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Service Information Bulletin

SUBJECT	DATE
SPN 3364 (ACM)(GHG14)	October 2015

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084 DDC-SVC-MAN-S084	DD Platform	SPN 3364/FMI 1, 2, 17, 18 -GHG14	Updated diagnostic procedures

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2 SPN 3364/FMI 1 - GHG14

Improper Diesel Exhaust Fluid Quality Final Warning

Table 1.

SPN 3364/FMI 1	
Description	Improper Diesel Exhaust Fluid (DEF) Quality Final Warning
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL, DEF Lamp Flash
Engine Reaction	None
Verification	Parked Regeneration

Check as follows:

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Using a refractometer from the DEF Test Kit W060589001900, measure the DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 2.
   b. No; clean/flush the DEF tank, then Go to step 6. Refer to section "Flushing of the GHG14 Diesel Exhaust Fluid System".
2. Turn ignition ON (key ON, engine OFF).
3. Visually check all DEF lines for physical damage (kinks, cracks, leaks and disconnects). Is any damage found?
   a. Yes; repair as necessary; Go to step 6.
   b. No; Go to step 4.
4. Unbolt DEF Dosing Unit from exhaust only. Do not disconnect DEF hoses or electrical connector. Refer to section "Removal of the GHG14 Dosing System Doser".

NOTE: Use a DEF-safe container when performing a DEF Quantity Test.

5. Perform a DEF Quantity Test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 108 and 132 mL (3.65 and 4.46 ounces)?
   a. Yes; reinstall DEF Dosing Unit. Go to step 6.
   b. No; replace Dosing Unit. Go to step 6. to verify repairs.
6. Connect DiagnosticLink ®. Monitor (chart) the following parameters.
   - ASL102 Engine Speed
   - AS018 Selective Catalyst Reduction (SCR) Inlet Temperature
   - AS019 SCR Outlet Temperature
   - AS035 SCR Inlet NOx sensor
   - AS036 SCR Outlet NOx sensor
   - AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

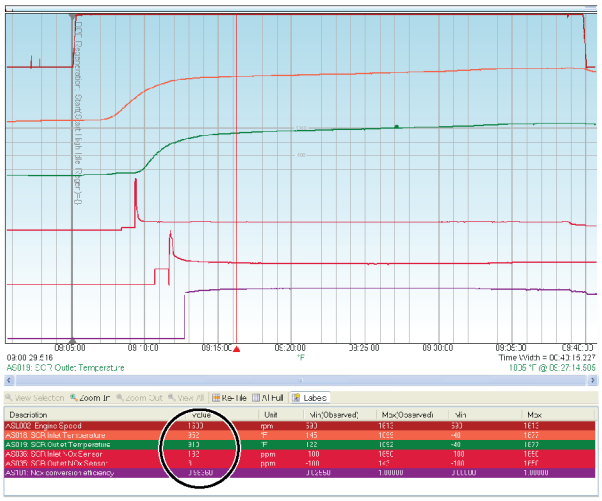
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

7. Start engine and perform a parked regeneration. Does the NOx conversion efficiency rise and stay above 85% (0.85) during the regeneration? Check after the regeneration to ensure SPN 3364/FMI 2 and all SPN 5246/ FMI (any) faults go inactive. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".



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   a. Yes; clear faults and release vehicle.
   b. No; Go to step 8.
8. Disconnect the DEF Dosing Unit electrical connector only. Leave Dosing Unit bolted to Aftertreatment and DEF hoses intact.
9. Inspect the harness connector for signs of damaged, bent, spread, corroded or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is damage or contamination found?
   a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
   b. No; Go to step 10.

NOTE: Running engine with DEF Dosing Unit disconnected will induce faults.

NOTE: Do not attempt to operate engine with the DEF lines disconnected. DEF pump runs and circulates DEF through the system at a limited rate (default) to aid in system cooling.

NOTE: NOx Inlet normal reading should be 0 to 50 ppm higher than the NOx Outlet reading.

