TEAM A.V.I.

As Fast As Lightning Strikes...
Automotive Technology Changes.

LBT-117
MODE 6
DOMESTIC

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WE ENCOURAGE PROFESSIONALISM

ASE CERTIFIED

THROUGH TECHNICIAN CERTIFICATION

"Before everything else, getting ready is the secret of success."
- Henry Ford

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

Monitors Suspended:

EVAP/Catalyst

P0141: H02S2 Heater circuit Fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) No Engine codes present.
2) Key off for at least 10 minutes.

Why did this code set?

1) The task manager detected no catalyst sensor voltage after the heater had been energized.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/Catalyst

P0143: H02S2 Short to ground Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Warm engine shut down.
2) Coolant below 90 degrees
3) Engine start up.

Why did this code set?

1) The task manager detected low (below .200 mv) catalyst sensor voltage for at least 30 seconds before the heater monitor has been ran.

What should you look for?

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit is to meat the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (apprx. .5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

Monitors Suspended:

EVAP/Catalyst

P0144: H02S2 shorted to voltage Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running three minutes.
2) Closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was greater than 1 volt for longer than 3 seconds.

What should you look for?

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (apprx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

Monitors suspended:

1) EVAP/Catalyst

P0145: H02S2 Slow response Sensor2 , Bank1

Monitor run conditions (Enable Criteria)

1) Engine running 2 minutes.
2) Closed loop operation.
3) Cruise speeds 0-20mph for 2 minutes.
4) Returned to idle.

Why did this code set?

1) The task manager detected the catalyst sensor has switched rich (600 mv) to lean (300 mv) too few times.

General Motors

What should you look for?

1) Drive the mixture rich and lean using propane enrichment while monitoring the catalyst sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

Monitors suspended:

EVAP

P0147: H02S2 Heater fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.

Why did this code set?

1) The task manager detected a catalyst sensor voltage greater then 300mv for at least ½ minute to 1 ½ minute.

What should you look for?

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias) . If it does, suspect sensor if still high (300 mv or greater) suspect PCM/harness.

Monitors suspended:

EVAP/Catalyst

P0151: H02S1 Shorted to ground Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Previous warm engine shut down.
2) Cold engine (below 90 degrees) start up.

Why did this code set?

1) The task manager detected the 02 sensor voltage too low (below 150 mv) for at least ½ minute after start up.

What should you look for?

1) While monitoring the sensor voltage under the above conditions unplug the sensor harness. Voltage should now read bias (apprx. ½ volt) if it does replace sensor. If voltage still reads low use your body as a resistor and touch a voltage source such

as the positive battery cable with one hand and the sensor signal return wire with your other hand. Voltage should read apprx. 1 volt if it doesn't suspect faulty harness or PCM.

Monitors Suspended:

EVAP/Catalyst

P0152: H02S1 shorted to voltage Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running for at least 2 minutes.
2) Coolant temperature over 175 degrees.

Why did this code set?

1) The task manager detected an 02 sensor voltage of greater than 1 volt for more than 2.5 seconds.

What should you look for?

1) Simply unplug the sensor connector while monitoring the voltage under the above conditions. Voltage should return to bias (apprx .5 volts) if it does, replace sensor. If it stays high then you will have either a PCM or harness problem.

Monitors suspended:

EVAP/Catalyst

P0153: H02S1 slow responding Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine run time 2-3 minutes.
2) Closed loop operation.
3) Cruise speed of 10-20 mph for at least 2 minute.
4) Engine returned to idle.

Why did this code set?

1) The task manager detected the 02 sensor switched from rich(600mv) to lean(300mv) too few times.

General Motors

What should you look for?

1) Drive the mixture rich and lean using propane enrichment while monitoring the oxygen sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

Monitors Suspended:

EVAP

P0154: H02S1 Voltage stuck at center Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Coolant temp greater than 175 degrees.

Why did this code set?

1) The task manager detected that the sensor voltage was near ½ volt for at least 1 minute.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM. This will usually be caused by a faulty sensor.

Monitors Suspended:

EVAP/Catalyst

P0155: H02S1 Heater fault Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.
2) Coolant below 125 degrees.

Why did this code set?

1) The task manager detected the 02 sensor voltage greater than 300mv for a period of ½ minute to 1 and ½ minute.

What should you look for?

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias) . If it does, suspect sensor if still high (300 mv or greater) suspect PCM/harness.

Monitors Suspended:

EVAP (most cars)

P0157: H02S2 Shorted to ground Sensor2, Bank2

Monitor run condition (Enable Criteria)

1) Ignition off for at least 10 minutes.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was too low (less then 200mv) below it had run the heater test for this sensor.

What should you look for?

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit meat the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (apprx. .5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

Monitors Suspended:

EVAP/Catalyst

P0158: H02S2 Shorted to voltage Sensor2 Bank2

Monitor run condition (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Coolant temperature greater than 175 degrees

General Motors

Why did this code set?

1) The task manager detected the catalyst sensor voltage was greater than 1.25 volts for at least 3 seconds.

What should you look for?

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (apprx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

Monitors Suspended:

EVAP

P0160: H02S2 Voltage stuck at center Sensor2, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage remained from .35mv to .50mv for the entire driving trip. The task manager will try to pull the sensor's voltage to 5 volts for ½ minute to see if it is indeed stuck.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

Monitors Suspended:

EVAP

General Motors

P0161: H02S2 Heater fault Sensor2, Bank2

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.
2) Coolant below 150 degrees

Why did this code set?

1) The task manager detected that the sensor voltage remained over 300 mv for at least 30-90 seconds.

What should you look for?

2) 1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

Monitors Suspended:

EVAP/Catalyst

P0170: Fuel trim fault Sensor1,Bank1

Monitor run conditions (Enable Criteria)

1) Engine Running
2) Closed loop operation

Why did this code set?

1) The task manager detected the fuel compensation value exceeded the allowable limit for at least 10 seconds.

What should you look for?

1) This condition can be caused by either a lean condition or a rich condition. Suspect leaking/shorted injectors, vacuum leak, fuel pressure out of range sensors such as ECT, MAP/MAF and IAT. Verify engine is in sound mechanical condition.

Monitors suspended:

General Motors

NONE

P0171: H02S1 is indicating fuel lean Sensor1, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running
2) Warm (over 175 degrees)
3) Closed loop operation

Why did this code set?

1) The task manager detected the long term fuel trim readings were at 25% and the short term readings were at 12% or greater for two consecutive trips.

What should you look for?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitors suspended:

NONE

P0171: H02S1 Fuel lean sensor 1 bank 1

Monitor run conditions (Enable Criteria)

1) Warm engine (over 175 degrees)
2) Engine running
3) Closed loop operation

Why did this code set?

1) The task manager detected a long term fuel trim reading of 25% and a short term fuel reading of 12% or more for two trips.

What should you do?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use

smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitor Suspended:

None

P0171: Fuel lean Sensor1, Bank1

Monitor run conditions (Enable Criteria)

1) Warm engine (greater the 175 degrees)
2) Closed loop operation

What should you look for?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitors suspended:

None

P0172: Fuel rich, Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) Closed loop operation
2) Engine over 175 degrees

Why did this code set?

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % or greater for at least two trips.

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

General Motors

Monitors suspended:

None

P0172: H02S1 Fuel Rich Sensor1, Bank1

Monitor run condition (Enable Criteria)

1) Engine temperature at least 175 degrees
2) Engine running in closed loop

Why did this code set?

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % for two trips.

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended

None

P0172: H02S1 Fuel rich Sensor1 , Bank1

Monitor run condition (Enable Criteria)

1) Engine running in closed loop
2) Warm engine (over 175 degrees)

Why did this code set?

1) The task manager used the 02 and fuel trim readings to determine that the system was too rich for two trips.

What should you do?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended:

None

General Motors

P0174: H02S1 Fuel lean Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Engine running in closed loop.
2) Altitude under 8,000 feet.

Why did this code set?

1) The task manager detected a lean condition for two consecutive trips. (Using fuel trim and 02 readings)

What should you look for?

1) The most common fault for this code is a leaking exhaust system or a contaminated MAF wire. Be sure to inspect this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks.

Monitors suspended:

None

P0175: H02S1 Fuel rich Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop.
2) Altitude under 8,000 feet

Why did this code set?

1) The task manager detected a rich condition that was present for at least two trips. (Using fuel trim and 02 readings)

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended:

None

General Motors

P0182: CNG temperature sensor voltage too low.

Monitor run condition (Enable Criteria)

1) Engine running.

Why did this code set?

1) The task manager detected a CNG temp sensor input of less than ½ volt.

What should you look for?

1) Unplug sensor and note reading on scan tool. The reading should read very cold apprx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm apprx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

Monitors suspended:

EVAP

P0183: CNG temperature sensor voltage high

Monitor run conditions (Enable Criteria)

1) Engine running.

Why did this code set?

1) The task manager detected a CNG voltage input of greater than 4.5 volts.

What should you look for?

1) Unplug sensor and note reading on scan tool. The reading should read very cold apprx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm apprx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

Monitors suspended:

Evap

General Motors

P0201-204: Fuel injectors 1-4 control circuit fault

Monitor run condition (Enable Criteria)

1) Engine running
2) Battery voltage over 12 volts.

Why did this code set?

1) The task manager detected no injector counter electromotive force for at least 3ms after the injector turned off.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

P0201-204: Injector 1-4 circuit fault

Monitor run condition (Enable Criteria)

1) Engine running below 1,000 RPM
2) TPS voltage less than 1.5 volts.

Why did this code set?

1) The task manager detected no injector spike when injector is switched off.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

General Motors

P0201-2010: Injector numbers 1-10 circuit fault

Monitor run conditions (Enable Criteria)

1) Battery over 12 volts
2) Engine running less than 3,000 RPM
3) Injector pulse width less than 10ms

Why did this code set?

1) The task manager detected no injector off spike.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

P0300: Multiple Misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) MAP voltage steady/under 1.6 volts
3) Engine speeds from 2,200-2,800 RPM
4) Coolant over 175 degrees.

Why did this code set?

1) 200 RPM test: The task manager detected a misfire in more than 15% of the engines ignition cycles in less the 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire in more than 1.5% of the ignition cycles in less than 1,000 revolutions.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage,

Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0300: Multiple misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Crank learned.
3) Engine running less than 3,000 RPM

Why did this code set?

1) 1 Trip test: The task manager detected more than 10% misfire rate with at least 2 cylinders misfiring.
2) 2 trip test: The task manager detected more than a 2% misfire rate on at least 2 cylinders.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0300: Multiple misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Engine less than 3,000 RPM
3) Crank learned.

Why did this code set?

1) 1 Trip test: The task manager detected over 10% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more then a 2% misfire rate with at least two cylinders misfiring.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02?Catalyst

P0300: Multiple misfire detected.

Monitor run condition (Enable Criteria)

1) No engine codes set.
2) Engine speed 3,000-3,500 RPM.
3) Crank learned

Why did this code set?

1) 1 Trip test: The task manager detected more than a 3-15% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more than a 3% misfire rate with at least two cylinders misfiring.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability,

use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:
EVAP/02/Catalyst

P0301-304: Cylinder numbers 1-4 misfire detected

Monitor run condition (Enable Criteria)

1) No engine codes set.
2) Engine speeds 2,000-2,500 RPM
3) MAP input less than 1.6 volts
4) Warm engine (over 175 degrees)
5) Vehicle speed less than 5 MPH

Why did this code set?

1) 200 RPM test: The task manager detected a misfire occurred in more than 15 % of engine cycles in less than 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire occurred in over 1.5% of engine cycles in less than a 1,000 revolution period.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:
EVAP/02/Catalyst

P0301-310: Engine cylinders 1-10 misfire detected.

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Crank learned
3) Engine speed less than 3,000 RPM

Why did this code set?

1) 1 trip test: The task manager recorded more than a 3-14% misfire rate.
2) 2 trip test: The task manager detected more than a 3% misfire rate.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0325: number 1 Knock sensor circuit fault.

Monitor run conditions (Enable Criteria)

1) Engine Running.

Why did this code set?

1) The task manager detected an open knock sensor circuit or an input voltage of greater than 5 volts.

What should you look for?

1) This will usually result in a circuit problem. Be sure to inspect the circuit for any previous nearby work. Make sure the sensor is connected! Try unplugging the sensor while monitoring scan tool for voltage to change.

Monitors suspended:

EVAP

P0325: Number 1 knock sensor circuit failure.

Monitor run conditions (Enable Criteria)

1) Engine running longer than 1 minute.
2) Engine speed greater than 2,000 RPM

Why did this code set?

1) The task manager detected the change in knock sensor voltage (each ½ revolution of crank sensor) was less than .06mv for 200 consecutive times.

What should you look for?

1) This will typically prove to be a disconnected sensor or a faulty sensor. Perform visual inspection of knock sensor circuit. Tap on intake manifold with a punch while monitoring scan tool for the sensor voltage to change. It should change.

Monitors suspended:
EVAP

P0335: Crankshaft Position Sensor/Circuit Fault

Monitor run condition (Enable Criteria)

1) Start engine

Why did this code set?

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP/Misfire/02/Catalyst

P0335: Crankshaft position sensor/circuit fault

Monitor run condition (Enable Criteria)

1) Engine cranking

Why did this code set?

