<ul style="list-style-type: none"> Locate and use relevant service information (to include diagnostic procedures, flow charts, and wiring diagrams). 	G2-4	P-1
<ul style="list-style-type: none"> Inspect and replace electrical connector terminals, seals, and locks. 	G2-5	P-1
<ul style="list-style-type: none"> Inspect and test switches, sensors, controls, actuator components, and circuits; adjust or replace as needed. 	G2-6	P-1
<ul style="list-style-type: none"> Using recommended electronic diagnostic tools (to include PC-based software and/or data scan tools), access and interpret customer programmable parameters. 	G2-7	P-2

Time off _____

Time on _____

Total time _____

Recommended Resource Materials

- CDX Automotive program
- CDX eTextbook
- Technical service bulletins, shop manuals, and any other information applicable to the specific vehicle or components you are working on
- Class notes

Materials Required

- Vehicle with possible engine concern
- Vehicle manufacturer's workshop manual
- Manufacturer-specific tools depending on the concern
- Vehicle lifting equipment if applicable

For every task in Diesel Engines, the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

Some Safety Issues to Consider

- Diagnosis of this fault may require test driving the vehicle on the school grounds or on a hoist, both of which carry severe risks. Attempt this task only with full permission from your supervisor/instructor and follow all the guidelines exactly.
- Caution: If you are working in an area where there could be “brake dust” present (may contain asbestos, which has been determined to cause cancer when inhaled or ingested), ensure you wear and use all OSHA-approved asbestos protective/removal equipment.
- Lifting equipment such as vehicle jacks and stands, vehicle hoists, and engine hoists are important tools that increase productivity and make the job easier. However, they can also cause severe injury or death if used improperly. Make sure you follow the manufacturer’s operation procedures. Also make sure you have your supervisor/instructor’s permission to use any particular type of lifting equipment.
- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with federal, state, and local regulations.
- Always wear the correct protective eyewear and clothing and use the appropriate safety equipment, as well as fender covers, seat protectors, and floor mat protectors.
- Make sure you understand and observe all legislative and personal safety procedures when carrying out practical assignments. If you are unsure of what these are, ask your supervisor/instructor.

Performance Standard

0–No exposure: No information or practice provided during the program; complete training required

1–Exposure only: General information provided with no practice time; close supervision needed; additional training required

2–Limited practice: Has practiced job during training program; additional training required to develop skill

3–Moderately skilled: Has performed job independently during training program; limited additional training may be required

4–Skilled: Can perform job independently with no additional training

► TASK Inspect and test power and ground circuits and connections; measure and interpret voltage, voltage drop, amperage, and resistance readings using a digital multimeter (DMM); determine needed action. G2-1

1. Inspect, test power, and ground circuits and connections.

a. Meets the manufacturer’s specifications: Yes: _____ No: _____

b. If no, list your recommendations for any rectifications:

2. Reference the manufacturer’s workshop for the appropriate specifications and measure and interpret voltage, voltage drop, amperage, and resistance readings using a digital multimeter (DMM).

a. Meets the manufacturer’s specifications: Yes: _____ No: _____

b. If no, list your recommendations for any rectifications:

Time off _____

Time on _____

Total time _____

3. Discuss the findings with your instructor.

Performance Rating

2007 NATEF Reference Number: G2-1

0

1

2

3

4

Supervisor/instructor signature _____ Date _____

▶ TASK Interface with vehicle's on-board computer; perform diagnostic procedures using recommended electronic diagnostic equipment and tools (to include PC-based software and/or data scan tools); determine needed action. **G2-2**

Time off _____

Time on _____

Total time _____

1. Identify the type of electronic diagnostic tool available in your workshop.

a. PC-based unit: Yes: _____ No: _____

b. If yes, list the make and model:

c. Hand-held data scanner: Yes: _____ No: _____

d. If yes, list the make and model:

2. Reference the manufacturer's workshop manual and diagnostic tool's manual and connect the unit to the vehicle's interface.

a. Perform diagnostic procedures as outlined by the manufacturer.

i. Meets the manufacturer's specifications: Yes: _____ No: _____

ii. If no, list your recommendations for any rectifications:

3. Discuss the findings with your instructor.

Performance Rating

2007 NATEF Reference Number: G2-2

0

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2

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4

Supervisor/instructor signature _____ Date _____

▶ TASK

Check and record electronic diagnostic codes and trip/operational data; monitor electronic data; clear codes; determine further diagnosis.