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

10. Start engine and perform a "Perform Performance Check - Low Temp ATD". After thirty minutes, are the NOx sensor values within 50 ppm of each other?
    a. Yes; Go to step 11.
    b. No; replace the Inlet NOx sensor. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
11. Turn the ignition OFF.
12. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
13. Inspect the ACM 120-pin connector and the 120-pin harness connector for signs of corrosion, spread, unseated (pushed out) or damaged pins, connector seal for damage (signs of water or oil intrusion) or signs of wire damage. Is damage or contamination found?
    a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
    b. No; Go to step 14.
14. Install a test ACM. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".

3 SPN 3364/FMI 2 - GHG14

Improper Diesel Exhaust Fluid Quality

Table 2.

SPN 3364/FMI 2	
Description	Improper Diesel Exhaust Fluid (DEF) Quality
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL, DEF Lamp Flash
Engine Reaction	None
Verification	Parked Regeneration

Check as follows:

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Was another emission component related fault code repaired prior to this step?
   a. Yes; perform a parked regeneration to verify repairs and clear fault codes.
   b. No; Go to step 2.
2. Using a refractometer from the DEF Test Kit W060589001900, measure the DEF percentage. Is DEF percentage between 28 to 36%?
   a. Yes; Go to step 3.
   b. No; clean/flush the DEF tank, then Go to step 7. Refer to section "Flushing of the GHG14 Diesel Exhaust Fluid System".
3. Turn ignition ON (key ON, engine OFF).
4. Visually check all DEF lines for physical damage (kinks, cracks, leaks and disconnects). Is any damage found?
   a. Yes; repair as necessary, Go to step 7.
   b. No; Go to step 5.
5. Unbolt DEF Dosing Unit from exhaust only. Do not disconnect DEF hoses or electrical connector. Refer to section "Removal of the GHG14 Dosing System Doser".
6. Perform a DEF Quantity Test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 108 to 132 mL (3.65 and 4.46 ounces)?
   a. Yes; reinstall DEF Dosing Unit. Go to step 7.
   b. No; replace DEF Dosing Unit. To verify repairs, Go to step 7.
7. Connect DiagnosticLink ®. Monitor (chart) the following parameters.
   - ASL102 Engine Speed
   - AS018 Selective Catalyst Reduction (SCR) Inlet Temperature
   - AS019 SCR Outlet Temperature
   - AS035 SCR Inlet NOx sensor
   - AS036 SCR Outlet NOx sensor
   - AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

8. Start engine and perform a parked regeneration. Does the NOx conversion efficiency rise and stay above 85% (0.85) during the regeneration? Check after the regeneration to ensure SPN 3364/FMI 2 and all SPN 5246/FMI (any) faults go inactive. Refer to section "Performing a Parked Regeneration - EPA10/GHG14".
   a. Yes; clear faults and release vehicle.
   b. No; Go to step 9.
9. Disconnect the DEF Dosing Unit electrical connector only. Leave Dosing Unit bolted to Aftertreatment and DEF hoses intact.
10. Inspect the harness connector for signs of damaged, bent, spread, corroded or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is damage or contamination found?
    a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
    b. No; Go to step 11.

NOTE: Running engine with DEF Dosing Unit disconnected will induce faults.

NOTE: Do not attempt to operate engine with the DEF lines disconnected. DEF pump runs and circulates DEF through the system at a limited rate (default) to aid in system cooling.

NOTE: NOx Inlet normal reading should be 0 to 50 ppm higher than the NOx Outlet reading.

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

11. Start engine and perform a "Perform Performance Check - Low Temp ATD". After thirty minutes, are the NOx sensor values within 50 ppm of each other?
    a. Yes; Go to step 12.
    b. No; replace the Inlet NOx sensor. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".

12. Turn the ignition OFF.
13. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
14. Inspect the ACM 120-pin connector and the 120-pin harness connector for signs of corrosion, spread, unseated (pushed out) or damaged pins, connector seal for damage (signs of water or oil intrusion) or signs of wire damage. Is damage or contamination found?
    a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
    b. No; Go to step 15.
15. Install a test ACM. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".

4 SPN 3364/FMI 17 - GHG14

Improper Diesel Exhaust Fluid Quality Warning

Table 3.