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least four seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP/Misfire/02/Catalyst

P0340: No camshaft synchronization signal to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least four seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present with at least 64 peak to peak voltage toggles present.
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present with at least 32 peak to peak voltage toggles present.
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0351: Primary circuit fault ignition coil 1

Monitor run conditions (Enable Criteria)

1) Battery voltage over 10 volts
2) Engine running less then 4500 RPM

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0351: Primary circuit fault ignition coil 1

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts while running
2) Engine running less then 2000 RPM
3) Ignition coil not in dwell period when being checked

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0352: Ignition coil 2 primary circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage over 10 volts
2) Engine running less then 4500 RPM

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given for a period of 3 seconds.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0352: Ignition coil 2 primary circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0353: Ignition coil 3 primary circuit fault

General Motors

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0400: EGR system fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Off idle
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) EGR Test activated

Why did the code set?

The task manager detected too little EGR gas flow with the EGR purge solenoid switched from off to on.

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.

3) Verify valve assembly is good.

Monitors suspended:
EVAP

PO401: EGR System fault
Monitor run conditions (Enable Criteria)

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Engine speed from 1900 to 2400 RPM
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) Short term fuel compensating value less then positive 5%
9) EGR Test activated

Why did the code set?

The task manager detected a measured change in short term fuel compensation value shift of less than 7.4% or more than 20%

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

Monitors suspended:
EVAP

PO401: EGR System fault
Monitor run conditions (Enable Criteria)

1) Engine speeds from1900 to 2400 RPM
2) Closed loop operation
3) ECT higher than 175 degrees
4) Off idle
5) MAP in mid-range
6) Vehicle speed greater then 3 MPH

General Motors

Why did this code set?

1) The task manager detected a measured change in short-term fuel compensation value of less than 7% or greater than 20% during the EGR flow rate test.

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

Monitors suspended:

EVAP

P0403: EGR Solenoid/Circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Battery voltage over 10 volts

Why did this code set?

1) The task manager detected an open or short in the EGR solenoid control circuit for a period of at least 3 seconds.

What should you do?

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
2) Check wiring to EGR solenoid and connector.

Monitors suspended:

EVAP/EGR

P0403: EGR solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Battery voltage over 10 volts

Why did this code set?

1) The task manager detected the EGR control circuit was not in the correct state when commanded to operate by the PCM. This condition was present for at least 3 seconds

What should you do?

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
Check wiring to EGR solenoid and connector

Monitors suspended:

EVAP/EGR

P0411: Incorrect amount of secondary air

Monitor run condition (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Engine running

Why did this code set?

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

What should you look for?

1) Check AIR solenoid resistance (Apprx. 30-40 ohms)
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

Monitors suspended:

EVAP

P0412: Secondary AIR solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Engine running

Why did this code set?

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

What should you look for?

1) Check AIR solenoid resistance (Apprx. 30-40 ohms)
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable levels Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running for at least three minutes.
2) Closed loop operation
3) Coolant temperature greater than 150 degrees

Why did this code set?

1) The task manager detected that the catalyst sensor's switch rate was too close to that of the o2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable levels Sensor2, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees
3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 10 MPH
6) MAP input voltage at 1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable limit Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees
3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 20 MPH
6) MAP input voltage at 1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

General Motors

P0422: Catalyst efficiency fault Sensor 2 bank 1

Monitor run condition (Enabling Criteria)

1) Engine running in closed loop (above 175 degrees)
2) Vehicle speed over 20 MOH
3) Engine speed from 1200-2500 (2 minutes)
4) MAP from 1.5-2.5 volts

Why did this code set?

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0422: Catalyst efficiency fault Sensor 2, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop
2) Coolant greater than 150 degrees
3) Engine speed from 1200-1700 RPM (3 minutes)
4) Vehicle speed greater than 20 MPH
5) MAP voltage from1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two

sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0432: Catalyst efficiency fault Sensor 2 Bank 2

Monitor run conditions (Enable Criteria)

1) Closed loop operation for three minutes run time
2) Coolant greater than 150 degrees
3) Vehicle speed greater than 20 MPH
4) Engine RPM 1200-1700
5) MAP range 10-15hg

Why did this code set?

1) The task manager detected that the catalyst sensor switched rich to lean too often. It should stay lean the majority amount of time.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor the catalyst sensor's signal. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the sensor's response. If it responds to the rich mixture try making the mixture lean by making a vacuum leak. If the sensor's response is to quickly switch lean, then you are most likely dealing with a bad converter. If the converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0440: Evaporative purge system fault

Monitor run conditions (Enable Criteria)

1) Engine warm
2) EVAP solenoid commanded to open and close

General Motors

Why did this code set?

1) The task manager detected the changes in fuel trim values and the IAC motor position were below its pre-determined range.

What should you look for?

1) We are most likely dealing with a leak in the system. You can perform a purge solenoid resistance test first if you would like to rule that out as a possibility. (it should measure 45-80 ohms). You can use your scan tool to command the solenoid to open and close. Use a smoke machine or a hand vacuum pump to help locate leak. Remember there are several other components in this system besides the gas cap, but that could also be the problem.

Monitors suspended:

None

P0441: Evap purge flow monitor fault

Monitor run conditions (Enable Criteria)

1) Closed loop operation.
2) Coolant greater than 175 degrees.
3) Engine idling for 2 minutes.
4) MAP under 15.7 hg
5) Altitude less than 8000 feet
6) Low fuel light off

Why did this code set?

1) The task manager's EVAP monitor detected that there was no air flow through the EVAP system.

What should you look for?

1) Be sure to inspect all the hoses for cracks and also make sure that they are all connected properly. Try blowing through the hoses one by one to check for restrictions. Check the vacuum port on Throttle body for restrictions. Use your smoke machine to aid in faster diagnosis of leaks. Check electrical integrity of solenoid/circuit to be sure that it is capable of activation.

Monitors suspended:

None

General Motors

P0442: EVAP system small leak detected

Monitor run conditions (Enable Criteria)

1) Cold start-up
2) BTS from 40-90 degrees
3) ECT within 10 degrees of BTS reading

Why did this code set?

1) The task manager detected a leak between .40" and .80" present while performing the EVAP leak detection test.

What should you look for?

1) Use your smoke machine to aid in the diagnosis of the leak. If no smoke machine is available, use your propane cylinder and an audible A/C leak detecter.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Battery voltage over 10 Volts

Why did this code set?

1) The task manager detected an open or a short in the EVAP solenoid/circuit for at least 3 seconds.

What should you look for?

1) Test the solenoid resistance (40-80 ohms)
2) Test harness and perform wiggle test if necessary.
3) This will usually be caused by a faulty solenoid.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) EVAP solenoid switched from off to on.

Why did this code set?

1) The task manager detected no current flow through the EVAP solenoid's coil. This condition lasted at least 4 seconds.

What should you look for?

1) This will usually result in replacing the solenoid. Measure the solenoid's resistance it should be between 40-80 ohms. Test for available voltage and ground to solenoid. Perform wiggle test on harness if necessary.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Monitor run condition (Enable Criteria)

1) Engine running
2) Not in limp mode Engine not shut down
3) 1 second time elapsed since last EVAP test ran

Why did this code set?

1) The task manager detected that it was unable to switch the state of the solenoid for at least 3 seconds.

What should you look for?

1) Inspect harness and perform wiggle test. Measure solenoid resistance 40-80 ohms. Check for proper supply voltage and ground to solenoid. Check to be sure PCM is capable of supplying ground.

Monitors suspended:

None

P0455: Large leak detected in the EVAP leak monitor

Monitor run conditions (Enable Criteria)

1) Cold engine start-up
2) BTS ambient form 40-90 degrees
3) ECT within 10 degrees of the BTS

Why did this code set?

1) The task manager detected an EVAP leak greater than .80" during the EVAP leak test.

What should you look for?

1) Use your smoke macine to aid in diagnosing this large leak. Perform close visual inspection of all hoses and fittings for signs of cracks or looseness. Make sure all hoses are attached correctly.

Monitor suspended:

None

P0500: Vehicle speed sensor circuit fault

Monitor run condition (Enable Criteria)

1) Engine running with closed throttle switch off
2) Engine speed 3,000 RPM or greater
3) Engine at high load conditions

Why did this code set?

1) The task amanger detected no VSS input change for at least 4 seconds

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude

Monitors suspended:

EVAP

General Motors

P0500: Vehicle speed sensor circuit fault.

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Coolant greater than 175 degrees
3) Transmission in drive
4) Brakes off
5) Engine speed 1800 RPM or greater
6) Throttle valve open

Why did this code set?

1) The task manager detected a speed input of less than 1 MPH for at least 10 seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude Also check sensor tip for foreign debris.

Monitors suspended:

EVAP

P0500: Vehicle speed sensor circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

Why did this code set?

1) The task manager detected no vehicle speed input for greater than 6 seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

Monitors supended:

EVAP

P0500: Vehicle speed sensor circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

Why did this code set?

1) The task manager detected no vehicle speed input for greater than 11seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

Monitors suspended:

EVAP

P0505: IAC Motor circuit fault

Monitor run condition (Enable Criteria)

1) Key on
2) Battery voltage greater than 10 volts

Why did this code set?

1) The task manager detected an open or short condition present in an IAC motor circuit for at least 3 seconds

General Motors

What should you look for?

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Misfire/Fuel

P0505: IAC motor system fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Warm engine

Why did this code set?

1) The task manager detected that the target idle speed and actual idle speed was out of acceptable limits.

What should you look for?

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Fuel/Misfire

P0505: IAC motor system fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Battery voltage greater than 10 volts
3) IAC motor activated

Why did this code set?

1) The task manager detected a shorted or open condition present on 1 of the four IAC driver circuits.

What should you look for?

1) 1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Misfire/Fuel

P0551: Power steering pressure switch fault

Monitor run conditions (Enable Criteria)

1) Vehicle speed greater than 50 MPH

Why did this code set?

1) The task manager detected a switch-high input for at least 30 seconds.

What should you look for?

1) Monitor your scan tool under these conditions watching for the power steering input to read high. Unplug sensor and duplicate the driving conditions again. The signal should read low. If it does, suspect faulty switch. Remember a restricted power steering return line or overfull pump reservoir could also be a cause for this type of code.

Monitors suspended:

None

P0600: PCM fault, SPI communications

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

Monitors suspended:

All

P0601: Internal PCM SPI communications fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

Monitors suspended:

All

P0605: PCM SPI communications fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

General Motors

Monitors suspended:

All

P0700: Transaxle control system fault

Monitor run conditions (Enable Criteria)

1) Engine running

Why did this code set?

1) The task manager received a TCM control fault trouble code.

What should you look for?

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

Monitors suspended:

None

P0700: Transaxle control system fault.

Monitor run conditions (Enable Criteria)

1) Engine running

Why did this code set?

1) The task manager received a TCM control fault trouble code.

What should you look for?

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

Monitors suspended:

None

P0703: Brake switch circuit fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Engine Running

Why did this code set?

1) The task manager did not detect a brake switch signal during the drive cycle.

What should you do?

1) Check brake switch with volt meter for proper operation. If good, check brake sense lead to PCM for continuity. This will usually be caused by a faulty brake switch, however in VERY rare cases it may be caused by a bad wire to the PCM or a bad PCM.

Monitors suspended:

None

P0711: No transmission temp sensor increase after startup

Monitor run conditions (Enable Criteria)

1) Key on
2) Transmission temperature hot

Why did this code set?

1) The task manager detected that there was no transmission temperature sensor increase of at least 15 degrees for at least 10 minutes of operation after start up.

What should you look for?

1) This will usually result in either a faulty sensor or wiring problem. Check sensor's resistance and perform a close visual and electrical check of the sensor's harness.

Monitors suspended:

None

P0712: Transmission temperature sensor's voltage low

General Motors

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the temp sensor voltage was less than 1.50 volts for at least 2 seconds.

What should you look for?

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

Monitors suspended:

None

P0713: Transmission temperature sensor's voltage too high

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The PCM detected the trans temp sensor's voltage was over 3.50 volts for at least 2 seconds.

What should you do?

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

Monitor run conditions:

None

P0740: Tourque converter clutch circuit fault

Monitor run conditions (Enable Criteria)

1) No engine or transmission codes set
2) Vehicle speed under 70 MPH
3) Transmission in 3rd gear
4) TCC unlocked for at least 10 seconds

5) Throttle open to 30 %
6) TCC locked for 5 seconds

Why did this code set?

1) The PCM detected no RPM drop with TCC engaged.

What should you look for?

1) Check the TCC solenoid for proper operation. This will usually be the reason for the code being set.

Monitors suspended:

None

P0743: Tourque converter clutch solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected an open or short condition in the solenoid circuit.

What should you look for?

1) test the TCC solenoid's operation with your scan tool's bi-directional tests. Also be sure to check for proper supply voltage and grounds to the solenoid. This will usually result in having to have the solenoid replaced.

Monitors suspended:

None

P0748: Governor pressure solenoid/circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Transmission relay energized

Why did this code set?

1) The task manager detected the current state of the pressure solenoid's output port was out of range.

What should you look for?

1) Test the solenoid for proper operation with your scan tool's bi-directional tests. Also inspect the solenoids circuit for proper voltage supply and ground.