G2-3

Time off _____
Time on _____
Total time _____

1. Record all diagnostic codes and trip/operational data stored in the system:

2. Refer to the manufacturer's manual and identify each stored code below.

a. Code: _____ Interpretation: _____

b. Code: _____ Interpretation: _____

c. Code: _____ Interpretation: _____

d. Code: _____ Interpretation: _____

e. Code: _____ Interpretation: _____

f. Code: _____ Interpretation: _____

g. Code: _____ Interpretation: _____

h. Code: _____ Interpretation: _____

i. Code: _____ Interpretation: _____

j. Code: _____ Interpretation: _____

i. Are any of these codes detrimental to the vehicle's operation?

Yes: _____ No: _____

ii. If yes, list your recommendations for any rectifications:

3. Clear all stored codes.

4. Discuss the findings with your instructor.

Performance Rating

2007 NATEF Reference Number: G2-3

0

1

2

3

4

Supervisor/instructor signature _____ Date _____

▶ TASK Locate and use relevant service information (to include diagnostic procedures, flow charts, and wiring diagrams).

G2-4

1. Reference the manufacturer's workshop manual and locate and use relevant service information (to include diagnostic procedures, flow charts, and wiring diagrams) as required throughout the servicing procedures.

a. Meets the manufacturer's specifications: Yes: _____ No: _____

b. If no, list your recommendations for any rectifications:

2. Discuss the findings with your instructor.

Time off _____
Time on _____
Total time _____

Performance Rating

2007 NATEF Reference Number: G2-4

0

1

2

3

4

Supervisor/instructor signature _____ Date _____

▶ TASK Inspect and replace electrical connector terminals, seals, and locks.

G2-5

1. Reference the manufacturer's workshop manual to inspect and replace electrical connector terminals, seals, and locks.

a. Meets the manufacturer's specifications: Yes: _____ No: _____

b. If no, list your recommendations for any rectifications:

2. Discuss the findings with your instructor.

Time off _____
Time on _____
Total time _____

Performance Rating

2007 NATEF Reference Number: G2-5

0

1

2

3

4

Supervisor/instructor signature _____ Date _____

► TASK Inspect and test switches, sensors, controls, actuator components, and circuits; adjust or replace as needed. G2-6

1. Reference the manufacturer's workshop manual to inspect and test switches, sensors, controls, actuator components, and circuits.
 - a. Inspect and test the switches.
 - i. Meets the manufacturer's specifications: Yes: _____ No: _____
 - b. Inspect and test the sensors.
 - i. Meets the manufacturer's specifications: Yes: _____ No: _____
 - c. Inspect and test the controls.
 - i. Meets the manufacturer's specifications: Yes: _____ No: _____
 - d. Inspect and test the actuator components.
 - i. Meets the manufacturer's specifications: Yes: _____ No: _____
 - e. Inspect and test the circuits.
 - i. Meets the manufacturer's specifications: Yes: _____ No: _____
 - f. If no to any of the above, list your recommendations for any rectifications.

2. Discuss the findings with your instructor.

Time off _____
 Time on _____
 Total time _____

Performance Rating

2007 NATEF Reference Number: G2-6

0	1	2	3	4
Supervisor/instructor signature _____				Date _____

► TASK Using recommended electronic diagnostic tools (to include PC-based software and/or data scan tools), access and interpret customer programmable parameters. G2-7

1. With the diagnostic tool and interpretation tool connected in accordance with the manufacturer's specifications, fill out the table below.

Programmable parameter	Default (D) / Programmed (P)	Programmed Parameter Set @
Example: Engine RPM	P	2200 RPM

Time off _____
 Time on _____
 Total time _____

a. Meets the manufacturer's specifications: Yes: _____ No: _____

b. If no, list your recommendations for any rectifications:

2. Discuss the findings with your instructor.

Performance Rating

2007 NATEF Reference Number: G2-7

0

1

2

3

4

Supervisor/instructor signature _____ Date _____