SPN 3364/FMI 17	
Description	Improper Diesel Exhaust Fluid (DEF) Quality Warning
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL, DEF Lamp Flash
Engine Reaction	None
Verification	Parked Regeneration

Check as follows:

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Using a refractometer from the DEF Test Kit W060589001900, measure the DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 2.
   b. No; clean/flush the DEF tank, then Go to step 6. Refer to section "Flushing of the GHG14 Diesel Exhaust Fluid System".
2. Turn ignition ON (key ON, engine OFF).
3. Visually check all DEF lines for physical damage (kinks, cracks, leaks and disconnects). Is any damage found?
   a. Yes; repair as necessary; Go to step 6.
   b. No; Go to step 4.
4. Unbolt DEF Dosing Unit from exhaust only. Do not disconnect DEF hoses or electrical connector. Refer to section "Removal of the GHG14 Dosing System Doser".

NOTE: Use a DEF-safe container when performing a DEF Quantity Test.

5. Perform a DEF Quantity Test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 108 and 132 mL (3.65 and 4.46 ounces)?
   a. Yes; reinstall DEF Dosing Unit. Go to step 6.
   b. No; replace Dosing Unit. Go to step 6. to verify repairs.
6. Connect DiagnosticLink ®. Monitor (chart) the following parameters.
   - ASL102 Engine Speed
   - AS018 Selective Catalyst Reduction (SCR) Inlet Temperature
   - AS019 SCR Outlet Temperature
   - AS035 SCR Inlet NOx sensor
   - AS036 SCR Outlet NOx sensor
   - AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

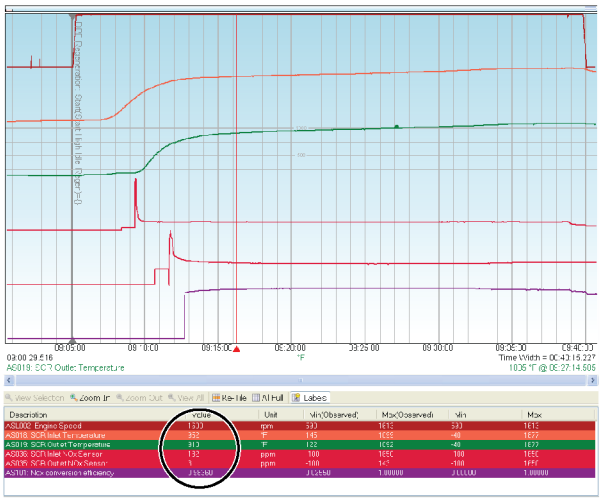
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

7. Start engine and perform a parked regeneration. Does the NOx conversion efficiency rise and stay above 85% (0.85) during the regeneration? Check after the regeneration to ensure SPN 3364/FMI 2 and all SPN 5246/ FMI (any) faults go inactive. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".



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   a. Yes; clear faults and release vehicle.
   b. No; Go to step 8.
8. Disconnect the DEF Dosing Unit electrical connector only. Leave Dosing Unit bolted to Aftertreatment and DEF hoses intact.
9. Inspect the harness connector for signs of damaged, bent, spread, corroded or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is damage or contamination found?
   a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
   b. No; Go to step 10.

NOTE: Running engine with DEF Dosing Unit disconnected will induce faults.

NOTE: Do not attempt to operate engine with the DEF lines disconnected. DEF pump runs and circulates DEF through the system at a limited rate (default) to aid in system cooling.

NOTE: NOx Inlet normal reading should be 0 to 50 ppm higher than the NOx Outlet reading.

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

10. Start engine and perform a "Perform Performance Check - Low Temp ATD". After thirty minutes, are the NOx sensor values within 50 ppm of each other?
    a. Yes; Go to step 11.
    b. No; replace the Inlet NOx sensor. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
11. Turn the ignition OFF.
12. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
13. Inspect the ACM 120-pin connector and the 120-pin harness connector for signs of corrosion, spread, unseated (pushed out) or damaged pins, connector seal for damage (signs of water or oil intrusion) or signs of wire damage. Is damage or contamination found?
    a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
    b. No; Go to step 14.
14. Install a test ACM. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".

5 SPN 3364/FMI 18 – GHG14

Improper Diesel Exhaust Fluid Quality Warning

Table 4.