Monitors suspended:

None

P0753: 3-4 shift solenoid/circuit fault

Monitor run conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager detected an open or short circuit in the 3-4 solenoid/ circuit for at least 5 seconds.

What should you look for?

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

Monitors suspended:

None

P0783: 3-4 Solenoid , No RPM drop

Monitor run conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager detected an open or short condition due to the fact that it saw no RPM drop when 3-4 shift was applied.

What should you look for?

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually

operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

Monitor suspended:

None

Gereral Motors Mode six J1850 Class 2

Test ID	Comp ID	Definition	Range
Enhanced Evaporative Emissions System Monitor #1 (.040" Leak)			
02	12	Evap small leak	-32.768 – 32.767 in of h20 per second decay
02	20	Evap weak vacuum fail test 1	-3276.8 – 3276.7 integral index-seconds
02	21	Evap purge leak vapor fail test	0 – 6553.5 seconds
02	21	Evap purge leak vacuum fail test	-3276.8 – 3276.7 in of H2O
02	26	Evap excess vacuum test 1	-3276.8 – 3276.7 in of H2O vacuum
02	36	Evap excess vacuum fail test 2	0 – 6553.5 seconds
02	52	Evap small leak test	-32.768 – 32.767 in of H2O per second decay
02	60	Evap weak vacuum fail test 1	-3276.8 – 3276.7 integral index-seconds
02	62	Evap NV .020" error test	-12800 – 12799.6% slope error
02	66	Evap excess vacuum test 1	-3276.8 – 3276.7 in of H2O vacuum
02	71	Evap purge leak vacuum fail test	-3276.8 – 3276.7 in of H20 vacuum
02	72	Evap NV .040" error test	-12800 – 12799.6% slope error
02	84	Evap canister loading test	Test not run – test passes
02	86	Evap excess vacuum pass test 2	-3276.8 – 32.76.7 integral index-seconds
02	90	Evap weak vacuum pass test 1	-3276.8 – 3276.7 in of H2O vacuum
02	91	Evap purge leak pass test	0 – 6553.5 seconds
02	B0	Evap weak vacuum test 2 vacuum	0 – 6553.5 seconds
02	C0	Evap weak vacuum test vapor	0 – 6553.5 seconds
02	C6	Evap excess vacuum pass test 2	-3276.8 – 3276.7 integral index-seconds
02	D0	Evap weak vacuum pass test 1	-3276.8 – 3276.7 in of H2O vacuum

Test ID	Comp ID	Definition	Range
Secondary Air injection Reaction Systems Monitor			
03	13	Air on pressure error test bank 2 out of range high	-32.768 – 32.767 kPa
03	15	Air pump off pressure error test bank 2 out of range high	-32.768 - 32.767 kPa
03	16	Air on pressure differential high between bank 1 & bank 2 out of range low	-32.768 – 32.767 kPa
03	83	Air on pressure error test bank 1 out of range	-32.768 – 32.767 kPa
03	84	Air valve shut pressure error test bank 1 Out of range	-32.768 – 32.767 kPa
03	93	Air on pressure error test bank 2 out of range low	-32.768 – 32.767 kPa
03	94	Air shut pressure error test bank 2 out of range	-32.768 – 32.767 kPa
03	96	Air pressure differential high between bank 1 & bank 2 out of range	-32.768 – 32.767 kPa
03	01	Air bank 1 test	0 – 65535 counts
03	02	Air bank test 2	0 – 65535 counts
03	03	Air on pressure error test bank 1 out of range high	-32.768 – 32.767 kPa
03	05	Air valve shut pressure error test	-32.768 – 32.767 kPa

		bank 1 Out of range	
Test ID	**Comp ID**	**Definition**	**Range**
Catalyst Efficiency Steady State Monitor			
04	20	Steady state cruise catalyst efficiency test bank 1	-555 – 554.9831 mV
04	30	Steady state cruise catalyst efficiency test bank 2	-555 – 554.9831 mV
04	60	Steady state cruise catalyst efficiency test bank 1	-555 – 554.9831 mV
04	70	Steady state cruise catalyst efficiency test bank 2	-555 – 554.9831 mV
Oxygen Sensor Monitors and Constants			
05	13	Low sensor voltage for half period time calculation –B1S1	0 – 2048
05	14	High sensor voltage for half period time calculation – B1S1	0 – 2048 mV
05	15	Rich sensor voltage for half period time calculation - B1S1	0 – 2048 msec
05	16	Lean to rich half period time - B1S1	0 – 2048 msec
05	17	Sum of R/L and L/r half period times – B1S1	0 – 2048 msec
05	1A	Post catalyst senor open test – B1S1	0 – 65535 samples
05	1C	Post catalyst sensor lean test –B1S1	0 – 2048 mV

Test ID	Comp ID	Definition	Range
Oxygen Sensor Monitors and Constants Cont.			
05	41	Rich to lean sensor threshold voltage – B2S1	0 – 2048 mV
05	42	Lean to rich sensor threshold voltage - B2S1	0 – 2048 mV
05	43	Low senor voltage for switch time calculation – B2S1	0 – 2048 mV
05	44	High sensor voltage for switch time calculation – B2S1	0 – 2048 mV
05	45	Rich to learn sensor switch time – B2S1	0 – 1024 msec
05	46	Lean to rich sensor switch time – B2S1	0 – 1024 msec
05	49	R/L response to L/R response ratio – B2S1	0:1 – 8:1 ratio
05	4A	Post catalyst sensor open test – B2S2	0 – 65535 samples
05	4C	Post catalyst sensor lean tests – B2S2	0 – 2048 mV
05	4D	Difference between R/L responses and L/R response – B2S1	-32768 – 32767 msec
05	53	Low sensor voltage for half period time calculation – B2S1	0 – 2048 mV

Test ID	Comp ID	Definition	Range
Oxygen Sensor Monitors and Constants Cont.			
05	54	High sensor voltage for half period	0 – 2048 mV
		time calculation – B2S2	
05	55	Rich to lean half period time – B2S1	0 – 2048 msec
05	56	Lean to rich half period time – B2S1	0 – 2048 msec
05	57	Sum of R/L and L/R half period	0 – 2048 msec
		times – B2S1	
05	87	Rich to lean switches – B1S1	0- 65535 switches
05	88	Lean to rich switches – B1S1	0 – 65535 switches
05	89	R/L response to L/R response	0:1 – 8:1 ratio
		ratio – B1S1	
05	8B	Post catalyst sensor rich test – B1S2	0 – 2048 mV
05	8D	Difference between R/l and L/R	-32768 – 32767 msec
		response – B1S1	
05	9B	Post catalyst sensor rich	0 – 2048 mV
		tests – B1S3	
05	01	Rich to lean sensor threshold	0 – 2048 mV
		voltage – B1S1	
05	02	Lean to rich sensor threshold	0 – 2048 mV
		voltage – B1S1	
05	03	Low sensor voltage for switch time	0 – 2048 mV
		calculation – B1S1	
05	04	High Sensor voltage for switch time	0 – 2048 mV
		calculation – B1S1	

Test ID	Comp ID	Definition	Range
Oxygen Sensor Monitors and Constants Cont.			
05	05	Rich to lean sensor switch time - B1S1	0 – 1024 msec
05	06	Lean to rich sensor switch time -B1S1	0 – 1024 msec
05	09	R/L response to L/R response ratio – B1S1	0:1 – 8:1 ratio
05	0A	Post catalyst sensor open test – B1S2	0 – 65535 samples
05	0C	Post catalyst sensor lean tests – B1S2	0 – 2048 mV
05	0D	Difference between R/L responses and L/R response – B1S1	-32768 – 32767 msec
05	C7	Rich to lean switches – B2S1	0 – 65535 switches
05	C8	Lean to rich switches – B2S1	0 – 65535 switches
05	C9	R/L response to L/R response ratio – B2S1	0:1 – 8:1 ratio
05	CB	Post catalyst sensor rich tests	0 –2048 mV
05	CD	Difference between R/L responses and L/R response – B2S1	-32768 – 32767 msec

Test ID	Comp ID	Definition	Range

02 Sensor Heater System Time to activity Monitor

06	35	Oxygen sensor heater time to activity – B1S1	0 – 65535 seconds
06	41	Oxygen sensor heater time to activity – B1S20	0 – 65535 seconds
06	47	Oxygen sensor heater time to activity – B1S3	0 – 65535 seconds
06	55	Oxygen sensor heater time to activity – B2S1	0 – 65535 seconds
06	61	Oxygen sensor heater time to activity – B2S2	0 – 65535 seconds
06	67	Oxygen sensor heater time to activity – B3S3	0 – 65535 seconds

Exhaust Gas Recirculation System Monitor

07	4C	EGR CRUISE TEST	-45.000 – 449863 kPa
07	4D	EGR decel test	-45.000 – 449863 kPa
07	4F	EGR quick test	-45.000 – 449863 kPa
07	81	MAF measured EGR dynamic range	0.000 – 255.996 gm/cyl

Test ID	Comp ID	Definition	Range
Exhaust Gas Recirculation System Monitor Cont.			
07	8B	MAF below expected value during no EGR intrusive idle test	0 – 25.996 gm/cyl
07	8C	MAF below expected value during no EGR off-idle test	0 – 25.996 gm/cyl
07	8D	MAF below expected value during full EGR intrusive idle test	0 – 25.996 gm/cyl
07	02	Lowest measured exhaust pressure during EGR intrusive test	0 – 32767.5 kPa
07	03	MAF below expected value during no EGR intrusive idle test	0 – 255.996 gm/cyl
07	04	MAF below expected value during no EGR off-idle test	0 – 255.996 gm/cyl
07	05	MAF below expected value during full EGR intrusive idle test	0 – 255.996 gm/cyl
07	06	MAF above expected value during no EGR intrusive idle test	0 – 255.996 gm/cyl
07	07	MAF above expected value during no EGR off-idle	0 – 255.996 gm/cyl
07	08	Largest positive MAF error during EGR intrusive test	0 – 255.996 gm/cyl
07	09	EVRV open struck during no EGR intrusive idle test	0 – 32767.5 kPa

Test ID	Comp ID	Definition	Range
Exhaust Gas Recirculation System Monitor Cont.			
07	0A	VSV closed stuck during no EGR intrusive idle test	0 – 32767.5 kPa
07	0B	MAF above expected value during no EGR intrusive test	0 – 255.996 gm/cyl
07	0C	EGR cruise test	-45.000 –44.99863 kPa
07	0C	MAF above expected value during no EGR off-idle test	0 – 255.996 gm/cyl
07	0D	EGR decel test	-45.000 – 44.99863 kPa
Enhanced evaporative systems Monitor			
0A	13	EVPD	Evap vacuum/Pressure decay test
0A	42	EONV	Engine off natural vacuum test
0A	48	EVPD purge vacuum fail test	-3276.8 – 3276.7 in of H2O
0A	84	EVPD weak vacuum follow-up test	0 – 6553.5 seconds
0A	87	EVPD purge pass test	0 – 6553.5 seconds
0A	01	EVPD canister vent restriction test 1	0 – 6553.5 seconds
0A	03	EVPD weak vacuum test	0 – 6553.5 seconds
0A	05	EVPD .040" leak test	0 – 6553.5 seconds
0A	06	EVPD .020" leak test	0 – 6553.5 seconds
0A	09	EONV NV .020" test	0:1 – 4.0000:1 ratio
0A	0A	EONV NV .020" test	1:0 - 255.9969375:1 ratio

Test ID	Comp ID	Definition	Range
Enhanced evaporative systems Monitor Cont.			
0A	0B	EONV vacuum rezero test	1:0 - 255.9969375:1 ratio
0A	0C	EONV fuel level rationality test	0 –65535 counts
0A	0D	EONV vacuum rationality test	0 – 65535 counts
0A	C2	EVPD vent restriction test2	0 – 65.535 liters
Catalyst Efficiency Idle Monitor			
0C	20	Idle catalyst efficiency test – bank1	-32.768 – 32.767 seconds
0C	30	Idle catalyst efficiency test – bank2	-32.768 – 32.767 seconds
0C	60	Idle catalyst efficiency test – bank1	-32.768 – 32.767 seconds
0C	70	Idle catalyst efficiency test – bank2	-32.768 – 32.767 seconds
02 Sensor Heater systems current Feedback Monitor			
0E	35	Oxygen sensor heater high amperage	
		test-B1S1	0 – 5.000 Amperes
0E	41	Oxygen sensor heater high amperage	
		test- B1S2	0 – 5.000 Amperes
0E	47	Oxygen sensor heater high amperage	
		test- B1S2	0 – 5.000 Amperes
0E	55	Oxygen sensor heater high amperage	
		test- B2S1	0 – 5.000 Amperes
0E	61	Oxygen sensor heater high amperage	
		test- B2S2	0 – 5.000 Amperes

Test ID	Comp ID	Definition	Range
02 Sensor Heater systems current Feedback Monitor Cont.			
0E	67	Oxygen sensor heater high amperage	
		test- B2S3	0 – 5.000 Amperes
0E	B5	Oxygen sensor heater low amperage	
		test- B1S1	0 – 5.000 Amperes
0E	C1	Oxygen sensor heater low amperage	
		test- B1S2	0 – 5.000 Amperes
0E	C7	Oxygen sensor heater low amperage	
		test-B1S3	0 – 5.000 Amperes
0E	D5	Oxygen sensor heater low amperage	
		test- B2S1	0 – 5.000 Amperes
0E	E1	Oxygen sensor heater low amperage	
		test- B2S2	0 – 5.000 Amperes
0E	E7	Oxygen sensor heater low amperage	
		test- B2S3	0 – 5.000 Amperes

Mode six data definitions for GM using CAN

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen Sensor Monitor Bank 1 Sensor 1				
01	01	0A	Rich to lean Sensor Threshold Voltage	0.0000 – 7.9900 V
01	02	0A	Lean to rich Sensor Threshold Voltage	0.0000 – 79900 V
01	03	0A	Low sensor Voltage for switch Time	
			Calculation	0.0000 – 79900 V
01	04	0A	Low sensor Voltage for switch Time	
			Calculation	0.0000 – 79900 V
01	05	10	Rich to Lean Sensor Switch Time	0.0000 – 65535 ms
01	06	10	Lean to Rich Sensor switch Time	0.0000 - 65535 ms
01	80	2B	Rich to Lean Switches Test Results	0 – 65535 switches
01	81	2B	Lean to Rich Switches Test Results	0 – 65535 switches
01	82	20	Rich-Lean Response to Lean- Rich	
			Response Ratio	0.00:1 – 255.996:1 ratio
01	83	0A	Low Sensor Voltage for Half Period Time	
			Calculation	0.0000 – 7.9900 V
01	84	0A	High Sensor Voltage for Half Period Time	
			Calculation	0.0000 – 7.9900 V
01	85	10	O2 Sensor Rich To Lean Half Period Time	0.0000 – 65535 ms
01	86	10	O2 Sensor Lean to Rich Half Period Time	0.0000 – 65535 ms

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen Sensor Monitor Bank 1 Sensor 1 Cont.				
01	87	10	Sum of O2 sensor L/R and R/L Half Period	
			Times	0.0000 – 65535 ms
01	88	90	Rich-Lean Response and Lean-Rich	
			Response	-32768 - +32767 Milliseconds

Oxygen *Sensor Monitor Bank 1 Sensor 2*

02	8B	0A	Post Catalyst Sensor Rich Test	0.0000 – 7.9900 V
02	8C	0A	Post Catalyst Sensor lean Test	0.0000 – 7.9900 V
02	8A	24	Post Catalyst Sensor Open Test	0 – 65535 counts

Oxygen *Sensor Monitor Bank 1 Sensor 3*

03	8B	0A	Post Catalyst Sensor Rich Test	0.0000 – 7.9900 V
03	8C	0A	Post Catalyst Sensor lean Test	0.0000 – 7.9900 V
03	8A	24	Post Catalyst Sensor Open Test	0 – 65535 counts

Oxygen *Sensor Monitor Bank 2 Sensor 1*

05	01	0A	Rich to lean Sensor Threshold Voltage	0.0000 – 7.9900 V
05	02	0A	Lean to rich Sensor Threshold Voltage	0.0000 – 79900 V
05	03	0A	Low sensor Voltage for switch Time	
			Calculation	0.0000 – 79900 V

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen *Sensor Monitor Bank 2 Sensor 1Cont.*				
05	04	0A	Low sensor Voltage for switch Time Calculation	0.0000 – 79900 V
05	05	10	Rich to Lean Sensor Switch Time	0.0000 – 65535 ms
05	06	10	Lean to Rich Sensor switch Time	0.0000 - 65535 ms
05	80	2B	Rich to Lean Switches Test Results	0 – 65535 switches
05	81	2B	Lean to Rich Switches Test Results	0 – 65535 switches
05	82	20	Rich-Lean Response to Lean- Rich Response Ratio	0.00:1 – 255.996:1 ratio
05	83	0A	Low Sensor Voltage for Half Period Time Calculation	0.0000 – 7.9900 V
05	84	0A	High Sensor Voltage for Half Period Time Calculation	0.0000 – 7.9900 V
05	85	10	O2 Sensor Rich To Lean Half Period Time	0.0000 – 65535 ms
05	86	10	O2 Sensor Lean to Rich Half Period Time	0.0000 – 65535 ms
05	87	10	Sum of O2 sensor L/R and R/L Half Period Times	0.0000 – 65535 ms
05	88	90	Difference Between Rich-Lean Response and Lean-Rich Response	-32768 - +32767 Milliseconds
Oxygen *Sensor Monitor Bank 2 Sensor 2*				
06	8B	0A	Post catalyst Senor Rich Test	0.0000 – 7.9900 V
06	8C	0A	Post catalyst Senor Lean Tests	0.0000 – 7.9900 V
06	8A	24	Post catalyst Senor Open Tests	0 – 65535 counts

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen *Sensor Monitor Bank 2 Sensor 3*				
07	8B	0A	Post catalyst Senor Rich Test	0.0000 – 7.9900 V
07	8C	0A	Post catalyst Senor Lean Tests	0.0000 – 7.9900 V
07	8A	24	Post catalyst Senor Open Tests	0 – 65535 counts
Catalyst Monitor				
21	A0	90	Catalyst Test Bank 1	-32768 - +32767 milliseconds
22	0A	90	Catalyst Test Bank 2	-32768 - +32767 milliseconds
EGR Bank1				
31	A8	FD	EGR Flow Decel Service Test	-32.768 - +32.767 kPa
31	A9	FD	EGR Flow Quick Test	-32.768 - +32.767 kPa
EVAP Monitor (Large)				
3A	C0	24	EVPD Weak Vacuum Test scaled in kPa	-32.768 - +32.767 kPa
3A	C0	31	EVPD Weak Vacuum Test Scaled in liters	0.0 – 65.535 liters
3A	C1	11	EVPD Weak Vacuum Follow-up Test	0.0 – 6553.5 sec
EVAP Monitor 0.040"				
3B	C2	B0	EVPD NV 0.040 Test – scaled in	
			Percentage slope	-100.01 - +100.00%
3B	C2	32	EVPD NV 0.040 Test – scaled in inches	0.000 – 1.999 inches

OBDIMID	TID	UASID	DESCRIPTION	RANGE
EVAP Monitor 0.002"				
3C	C2	B0	EVPD NV 0.020 Test –scaled in	
			percentages slope	-100.01 - +100.00%
3C	C3	32	EVPD NV 0.020 Test – scaled in inches	0.000 – 1.999 inches
3C	C8	FD	EVPD NV 0.020 Tests	
			1 kPa = 4.0146309 inches H2O	-32.768 – 32.767 kPa
3C	C8	20	EONV NV 0.020 Test	0.000:1 – 255.996:1 ratio
3C	C9	20	EONV Vacuum Rezero Test	0.000:1 – 255.996:1 ratio
3C	CA	24	EONV Fuel Level Rationality Test	0 – 65535 counts
3C	CB	24	EONV Vacuum Rationality Test	0 – 65535 counts
Purge Flow Monitor				
3D	C4	11	EVPD NV Purge Pass Test	0.0 – 6553.5 sec
3D	C5	FE	EVPD Purge Vacuum Fail Test	
			1kPa = 0.0040146309 inches H2O Vacuum	-8192 – 8191.75 Pa
			Min Test Limit is Set to $8000 if test	-32.768 - +32.767 inches H2O
			Complete	
3D	C6	11	EVPD Vent Restriction Test 1	0.0 – 6553.5 sec
3D	C7	FD	EVPD Vent Restriction Test 2 – scaled	
			in kPa. 1kPa=4.0146309 in H2O	32.-768 – 32.767 kPa
3D	C8	31	EVPD Vent Restriction Test2 – scaled	
			in liters	0.0 – 65.535 liters

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen Sensor Heater Monitor Bank 1 Sensor 1				
41	D0	11	Time to Activity monitor	0.0 – 6553.5 sec
41	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
41	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts
Oxygen Sensor Heater Monitor Bank 1 Sensor 2				
42	D0	11	Time to Activity monitor	0.0 – 6553.5 sec
42	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
42	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts
Oxygen Sensor Heater Monitor Bank 1 Sensor 3				
43	D0	11	Time to Activity monitor	0.0 – 6553.5 sec
43	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
43	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts
Oxygen Sensor Heater Monitor Bank 2 Sensor 1				
45	D0	11	Time to Activity monitor	0.0 – 6553.5 sec
45	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
45	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Oxygen Sensor Heater Monitor Bank 2 Sensor 2				
46	D0	11	Time to Activity monitor	0.0 – 6553.5 sec
46	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
46	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts
Oxygen Sensor Heater Monitor Bank 2 Sensor 3				
47	D2	11	Time to Activity monitor	0.0 – 6553.5 sec
47	D1	0F	Current Feedback Amps Value Test	0.00 to 655.35 amperes
47	D2	24	Current Feedback X out of Y Samples Test	0 – 65535 counts
Secondary AIR Monitor Bank 1				
71	E0	24	AIR – Bank 1 Test	0- 65535 counts
71	E1	FD	AIR on – pressure error test	-32.768+32.767
71	E2	FD	AIR Value shut – pressure error test	-32.768+32.767
71	E3	FD	AIR Pump off	-32.768+32.767
Secondary AIR Monitor Bank 2				
72	E0	24	AIR – Bank 2 Test	0—65535 counts
72	E1	FD	AIR on – Pressure error test	-32.768+32.767
72	E2	FD	AIR Value Shut – pressure error test	-32.768+32.767
72	E3	FD	AIR Pump off – pressure error test	-32.768+32.767
72	E4	FD	AIR on – pressure differential between	
			bank 1 and bank 2	-32.768+32.767

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Misfire Cylinder 1 Data				
A2	0B	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A2	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 2 Data				
A3	0B	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A3	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 3 Data				
A4	0B	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A4	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 4 Data				
A5	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A5	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Misfire Cylinder 5 Data				
A6	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A6	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 6 Data				
A7	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A7	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 7 Data				
A8	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A8	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 8 Data				
A9	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
A9	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts

OBDIMID	TID	UASID	DESCRIPTION	RANGE
Misfire Cylinder 9 Data				
AA	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
AA	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 10 Data				
AB	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
AB	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 11 Data				
AC	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
AC	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts
Misfire Cylinder 12 Data				
AD	A5	24	EWMA (Exponentially Weighted Moving Average)	
			Misfire counts for the last 10 driving cycles	0 –65535 counts
AD	0C	24	Misfire counts for the / current driving	
			Cycles	0 – 655.5 counts

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*** Ford Motors Vehicles ***

As always, begin your diagnosis by looking at freeze frame data!

Remember to view the corresponding Mode Six information to aid in diagnostics.

Ford

PO100 : Volume airflow sensor circuit fault

Enable Criteria {Monitor run conditions}

1) Engine speeds higher then 500 RPM

Why did the code set?

1) The Task manager saw a VAF input of less than a specified minimum amount for 1 second.

What should you look at?

1) You will need to monitor the VAF signal to see if this condition is present and to verify the repair after you work is done. Be sure to check for mechanical restriction or binding and restricted or missing air cowls or tubes.

Monitors suspended:

None

P0101: MAF circuit fault

Enable criteria {monitor run conditions}
Engine running

Why did code set?
PCM detected no MAF input for 2 seconds

What should you look at?
Attach volt meter or view scan tool readings pertaining to MAF output signal wire. If no signal present verify that signal power and ground is present at MAF.

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Monitors suspended:
EVAP, Fuel

P0101: MAF sensor performance conditions

Enable Criteria {Monitor run conditions}
No MAP or TPS codes present, engine running, throttle angle steady, EGR stable and under 50%.

Why did this code set?
PCM detected the MAF value increased significantly with no change in engine load. Condition met for 10-20 seconds.

What should you look for?
View scan tool MAF PID and verify condition present. If present check for vacuum leaks or torn air intake hoses, slightly tap on MAF to see if this effects change in values.

Monitors suspended:
EVAP, Fuel, EGR

P0101: MAF sensor performance code conditions

Enable criteria {Monitor run conditions}
No other codes set, engine on, Throttle stable, EGR less than 75 %.

Why did this code set?
PCM detected the MAF signal did not reach a pre-set value based on BARO input and engine speed inputs, conditions met for 5 seconds.

What should you look for?
View MAF and Baron inputs with scan tool.

Monitors suspended:
EVAP, Fuel

P0101: MAF sensor performance code

Enable criteria {Monitor run conditions}:
No engine codes set, engine speed from 500-2800 RPM, Throttle angle less than 50%, MAP greater than 40 kpa.

Why did this code set?
PCM detected the Actual MAF input did not match the calculated MAF input.

Ford Motor Co.

What should you do?

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

Monitors suspended:

EVAP, Fuel

P0101: MAF sensor circuit fault:

Enable criteria {monitor run conditions}:

No engine code set, Closed loop enabled, Purge less than 99 %, Throttle angle under 50%, Traction control not active, Egr pintle position less than 240 counts, MAP under 5 kpa.

Why did this code set?

PCM detected a large difference between actual MAF and calculated MAF.

What should you do?

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

Monitors suspended:

EVAP, Fuel

P0101: MAF sensor code conditions

Enable criteria{monitor run conditions}:

No engine codes set, engine on, EVAP under 99%, EGR duty cycle under 90%, EGR pintle and throttle angle under 90%, engine vacuum less than 90kpa, all conditions present for 2 seconds.