SPN 3364/FMI 18	
Description	Improper Diesel Exhaust Fluid (DEF) Quality Warning
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL, DEF Lamp Flash
Engine Reaction	None
Verification	Parked Regeneration

Check as follows:

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Using a refractometer from the DEF Test Kit W060589001900, measure the DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 2.
   b. No; clean/flush the DEF tank, then Go to step 6. Refer to section "Flushing of the Diesel Exhaust Fluid System".
2. Turn ignition ON (key ON, engine OFF).
3. Visually check all DEF lines for physical damage (kinks, cracks, leaks and disconnects). Is any damage found?
   a. Yes; repair as necessary. Go to step 6.
   b. No; Go to step 4.
4. Unbolt DEF dosing unit from exhaust only. Do not disconnect DEF hoses or electrical connector. Refer to section "Removal of the GHG14 Dosing System Doser".

NOTE: Use a DEF-safe container when performing a DEF Quantity Test.

5. Perform a DEF Quantity Test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 108mL and 132mL (3.65 oz and 4.46 oz)?
   a. Yes; reinstall DEF Dosing Unit. Go to step 6.
   b. No; replace dosing unit. Go to step 6. to verify repairs.
6. Connect DiagnosticLink ®. Monitor (chart) the following parameters:
   - ASL102 Engine Speed
   - AS018 Selective Catalyst Reduction (SCR) Inlet Temperature
   - AS019 SCR Outlet Temperature
   - AS035 SCR Inlet NOx sensor
   - AS036 SCR Outlet NOx sensor
   - AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

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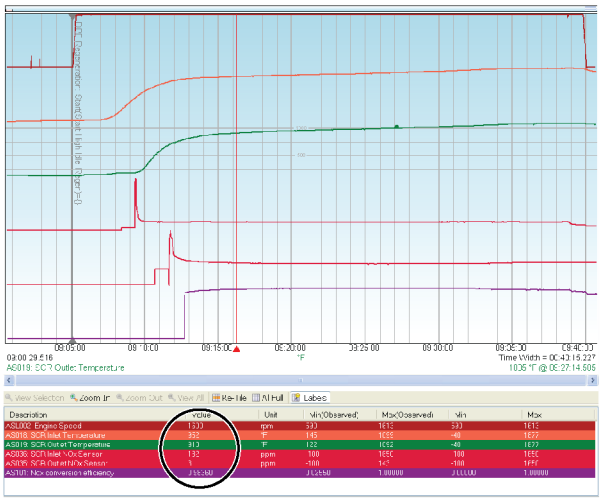
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

7. Start engine and perform a parked regeneration. Does the NOx conversion efficiency rise and stay above 85% (0.85) during the regeneration? Check after the regeneration to ensure SPN 3364/FMI 2 and all SPN 5246/FMI (any) faults go inactive. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".



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   a. Yes; clear faults and release vehicle.
   b. No; Go to step 8.
8. Disconnect the DEF Dosing Unit electrical connector only. Leave Dosing Unit bolted to Aftertreatment and DEF hoses intact.
9. Inspect the harness connector for signs of damaged, bent, spread, corroded or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is damage or contamination found?
   a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
   b. No; Go to step 10.

NOTE: Running engine with DEF Dosing Unit disconnected will induce faults.

NOTE: Do not attempt to operate engine with the DEF lines disconnected. DEF pump runs and circulates DEF through the system at a limited rate (default) to aid in system cooling.

NOTE: NOx Inlet normal reading should be 0 to 50 ppm higher than the NOx Outlet reading.

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

10. Start engine and perform a "Perform Performance Check - Low Temp ATD". After thirty minutes, are the NOx sensor values within 50 ppm of each other?
    a. Yes; Go to step 11.
    b. No; replace the Inlet NOx sensor. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
11. Turn the ignition OFF.
12. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
13. Inspect the ACM 120-pin connector and the 120-pin harness connector for signs of corrosion, spread, unseated (pushed out) or damaged pins, connector seal for damage (signs of water or oil intrusion) or signs of wire damage. Is damage or contamination found?
    a. Yes; repair as necessary. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".
    b. No; Go to step 14.
14. Install a test ACM. Perform a parked regeneration to verify repairs. Refer to section "Performing a Parked Regeneration Using DiagnosticLink®".