Why did this code set?

PCM detected a MAF input change more than calculated value.

What should you look for?

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

Monitors suspended:

EVAP, Fuel

Ford Motor Co.

P0102: MAF sensor low frequency condition

Enable criteria {monitor run conditions}:
Engine running, Throttle less than 50%

Why did this code set?
PCM detected a MAF input of less than 1150 HZ for more than 500ms with 100 3X reference periods.

What should you look for?
View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

Monitors suspended:
EVAP, Fuel

P0102: MAF sensor low frequency condition

Enable criteria {monitor run conditions}
Engine on, throttle less than 75% (VIN M)

Why did this code set?
PCM detected a MAF input of less than 1200hz for 1-3 seconds.

What should you look for?
View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

Monitors suspended:
EVAP, Fuel

P0102: MAF sensor low frequency condition

Enable criteria {monitor run conditions}
Engine on

Why did this code set?
PCM detected a MAF input of less than 3.9 gm/s for 1 second

Ford Motor Co.

What should you look for?

PO105: Baro sensor circuit fault

Enable Criteria {Monitor run conditions}

1) Battery voltage over 8 volts
2) Key on less then 1 minute

Why did code set?

1) Task manager saw a voltage input of either greater then 4.3 volts or less then 200 milivolts for at least 5 seconds.

What should you look at?

1) Baro input to see if this condition is present and to verify repair after work is completed.

Monitors Suspended:

None

PO106: Baro/Map out of range

Enable Criteria {Monitor run conditions}

1) Key on for less then 1 second
2) Engine speed less then 250 RPM

Why did the code set?

1) Task manager saw a MAP input of greater then .020 but less then 2.25 volts for more then 500 miliseconds.

What should you look at?

1) MAP input to verify if this condition is present and after vehicle is repaired, be sure that it is not. Pay close attention to the vacuum hose for proper routing and that both the hose and vacuum port are free from moisture and carbon restrictions.

Also be sure that the engine is in sound mechanical condition. (at least 16inches of vacuum)

Monitors Suspended:

EVAP/Fuel { be sure to test these after successful repair }

PO107: Map circuit voltage low

Enable Criteria {Monitor run conditions}

1) Engine speed between 500-1500
2) TPS input less then 1.5 volts

Why did the code set?

1) Task manager detected a MAP input of less then .02 volts for at least 2 whole seconds.

What should you look at?

1) MAP input to both verify this condition and also to verify repair. Check for restrictions in hose keeping vacuum built up in hose.

Monitors Suspended:

EVAP Monitor/ O2 Heater/EGR

PO107: MAP sensor circuit low voltage

Enable Criteria {Monitor run conditions}

1) Engine speeds between 500-1500 RPM
2) TPS input less then 1 volt

Why did the code set?

1) Task manager saw a MAP input of less then 1 volt at startup or below .02 volts during engine running for at least 2 seconds.

Ford Motor Co.

What should you look at?

1) MAP voltage input to verify repair, Check for restriction in hose or nipple keeping vacuum on sensor.

Monitors Suspended:

Evap/Catalyst/EGR

PO107: MAP sensor circuit low voltage

Enable Criteria {Monitor run conditions}

1) Engine speeds between 450-1450 RPM
2) TPS input less then 1 volt

Why did the code set?

1) Task manager saw a MAP input of less then 2.40 volts at time of start up or below 200 milivolts with engine running for at least 2 seconds.

What should you look at?

1) MAP input under these conditions, be sure to check for restrictions in hose.

Monitors Suspended:
EVAP/Catalyst/EGR

PO108: MAP sensor circuit high voltage

Monitor run conditions

1) Engine speeds 400-1500 RPM
2) TPS less then 1.3 volts

Why did this code set?

1) Task manager detected a MAP input less then 4.5 volts for at least 2 seconds.

What should you look at?

1) MAP input during this condition and also after the repair. Be sure to check for vacuum supply problems due to engine mechanical conditions , supply hose problems or restricted ports due to carbon.

Ford Motor Co.

Monitors Suspended:

EVAP/EGR/O2 Heater

PO108: MAP sensor circuit high voltage

Enable Criteria {Monitor run conditions}

1) Engine speeds between 400-1450 RPM
2) Closed throttle

Why did this code set?

1) Task manager detected a MAP input over 4.6 volts for at least 1 second

What should you look at?

1) MAP input under this condition, be sure to check for vacuum supply problems such as hose restrictions and or engine mechanical problems.

Monitors Suspended:

EVAP/02 Heater/EGR

PO108: MAP sensor circuit high voltage

Enable Criteria {Monitor run conditions}

1) Engine speeds from 400-1500
2) TPS input less then 1 volt

Why did the code set?

1) Task manager detected a MAP input of greater then 4.5 volts with engine running for 2 seconds.

What should you look at?

1) MAP input while vehicle is running, check for vacuum supply problems such as engine mechanical condition, vacuum hose restrictions and or routing problems..

Monitors Suspended:

Ford Motor Co.

EVAP/02 Heater/EGR

P0110: IAT Sensor circuit fault

Enable Criteria {Monitor run conditions}

1) Key on for less then 60 seconds

Why did the code set?

1) Task manager detected an IAT input greater then 4.5 volts or less then .20 volts for at least 4 seconds.

What should you look at?

1) IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts.

Monitors suspended:

EVAP/02 Heater

PO112: IAT sensor circuit low voltage

Enable Criteria {Monitor run condition}

1) Key on

Why did this code set?

1) Task manager detected an IAT input less then .2 volts for at least 3 seconds

What should you look at?

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

Monitors Suspended:

1) EVAP/02 Heater

Ford Motor Co.

PO112: IAT sensor circuit voltage low

Enable Criteria {Monitor run conditions}

1) Key on/Engine running

Why did this code set?

1) Task manager detected an IAT input of less the .200 volts for at least 3 seconds

What should you look at?

1) Pay attention to the IAT input voltage to verify if this condition is present before, during and after repair. Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

Monitors suspended:

EVAP/02 Heater

PO112: IAT circuit/sensor low voltage

Enable criteria {Monitor run conditions}

1) Engine running/idle

Why did this code set?

1) Task manager detected an IAT input voltage less the .500 volts for a period of greater then 3 seconds.

Ford Motor Co.

What should you look at?

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

Monitors suspended:

EVAP/02 Heater

PO113: IAT sensor circuit voltage high

Enable criteria {Monitor run conditions}

1) Key on

Why did this code set?

1) Task manager detected an IAT input of greater the 4.5 volts for longer then 3 seconds

What should you look at?

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

Monitors suspended:

EVAP/02 Heater

PO113: IAT sensor/circuit voltage high

Enable criteria {Monitor run conditions}

1) Engine must be running

Why did this code set?

1) Task manager saw a shorted reference voltage of 5 volts on the IAT input for longer then 3 seconds.

What should you look at?

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

Monitors suspended:

EVAP/02 Heater

PO113: IAT sensor/circuit voltage high

Enable criteria {Monitor run conditions}

1) Engine must be running

Why did this code set?

1) Task manager saw an IAT input voltage of 5 volts (short) for at least 3 seconds.

What should you look at?

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 millivolts

Monitors suspended:

EVAP

Ford Motor Co.

PO115: ECT sensor/circuit fault

Enable criteria {Monitor run conditions}

1) Key on less then 1 minute.

Why did this code set?

1) The Task manager saw a hard open condition on the ECT circuit of 200 millivolts or less or the task manager saw a hard short condition of 4.5 volts or more for at least 5 seconds or the ECT took more then 5 minutes to reach a temperature higher then 122 degrees.

What should you look at?

1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

Monitors Suspended

EVAP/02 Heater

P0117: ECT Sensor/circuit low voltage

Monitor Run Conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager saw an input voltage of less then half a volt to the PCM from the ECT sensor.

What should you look at?

Be sure to monitor the ECT input parameter from the data stream. Pay close attention to the connector and harness for intermittent problems. Also suspect possible moisture in the PCM connector. Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

Monitors suspended:

EVAP/O2 Heater

P0118: ECT Sensor circuit high voltage

Monitor run conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager saw an ECT input of greater then 4.3 volts for longer then 3 seconds

What should you look at?

2) 1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the

scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

Monitors Suspended:

EVAP/02 Heater

P0120: TPS/Circuit Fault

Monitor Run conditions (Enable Criteria)

1) Key on longer then 1 minute
2) Closed throttle

Why did this code set?

1) The task manager saw a TPS input of 2 volts or more for at least 4 seconds or a TPS input of 100 millivolts or less for 4 seconds.

What should you look at?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

Monitors suspended:

EVAP/02 Heater

P0121: TP voltage out of sync with MAP

Monitor Run Conditions (Enable Criteria)

1) Engine warm
2) Engine running
3) Vehicle speed greater then 25 MPH

Why did this code set?

1) either the TPS input voltage was seen reading high (greater then 1.5 volts) while the engine was idling with a high MAP input. Or the TPS input was reading too low of voltage (less then .50 volts) while the vehicle was being driven at a speed greater then 25 MPH with the throttle opened slightly and a low MAP input voltage present. Both conditions would of have had to of been present for at least 4 seconds.

What should you look at?

1) Monitor the TPS circuit voltage under these conditions. If fault is present, be suspicious of faulty sensor and or circuit wiring.

Monitors suspended:

EVAP/02 Heater/Catalyst

P0122: TP sensor/circuit low voltage

Monitor run conditions (Enable Criteria)

1) Key on.

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Why did this code set?

1) Task manager saw a TP voltage input of less the .250 volts for a period of at least 2 seconds.

What should you do?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

Monitors suspended:

EVAP/02 Heater

P0122: TP sensor/circuit low voltage

Monitor run conditions (Enable Criteria)

1) Key On.

Why did this code set?

1) The task manager saw a TP voltage input of less then .100 volts for at least 1 second.

What should you look at?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults. This would be a great thing to graph or plot using your scope or graphing meter!

Monitors Suspended:

EVAP/02 Heater

P0122: TP sensor/circuit low voltage

Monitor run conditions (Enable Criteria)

1) Key on.

Why did this code set?

1) Task manager detected a throttle voltage input of less then .200 volts for at least .500 seconds.

What should you look at?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

Monitors Suspended:

EVAP/O2 Heater

P0123: TP sensor/circuit high voltage

Monitor run conditions (Enable criteria)

1) Key on.

Why did this code set?

1) Task manager saw a voltage input of greater then 4.5 volts for at least 1 second

Ford Motor Co.

What should you look at?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

Monitors suspended:

EVAP/02 Heater

P0123: TP sensor/circuit high voltage

Monitor run conditions (Enable Criteria)

1) Key on.

Why did this code set?

1) Task manager detected a voltage input greater then 4.5 volts for at least .500 seconds.

What should you look at?

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

Monitors suspended:

EVAP/O2 Heater

P0125: Operating temperature not reached

Monitor run conditions (Enable Criteria)

1) Engine running for at least 10 minutes or longer.
2) No previous ECT codes recorded.

Why did this code set?

1) Task manager saw that the coolant temperature never reached a minimum reading of at least 176 degrees.

What should you look at?

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

Monitors suspended:

EVAP

P0125: Operating temperature not reached

Monitor run conditions (Enable Criteria)

1) Engine running for at least 10 minutes.
2) No previous ECT related codes recorded.
3) IAT input at normal range (30 degrees-130 degrees)
4) Engine speed greater then 2500 but less then 4,000 RPM.

Why did this code set?

1) Task manager did not see the coolant temperature reach a minimum of 176 degrees during these conditions.

What should you look for?

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

Monitors suspended:

EVAP

Ford Motor Co.

P0125: Operating temperature not reached

Monitor run conditions (Enable criteria)

1) Engine running 10 minutes or longer
2) No previous ECT codes detected

Why did this code set?

1) Task manager failed to see a temperature greater then 125 degrees after 15 minutes of operation.

What should you look at?

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

Monitors suspended:

EVAP

P0125: Failure to reach operating temperature

Monitor run conditions (Enable Criteria)

1) No previous ECT related codes recorded
2) Engine run time greater then 10 minutes

Why did this code set?

1) Task manager never detected a temperature greater then 135 degrees after run time had been achieved.

What should you look at?

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

Monitors suspended:

EVAP

P0130: HO2S1 circuit fault – Sensor 1 Bank 1

Monitor run condition (Enable Criteria)

1) Closed Loop

Why did this code set?

1) Task manager detected an O2 switch time of greater the .100 milliseconds during the fuel system enrichen/enleanment test.

What should you look for?

1) You should look at the oxygen sensor wave form under the following scope setups/conditions. .200 volts per division and .200 seconds per division while the vehicle is running at 2,000 RPM. You should see vertical lines of less the .100 ms in length switching from rich to lean. If the response is too slow/lazy suspect a faulty sensor.

Monitors suspended:

EVAP/Catalyst

PO131: HO2S1 shorted to ground – Sensor1 Bank 1

Monitor run conditions (Enable Criteria)

1) Key off with cool down cycle reached (typically 10 minutes)
2) Key on power up with ECT reading of less then 100 degrees

Why did this code set?

1) Task manager detected sensor voltage less then .150 MV prior to heater test for two consecutive key on testing conditions.

What should you look for?

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor , however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

Monitors suspended:

EVAP/Catalyst/02

P0131: HO2S1 shorted to ground-Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) ECT at operating (180 degrees) temp.

2) Engine shut down
3) Cold start less then 98 degrees coolant reading.

Why did this code set?

1) Task manager detected an O2 reading of less the .150 MV for at least 28 seconds after engine startup under the listed enabling conditions.

What should you look for?

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor , however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

Monitors Suspended:

EVAP/O2/Catalyst

P0132: HO2S1 shorted to voltage – Sensor 1 Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running

Why did this code set?

1) Task manager detected a sensor voltage of greater then 1.3 volts during all running conditions for at least 3 seconds.

What should you look for?

1)You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

Monitors Suspended:

EVAP/Catalyst/O2

PO132: HO2S1 shorted to voltage – Sensor 1 Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running for at least two minutes
2) ECT value greater then 170 degrees

Why did this code set?

1) Task manager saw sensor voltage greater then 1.2 volts

What should you look for?

1) 1)You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

Monitors suspended:

EVAP/O2/Catalyst

PO132: HO2S1 Shorted to voltage Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running for at least 4 minutes
2) Closed loop (180 degrees)

Why did this code set?

1) Task manager detected the sensor voltage to be greater then 1.3 volts

What should you look for?

1) 1) You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

Monitors Suspended:

EVAP/Catalyst/O2

PO133: HO2S1 Slow to respond Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine run time of 3 minutes

2) Closed loop operation
3) Vehicle speed of 25 or greater MPH
4) A/C off
5) Return to idle speed pf 500-800 RPM

Why did this code set?

1) The task manager detected that the bank 1 sensor 1 voltage was too low (under 650mv) or the response time was too slow.

What should you do?

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

Monitors suspended:

Evap/Catalyst

P0133: HO2S1 Slow responding Sensor 1 Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running at least 3 minutes.
2) Closed loop operation
3) Cruising at speeds over 20 MPH for at least 2 minutes.
4) Engine brought back to idle.

Why did this code set?

1) The task manager saw the O2 sensor switch from rich(over .650mv) to lean (under .350mv) too few of times.

What should you look for?

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

Monitors Suspended:

Evap/Catalyst

Ford Motor Co.

P0133: HO2S1 Slow responding Sensor 1 Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running for at least 3 minutes.
2) Closed loop operation.
3) Cruising at least 2 minutes over 10 mph.
4) Engine brought back to idle.

Why did this code set?

1) The Task Manager detected the O2 sensor switched from rich (650mv) to lean (250mv) too few of times.

What should you do?

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

Monitors suspended:

EVAP / Catalyst

PO133: HO2S1 slow responding sensor 1 bank 1

Monitor run conditions (Enable Criteria)

1) Engine running at least 3 minutes.
2) Closed loop operation.
3) Cruising speed higher than 10 mph for at least a ½ minute.
4) Vehicle return to idle.

Why did this code set?

1) The Task Manager detected the O2 sensor switch from rich (600mv) to lean (350mv) too few of times.

What should you do?

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

Ford Motor Co.

Monitors suspended:

EVAP/ Catalyst

PO134: HO2S1 stuck at center sensor 1 bank 1.

Monitor run conditions (Enable Criteria)

1) Engine running for at least 2 minutes.
2) Closed loop operation.

Why did this code set?

1) The Task Manager detected the O2 sensor voltage was stuck at mid range for at least 1.5 minutes.

What should you do?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

Monitors Suspended:

EVAP/Catalyst

P0134: H02S1 Stuck at center Sensor 1 bank 1

Monitor run conditions (Enable Criteria)

1) Engine running at least 2 minutes
2) Closed loop operation

Why did this code set?

1) Task manager detected that the 02 sensor was stuck at ½ volt for at least 1 minute.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to

the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

Monitors Suspended:

EVAP/Catalyst

P0134: H02S1 Stuck at center Sensor 1 bank 1

Monitor run conditions (Enable Criteria)

1) Engine running at least 2 minutes
2) Closed loop operations

Why did this code set?

1) Task manager detected that the 02 sensor voltage was stuck at ½ volt for at least 1.5 minutes.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

Monitors Suspended:

EVAP/Catalyst

P0135: H02S1 Heater fault Sensor 1 Bank 1

Monitor run conditions (Enable Criteria)

1) Battery voltage at least 10 volts.
2) Key off for at least 5 seconds
3) Engine started

Ford Motor Co.

Why did this code set?

1) The task manager detected that the 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors suspended:

EVAP/02/Catalyst

P0135: H02S1 Heater fault Sensor1 Bank 1

Monitor run conditions (Enable Criteria)

1) Key off for at least 10 minutes.

Why did this code set?

1) The task manager detected the 02 sensor's voltage was either higher or lower then expected during the 02 heater test.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/02/Catalyst

P0135: H02S1 Heater Fault Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) Key off for at least 10 minutes after engine cool down.

Why did this code set?

1) The task manager detected no 02 sensor output voltage with the heater energized.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/02/Catalyst

P0135: H02S1 Heater fault Sensor1, Bank1

Monitor run conditions (Enable Criteria)

1) Cold engine startup.
2) Engine idling.
3) Operating temperature less then 150 degrees.

Why did this code set?

1) The task manager detected the 02 sensor's voltage was greater then 3 volts for a time period of ½ minute to 1.5 minutes.

What should you do?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/02/Catalyst

P0136: H02S2 Circuit fault Sensor 2, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine on

Why did this code set?

1) The task manager detected an open circuit condition in the catalyst sensor's circuit.

Ford Motor Co.

What should you look for?

1)Inspect the 02 Harness connector to be sure that is plugged in and all the connectors are clean and secure. Then jump the 02 heater lead of harness connector to the signal return lead of connector and see if proper voltage is read on scan tool. If so, suspect faulty connecter or sensor, if not perform wiggle test on harness working your way up towards the PCM. If harness is alright, suspect faulty PCM or main PCM connecter.

Monitors Suspended:

EVAP/Catalyst

P0137: H02S2 Short to ground Sensor 2 Bank 1

Monitor run conditions (Enable Criteria)

1) No engine related codes stored.
2) Key off with engine cooled down.
3) Cold engine started temperature under 100 degrees.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

What should you look for?

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

Monitors suspended:

EVAP/Catalyst

P0137: H02S2 Sorted to ground Sensor 2 Bank 1

Monitor run condition (Enable Criteria)

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

What should you look for?

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

Monitor Suspended:

EVAP/Catalyst

P0137: H02S1 Pre Cat 02 sensor shorted to ground

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

Why did this code set?

1) The task manager detected the pre cat 02 sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

What should you look for?

1) This will typically be the result of a faulty sensor. While monitoring the pre catalyst 02 sensor's signal voltage on your scan tool, try unplugging the pre Catalyst 02 sensor's harness and seeing if the voltage changes (goes up), if it does, suspect/replace 02 sensor. If it stays low suspect faulty harness or PCM.

Monitors Suspended:

EVAP/02/Catalyst

P0138: H02S2 Shorted to voltage sensor 2 bank 1

Monitor run conditions (Enable Criteria)

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

Ford Motor Co.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was greater the 1.2 volts for at least 3 seconds.

What should you look for?

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

Monitors suspended:

EVAP/Catalyst

P0138: H02S2 Sensor2, Bank 1 Shorted to voltage

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor voltage was greater then 1.2 volts for at least 3 seconds or more.

What should you look for?

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

Monitors Suspended:

EVAP/Catalyst

P0138: H02S1 Shorted to voltage Sensor 1, Bank 1

Monitor run condition (Enable Criteria)

1) No engine codes present.

2) Engine running longer then 2 minutes
3) Warm Engine

Why did this code set?

1) The task manager detected a sensor voltage reading of greater then 1.2 volts for a period of at least 3 seconds.

What should you look for?

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the pre-cat 02 sensor on this vehicle.

Monitors Suspended:

EVAP/Catalyst

P0139: H02S2 Stuck at center Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Warm engine (higher then 150 degrees)

Why did this code set?

1) The task manager detected that the catalyst sensor's voltage has been fixed at ½ volt for a period longer then 1.5 minutes.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor. If this does not happen, suspect faulty wiring or PCM.

Monitors Suspended:

EVAP/Catalyst

Ford Motor Co.

P0139: H02S1 Switching response slow from Sensor1, Bank 1

Monitor run condition (Enable Criteria)

1) No engine codes present.
2) Engine temperature greater then 150 degrees.
3) Cruise speed higher then 10 MPH for at least 2 minutes.
4) Vehicle brought back to idle.

Why did this code set?

1) The task manager detected too few of switching from rich (600mv) to lean (300 MV) from the pre-cat 02 sensor.

What should you look for?

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

Monitors Suspended:

EVAP

P0140: H02S2 Sensor 2, Bank 1 remains stuck at center

Monitor run conditions (Enable Criteria)

1) No engine codes present.
2) Engine running at least 2 minutes.
3) Closed loop operation.

Why did this code set?

1) The task manager detected that the catalyst sensor's voltage was fixed between .300 MV and .500 MV for at least ½ minute.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while

grounded and approximately 1 volt while hooked to power through your body. If this happens suspect faulty sensor, if this does not happens, suspect faulty wiring or PCM.

Monitors Suspended:

EVAP/Catalyst

PO141: H02S2 Heater fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) No engine codes present.
2) Battery voltage higher then 10 volts.
3) Key off longer then 30 seconds.

Why did this code set?

1) The task manager detected that the Catalyst 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

What should you look for?

1) This will most likely require the catalyst 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/Catalyst

P0141: H02S2 Heater Fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) No engine codes present.
2) Cold start up (under 95 degrees)
3) Engine idling with temperature below 150 degrees.

Why did this code set?

2) 1) The task manager detected the catalyst 02 sensor's voltage was greater then .3 MV volts for a time period of ½ minute to 1.5 minutes.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

Monitors Suspended:

EVAP/Catalyst

P0141: H02S2 Heater circuit Fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) No Engine codes present.
2) Key off for at least 10 minutes.

Why did this code set?

1) The task manager detected no catalyst sensor voltage after the heater had been energized.

What should you look for?

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

Monitors Suspended:

EVAP/Catalyst

P0143: H02S2 Short to ground Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Warm engine shut down.
2) Coolant below 90 degrees
3) Engine start up.

Why did this code set?

1) The task manager detected low (below .200 MV) catalyst sensor voltage for at least 30 seconds before the heater monitor has been run.

What should you look for?

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit is to meat the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (approx. 5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

Monitors Suspended:

EVAP/Catalyst

P0144: H02S2 shorted to voltage Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running three minutes.
2) Closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was greater than 1 volt for longer than 3 seconds.

What should you look for?

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (approx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

Monitors suspended:

1) EVAP/Catalyst

P0145: H02S2 Slow response Sensor2 , Bank1

Monitor run conditions (Enable Criteria)

1) Engine running 2 minutes.
2) Closed loop operation.
3) Cruise speeds 0-20mph for 2 minutes.
4) Returned to idle.

Why did this code set?

1) The task manager detected the catalyst sensor has switched rich (600 MV) to lean (300 MV) too few times.

Ford Motor Co.

What should you look for?

1) Drive the mixture rich and lean using propane enrichment while monitoring the catalyst sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

Monitors suspended:

EVAP

P0147: H02S2 Heater fault Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.

Why did this code set?

1) The task manager detected a catalyst sensor voltage greater then 300mv for at least ½ minute to 1 ½ minute.

What should you look for?

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias) . If it does, suspect sensor if still high (300 MV or greater) suspect PCM/harness.

Monitors suspended:

EVAP/Catalyst

P0151: H02S1 Shorted to ground Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Previous warm engine shut down.
2) Cold engine (below 90 degrees) start up.

Why did this code set?

1) The task manager detected the 02 sensor voltage too low (below 150 MV) for at least ½ minute after start up.

What should you look for?

1) While monitoring the sensor voltage under the above conditions unplug the sensor harness. Voltage should now read bias (approx. ½ volt) if it does replace sensor. If voltage still reads low use your body as a resistor and touch a voltage source

such as the positive battery cable with one hand and the sensor signal return wire with your other hand. Voltage should read approx. 1 volt if it doesn't suspect faulty harness or PCM.

Monitors Suspended:

EVAP/Catalyst

P0152: H02S1 shorted to voltage Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running for at least 2 minutes.
2) Coolant temperature over 175 degrees.

Why did this code set?

1) The task manager detected an 02 sensor voltage of greater than 1 volt for more than 2.5 seconds.

What should you look for?

1) Simply unplug the sensor connector while monitoring the voltage under the above conditions. Voltage should return to bias (approx .5 volts) if it does, replace sensor. If it stays high then you will have either a PCM or harness problem.

Monitors suspended:

EVAP/Catalyst

P0153: H02S1 slow responding Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine run time 2-3 minutes.
2) Closed loop operation.
3) Cruise speed of 10-20 mph for at least 2 minute.
4) Engine returned to idle.

Why did this code set?

1) The task manager detected the 02 sensor switched from rich(600mv) to lean(300mv) too few times.

What should you look for?

1) Drive the mixture rich and lean using propane enrichment while monitoring the oxygen sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

Monitors Suspended:

EVAP

P0154: H02S1 Voltage stuck at center Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Coolant temp greater than 175 degrees.

Why did this code set?

1) The task manager detected that the sensor voltage was near ½ volt for at least 1 minute.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM. This will usually be caused by a faulty sensor.

Monitors Suspended:

EVAP/Catalyst

P0155: H02S1 Heater fault Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.
2) Coolant below 125 degrees.

Why did this code set?

1) The task manager detected the 02 sensor voltage greater than 300mv for a period of ½ minute to 1 and ½ minute.

What should you look for?

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias) . If it does, suspect sensor if still high (300 MV or greater) suspect PCM/harness.

Monitors Suspended:

EVAP (most cars)

P0157: H02S2 Shorted to ground Sensor2, Bank2

Monitor run condition (Enable Criteria)

1) Ignition off for at least 10 minutes.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage was too low (less then 200mv) below it had run the heater test for this sensor.

What should you look for?

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit meat the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (approx. .5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

Monitors Suspended:

EVAP/Catalyst

P0158: H02S2 Shorted to voltage Sensor2 Bank2

Monitor run condition (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Coolant temperature greater than 175 degrees

Ford Motor Co.

Why did this code set?

1) The task manager detected the catalyst sensor voltage was greater than 1.25 volts for at least 3 seconds.

What should you look for?

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (approx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

Monitors Suspended:

EVAP

P0160: H02S2 Voltage stuck at center Sensor2, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running longer than 2 minutes.
2) Closed loop operation.

Why did this code set?

1) The task manager detected the catalyst sensor's voltage remained from .35mv to .50mv for the entire driving trip. The task manager will try to pull the sensor's voltage to 5 volts for ½ minute to see if it is indeed stuck.

What should you look for?

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

Monitors Suspended:

EVAP

Ford Motor Co.

P0161: H02S2 Heater fault Sensor2, Bank2

Monitor run conditions (Enable Criteria)

1) Engine idle after cold start up.
2) Coolant below 150 degrees

Why did this code set?

1) The task manager detected that the sensor voltage remained over 300 MV for at least 30-90 seconds.

What should you look for?

2) 1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

Monitors Suspended:

EVAP/Catalyst

P0170: Fuel trim fault Sensor1,Bank1

Monitor run conditions (Enable Criteria)

1) Engine Running
2) Closed loop operation

Why did this code set?

1) The task manager detected the fuel compensation value exceeded the allowable limit for at least 10 seconds.

What should you look for?

1) This condition can be caused by either a lean condition or a rich condition. Suspect leaking/shorted injectors, vacuum leak, and fuel pressure out of range sensors such as ECT, MAP/MAF and IAT. Verify engine is in sound mechanical condition.

Monitors suspended:

Ford Motor Co.

NONE

P0171: H02S1 is indicating fuel lean Sensor1, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running
2) Warm (over 175 degrees)
3) Closed loop operation

Why did this code set?

1) The task manager detected the long term fuel trim readings were at 25% and the short term readings were at 12% or greater for two consecutive trips.

What should you look for?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitors suspended:

NONE

P0171: H02S1 Fuel lean sensor 1 bank 1

Monitor run conditions (Enable Criteria)

1) Warm engine (over 175 degrees)
2) Engine running
3) Closed loop operation

Why did this code set?

1) The task manager detected a long term fuel trim reading of 25% and a short term fuel reading of 12% or more for two trips.

What should you do?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use

smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitor Suspended:

None

P0171: Fuel lean Sensor1, Bank1

Monitor run conditions (Enable Criteria)

1) Warm engine (greater the 175 degrees)
2) Closed loop operation

What should you look for?

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

Monitors suspended:

None

P0172: Fuel rich, Sensor 1, Bank 1

Monitor run conditions (Enable Criteria)

1) Closed loop operation
2) Engine over 175 degrees

Why did this code set?

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % or greater for at least two trips.

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Ford Motor Co.

Monitors suspended:

None

P0172: H02S1 Fuel Rich Sensor1, Bank1

Monitor run condition (Enable Criteria)

1) Engine temperature at least 175 degrees
2) Engine running in closed loop

Why did this code set?

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % for two trips.

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended

None

P0172: H02S1 Fuel rich Sensor1 , Bank1

Monitor run condition (Enable Criteria)

1) Engine running in closed loop
2) Warm engine (over 175 degrees)

Why did this code set?

1) The task manager used the 02 and fuel trim readings to determine that the system was too rich for two trips.

What should you do?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended:

None

P0174: H02S1 Fuel lean Sensor1, Bank2

Monitor run condition (Enable Criteria)

1) Engine running in closed loop.
2) Altitude under 8,000 feet.

Why did this code set?

1) The task manager detected a lean condition for two consecutive trips. (Using fuel trim and 02 readings)

What should you look for?

1) The most common fault for this code is a leaking exhaust system or a contaminated MAF wire. Be sure to inspect this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks.

Monitors suspended:

None

P0175: H02S1 Fuel rich Sensor1, Bank2

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop.
2) Altitude under 8,000 feet

Why did this code set?

1) The task manager detected a rich condition that was present for at least two trips. (Using fuel trim and 02 readings)

What should you look for?

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

Monitors suspended:

None

Ford Motor Co.

P0182: CNG temperature sensor voltage too low.

Monitor run condition (Enable Criteria)

1) Engine running.

Why did this code set?

1) The task manager detected a CNG temp sensor input of less than ½ volt.

What should you look for?

1) Unplug sensor and note reading on scan tool. The reading should read very cold approx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm approx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

Monitors suspended:

EVAP

P0183: CNG temperature sensor voltage high

Monitor run conditions (Enable Criteria)

1) Engine running.

Why did this code set?

1) The task manager detected a CNG voltage input of greater than 4.5 volts.

What should you look for?

1) Unplug sensor and note reading on scan tool. The reading should read very cold approx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm approx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

Monitors suspended:

Evap

Ford Motor Co.

P0201-204: Fuel injectors 1-4 control circuit fault

Monitor run condition (Enable Criteria)

1) Engine running
2) Battery voltage over 12 volts.

Why did this code set?

1) The task manager detected no injector counter electromotive force for at least 3ms after the injector turned off.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

P0201-204: Injector 1-4 circuit fault

Monitor run condition (Enable Criteria)

1) Engine running below 1,000 RPM
2) TPS voltage less than 1.5 volts.

Why did this code set?

1) The task manager detected no injector spike when injector is switched off.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

Ford Motor Co.

P0201-2010: Injector numbers 1-10 circuit fault

Monitor run conditions (Enable Criteria)

1) Battery over 12 volts
2) Engine running less than 3,000 RPM
3) Injector pulse width less than 10ms

Why did this code set?

1) The task manager detected no injector off spike.

What should you look for?

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

Monitors suspended:

EVAP

P0300: Multiple Misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) MAP voltage steady/under 1.6 volts
3) Engine speeds from 2,200-2,800 RPM
4) Coolant over 175 degrees.

Why did this code set?

1) 200 RPM test: The task manager detected a misfire in more than 15% of the engines ignition cycles in less the 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire in more than 1.5% of the ignition cycles in less than 1,000 revolutions.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage,

Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0300: Multiple misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Crank learned.
3) Engine running less than 3,000 RPM

Why did this code set?

1) 1 Trip test: The task manager detected more than 10% misfire rate with at least 2 cylinders misfiring.
2) 2 trip test: The task manager detected more than a 2% misfire rate on at least 2 cylinders.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0300: Multiple misfire detected

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Engine less than 3,000 RPM
3) Crank learned.

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Why did this code set?

1) 1 Trip test: The task manager detected over 10% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more then a 2% misfire rate with at least two cylinders misfiring.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02?Catalyst

P0300: Multiple misfire detected.

Monitor run condition (Enable Criteria)

1) No engine codes set.
2) Engine speed 3,000-3,500 RPM.
3) Crank learned

Why did this code set?

1) 1 Trip test: The task manager detected more than a 3-15% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more than a 3% misfire rate with at least two cylinders misfiring.

What should you look for?

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability,

use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:
EVAP/02/Catalyst

P0301-304: Cylinder numbers 1-4 misfire detected

Monitor run condition (Enable Criteria)

1) No engine codes set.
2) Engine speeds 2,000-2,500 RPM
3) MAP input less than 1.6 volts
4) Warm engine (over 175 degrees)
5) Vehicle speed less than 5 MPH

Why did this code set?

1) 200 RPM test: The task manager detected a misfire occurred in more than 15 % of engine cycles in less than 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire occurred in over 1.5% of engine cycles in less than a 1,000 revolution period.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:
EVAP/02/Catalyst

P0301-310: Engine cylinders 1-10 misfire detected.

Monitor run conditions (Enable Criteria)

1) No engine codes set.
2) Crank learned
3) Engine speed less than 3,000 RPM

Why did this code set?

1) 1 trip test: The task manager recorded more than a 3-14% misfire rate.
2) 2 trip test: The task manager detected more than a 3% misfire rate.

What should you look for?

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition(fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

Monitors suspended:

EVAP/02/Catalyst

P0325: number 1 Knock sensor circuit fault.

Monitor run conditions (Enable Criteria)

1) Engine Running.

Why did this code set?

1) The task manager detected an open knock sensor circuit or an input voltage of greater than 5 volts.

What should you look for?

1) This will usually result in a circuit problem. Be sure to inspect the circuit for any previous nearby work. Make sure the sensor is connected! Try unplugging the sensor while monitoring scan tool for voltage to change.

Monitors suspended:

EVAP

P0325: Number 1 knock sensor circuit failure.

Monitor run conditions (Enable Criteria)

1) Engine running longer than 1 minute.
2) Engine speed greater than 2,000 RPM

Why did this code set?

1) The task manager detected the change in knock sensor voltage (each ½ revolution of crank sensor) was less than .06mv for 200 consecutive times.

What should you look for?

1) This will typically prove to be a disconnected sensor or a faulty sensor. Perform visual inspection of knock sensor circuit. Tap on intake manifold with a punch while monitoring scan tool for the sensor voltage to change. It should change.

Monitors suspended:
EVAP

P0335: Crankshaft Position Sensor/Circuit Fault

Monitor run condition (Enable Criteria)

1) Start engine

Why did this code set?

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP/Misfire/02/Catalyst

P0335: Crankshaft position sensor/circuit fault

Monitor run condition (Enable Criteria)

1) Engine cranking

Why did this code set?

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least four seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP/Misfire/02/Catalyst

P0340: No camshaft synchronization signal to PCM

Ford Motor Co.

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least four seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present with at least 64 peak to peak voltage toggles present.
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0340: No camshaft synchronization signal present to PCM

Monitor run conditions (Enable Criteria)

1) Good Crank sensor signal present with at least 32 peak to peak voltage toggles present.
2) Engine cranking

Why did the code set?

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

What should you look for?

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

Monitors suspended:

EVAP

P0351: Primary circuit fault ignition coil 1

Monitor run conditions (Enable Criteria)

1) Battery voltage over 10 volts
2) Engine running less then 4500 RPM

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given.

Ford Motor Co.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0351: Primary circuit fault ignition coil 1

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts while running
2) Engine running less then 2000 RPM
3) Ignition coil not in dwell period when being checked

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0352: Ignition coil 2 primary circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage over 10 volts
2) Engine running less then 4500 RPM

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given for a period of 3 seconds.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0352: Ignition coil 2 primary circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0353: Ignition coil 3 primary circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

Why did this code set?

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

What should you look for?

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

Monitors suspended:

EVAP

P0400: EGR system fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Off idle
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) EGR Test activated

Why did the code set?

The task manager detected too little EGR gas flow with the EGR purge solenoid switched from off to on.

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.

3) Verify valve assembly is good.

Monitors suspended:
EVAP

PO401: EGR System fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Engine speed from 1900 to 2400 RPM
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) Short term fuel compensating value less then positive 5%
9) EGR Test activated

Why did the code set?

The task manager detected a measured change in short term fuel compensation value shift of less than 7.4% or more than 20%

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

Monitors suspended:
EVAP

PO401: EGR System fault

Monitor run conditions (Enable Criteria)

1) Engine speeds from1900 to 2400 RPM
2) Closed loop operation
3) ECT higher than 175 degrees
4) Off idle
5) MAP in mid-range
6) Vehicle speed greater then 3 MPH

Ford Motor Co.

Why did this code set?

1) The task manager detected a measured change in short-term fuel compensation value of less than 7% or greater than 20% during the EGR flow rate test.

What should you look for?

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

Monitors suspended:

EVAP

P0403: EGR Solenoid/Circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Battery voltage over 10 volts

Why did this code set?

1) The task manager detected an open or short in the EGR solenoid control circuit for a period of at least 3 seconds.

What should you do?

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
2) Check wiring to EGR solenoid and connector.

Monitors suspended:

EVAP/EGR

P0403: EGR solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Battery voltage over 10 volts

Why did this code set?

1) The task manager detected the EGR control circuit was not in the correct state when commanded to operate by the PCM. This condition was present for at least 3 seconds

What should you do?

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
Check wiring to EGR solenoid and connector

Monitors suspended:

EVAP/EGR

P0411: Incorrect amount of secondary air

Monitor run condition (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Engine running

Why did this code set?

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

What should you look for?

1) Check AIR solenoid resistance (Approx. 30-40 ohms)
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

Monitors suspended:

EVAP

P0412: Secondary AIR solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Engine running

Why did this code set?

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

Ford Motor Co.

What should you look for?

1) Check AIR solenoid resistance (Approx. 30-40 ohms)
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable levels Sensor2, Bank1
Monitor run conditions (Enable Criteria)

1) Engine running for at least three minutes.
2) Closed loop operation
3) Coolant temperature greater than 150 degrees

Why did this code set?

1) The task manager detected that the catalyst sensor's switch rate was too close to that of the o2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable levels Sensor2, Bank 1
Monitor run conditions (Enable Criteria)

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees
3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 10 MPH
6) MAP input voltage at 1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0420: Catalyst efficiency below acceptable limit Sensor2, Bank1

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees
3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 20 MPH
6) MAP input voltage at 1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

What should you do?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

Ford Motor Co.

P0422: Catalyst efficiency fault Sensor 2 bank 1

Monitor run condition (Enabling Criteria)

1) Engine running in closed loop (above 175 degrees)
2) Vehicle speed over 20 MOH
3) Engine speed from 1200-2500 (2 minutes)
4) MAP from 1.5-2.5 volts

Why did this code set?

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0422: Catalyst efficiency fault Sensor 2, Bank 1

Monitor run conditions (Enable Criteria)

1) Engine running in closed loop
2) Coolant greater than 150 degrees
3) Engine speed from 1200-1700 RPM (3 minutes)
4) Vehicle speed greater than 20 MPH
5) MAP voltage from1.5 to 2.0 volts

Why did this code set?

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two

sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0432: Catalyst efficiency fault Sensor 2 Bank 2

Monitor run conditions (Enable Criteria)

1) Closed loop operation for three minutes run time
2) Coolant greater than 150 degrees
3) Vehicle speed greater than 20 MPH
4) Engine RPM 1200-1700
5) MAP range 10-15hg

Why did this code set?

1) The task manager detected that the catalyst sensor switched rich to lean too often. It should stay lean the majority amount of time.

What should you look for?

1) Use your scope or the graphing ability built into your scan tool to monitor the catalyst sensor's signal. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the sensor's response. If it responds to the rich mixture try making the mixture lean by making a vacuum leak. If the sensor's response is to quickly switch lean, then you are most likely dealing with a bad converter. If the converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

Monitors suspended:

EVAP

P0440: Evaporative purge system fault

Monitor run conditions (Enable Criteria)

1) Engine warm
2) EVAP solenoid commanded to open and close

Ford Motor Co.

Why did this code set?

1) The task manager detected the changes in fuel trim values and the IAC motor position was below its pre-determined range.

What should you look for?

1) We are most likely dealing with a leak in the system. You can perform a purge solenoid resistance test first if you would like to rule that out as a possibility. (it should measure 45-80 ohms). You can use your scan tool to command the solenoid to open and close. Use a smoke machine or a hand vacuum pump to help locate leak. Remember there are several other components in this system besides the gas cap, but that could also be the problem.

Monitors suspended:

None

P0441: Evap purge flow monitor fault

Monitor run conditions (Enable Criteria)

1) Closed loop operation.
2) Coolant greater than 175 degrees.
3) Engine idling for 2 minutes.
4) MAP under 15.7 hg
5) Altitude less than 8000 feet
6) Low fuel light off

Why did this code set?

1) The task manager's EVAP monitor detected that there was no air flow through the EVAP system.

What should you look for?

1) Be sure to inspect all the hoses for cracks and also make sure that they are all connected properly. Try blowing through the hoses one by one to check for restrictions. Check the vacuum port on Throttle body for restrictions. Use your smoke machine to aid in faster diagnosis of leaks. Check electrical integrity of solenoid/circuit to be sure that it is capable of activation.

Monitors suspended:

None

Ford Motor Co.

P0442: EVAP system small leak detected

Monitor run conditions (Enable Criteria)

1) Cold start-up
2) BTS from 40-90 degrees
3) ECT within 10 degrees of BTS reading

Why did this code set?

1) The task manager detected a leak between .40" and .80" present while performing the EVAP leak detection test.

What should you look for?

1) Use your smoke machine to aid in the diagnosis of the leak. If no smoke machine is available, use your propane cylinder and an audible A/C leak detector.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Battery voltage over 10 Volts

Why did this code set?

1) The task manager detected an open or a short in the EVAP solenoid/circuit for at least 3 seconds.

What should you look for?

1) Test the solenoid resistance (40-80 ohms)
2) Test harness and perform wiggle test if necessary.
3) This will usually be caused by a faulty solenoid.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Ford Motor Co.

Monitor run conditions (Enable Criteria)

1) Engine running
2) EVAP solenoid switched from off to on.

Why did this code set?

1) The task manager detected no current flow through the EVAP solenoid's coil. This condition lasted at least 4 seconds.

What should you look for?

1) This will usually result in replacing the solenoid. Measure the solenoid's resistance it should be between 40-80 ohms. Test for available voltage and ground to solenoid. Perform wiggle test on harness if necessary.

Monitors suspended:

None

P0443: EVAP purge solenoid circuit fault

Monitor run condition (Enable Criteria)

1) Engine running
2) Not in limp mode Engine not shut down
3) 1 second time elapsed since last EVAP test ran

Why did this code set?

1) The task manager detected that it was unable to switch the state of the solenoid for at least 3 seconds.

What should you look for?

1) Inspect harness and perform wiggle test. Measure solenoid resistance 40-80 ohms. Check for proper supply voltage and ground to solenoid. Check to be sure PCM is capable of supplying ground.

Monitors suspended:

None

P0455: Large leak detected in the EVAP leak monitor

Ford Motor Co.

Monitor run conditions (Enable Criteria)

1) Cold engine start-up
2) BTS ambient form 40-90 degrees
3) ECT within 10 degrees of the BTS

Why did this code set?

1) The task manager detected an EVAP leak greater than .80" during the EVAP leak test.

What should you look for?

1) Use your smoke machine to aid in diagnosing this large leak. Perform close visual inspection of all hoses and fittings for signs of cracks or looseness. Make sure all hoses are attached correctly.

Monitor suspended:

None

P0500: Vehicle speed sensor circuit fault

Monitor run condition (Enable Criteria)

1) Engine running with closed throttle switch off
2) Engine speed 3,000 RPM or greater
3) Engine at high load conditions

Why did this code set?

1) The task manager detected no VSS input change for at least 4 seconds

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude

Monitors suspended:

EVAP

Ford Motor Co.

P0500: Vehicle speed sensor circuit fault.

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Coolant greater than 175 degrees
3) Transmission in drive
4) Brakes off
5) Engine speed 1800 RPM or greater
6) Throttle valve open

Why did this code set?

1) The task manager detected a speed input of less than 1 MPH for at least 10 seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude Also check sensor tip for foreign debris.

Monitors suspended:

EVAP

P0500: Vehicle speed sensor circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

Why did this code set?

1) The task manager detected no vehicle speed input for greater than 6 seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

Monitors suspended:

EVAP

P0500: Vehicle speed sensor circuit fault

Monitor run conditions (Enable Criteria)

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

Why did this code set?

1) The task manager detected no vehicle speed input for greater than 11seconds.

What should you look for?

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

Monitors suspended:

EVAP

P0505: IAC Motor circuit fault

Monitor run condition (Enable Criteria)

1) Key on
2) Battery voltage greater than 10 volts

Why did this code set?

1) The task manager detected an open or short condition present in an IAC motor circuit for at least 3 seconds

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What should you look for?

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Misfire/Fuel

P0505: IAC motor system fault

Monitor run conditions (Enable Criteria)

1) Engine running
2) Warm engine

Why did this code set?

1) The task manager detected that the target idle speed and actual idle speed was out of acceptable limits.

What should you look for?

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Fuel/Misfire

P0505: IAC motor system fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Battery voltage greater than 10 volts
3) IAC motor activated

Why did this code set?

1) The task manager detected a shorted or open condition present on 1 of the four IAC driver circuits.

What should you look for?

1) 1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

Monitors suspended:

EVAP/Misfire/Fuel

P0551: Power steering pressure switch fault

Monitor run conditions (Enable Criteria)

1) Vehicle speed greater than 50 MPH

Why did this code set?

1) The task manager detected a switch-high input for at least 30 seconds.

What should you look for?

1) Monitor your scan tool under these conditions watching for the power steering input to read high. Unplug sensor and duplicate the driving conditions again. The signal should read low. If it does, suspect faulty switch. Remember a restricted power steering return line or overfull pump reservoir could also be a cause for this type of code.

Monitors suspended:

None

P0600: PCM fault, SPI communications

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

Monitors suspended:

All

P0601: Internal PCM SPI communications fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

Monitors suspended:

All

P0605: PCM SPI communications fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the serial communications failed inside the computer at least 9 times.

What should you do?

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

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Monitors suspended:

All

P0700: Transaxle control system fault

Monitor run conditions (Enable Criteria)

1) Engine running

Why did this code set?

1) The task manager received a TCM control fault trouble code.

What should you look for?

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

Monitors suspended:

None

P0700: Transaxle control system fault.

Monitor run conditions (Enable Criteria)

1) Engine running

Why did this code set?

1) The task manager received a TCM control fault trouble code.

What should you look for?

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

Monitors suspended:

None

P0703: Brake switch circuit fault

Monitor run conditions (Enable Criteria)

1) Key on
2) Engine Running

Why did this code set?

1) The task manager did not detect a brake switch signal during the drive cycle.

What should you do?

1) Check brake switch with volt meter for proper operation. If good, check brake sense lead to PCM for continuity. This will usually be caused by a faulty brake switch, however in VERY rare cases it may be caused by a bad wire to the PCM or a bad PCM.

Monitors suspended:

None

P0711: No transmission temp sensor increase after startup

Monitor run conditions (Enable Criteria)

1) Key on
2) Transmission temperature hot

Why did this code set?

1) The task manager detected that there was no transmission temperature sensor increase of at least 15 degrees for at least 10 minutes of operation after start up.

What should you look for?

1) This will usually result in either a faulty sensor or wiring problem. Check sensor's resistance and perform a close visual and electrical check of the sensor's harness.

Monitors suspended:

None

P0712: Transmission temperature sensor's voltage low

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected the temp sensor voltage was less than 1.50 volts for at least 2 seconds.

What should you look for?

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

Monitors suspended:

None

P0713: Transmission temperature sensor's voltage too high

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The PCM detected the trans temp sensor's voltage was over 3.50 volts for at least 2 seconds.

What should you do?

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

Monitor run conditions:

None

P0740: Torque converter clutch circuit fault

Monitor run conditions (Enable Criteria)

1) No engine or transmission codes set
2) Vehicle speed under 70 MPH
3) Transmission in 3rd gear
4) TCC unlocked for at least 10 seconds

5) Throttle open to 30 %
6) TCC locked for 5 seconds

Why did this code set?

1) The PCM detected no RPM drop with TCC engaged.

What should you look for?

1) Check the TCC solenoid for proper operation. This will usually be the reason for the code being set.

Monitors suspended:

None

P0743: Torque converter clutch solenoid circuit fault

Monitor run conditions (Enable Criteria)

1) Key on

Why did this code set?

1) The task manager detected an open or short condition in the solenoid circuit.

What should you look for?

1) test the TCC solenoid's operation with your scan tool's bi-directional tests. Also be sure to check for proper supply voltage and grounds to the solenoid. This will usually result in having to have the solenoid replaced.

Monitors suspended:

None

P0748: Governor pressure solenoid/circuit fault

Monitor run conditions (Enable Criteria)

1) Battery voltage greater than 10 volts
2) Transmission relay energized

Why did this code set?

1) The task manager detected the current state of the pressure solenoid's output port was out of range.

What should you look for?

1) Test the solenoid for proper operation with your scan tool's bi-directional tests. Also inspect the solenoids circuit for proper voltage supply and ground.

Monitors suspended:

None

P0753: 3-4 shift solenoid/circuit fault

Monitor run conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager detected an open or short circuit in the 3-4 solenoid/ circuit for at least 5 seconds.

What should you look for?

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

Monitors suspended:

None

P0783: 3-4 Solenoid , No RPM drop

Monitor run conditions (Enable Criteria)

1) Key On

Why did this code set?

1) The task manager detected an open or short condition due to the fact that it saw no RPM drop when 3-4 shift was applied.

What should you look for?

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually

operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

Monitor suspended:

None

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Enhanced Evaporative Emissions System Monitor #1 (.040" Leak)			
$26	$00	Phase 0 Initial tank vacuum and minimum limit	in H20
$26	$00	Phase 0 Initial tank vacuum and maximum limit	in H20
$27	$00	Phase 2 0.040 cruise leak check vacuum based-up and max threshold	in H20
$2A	$00	Phase 4 vapor generation maximum change in pressure and max threshold	in H20
$2B	$00	Phase 4 vapor generation maximum absolute pressure rise and max threshold	inH20

- Conversion for test ID's $26-$2B; Apply value, subtract 32,768, and then multiply value by 0.00195 to get inches of H20. The result will either be a positive value or a negative value.
- Special Note: If the monitor has not yet ran or if all phases of monitor have not been completed, you will receive a value of –64 in H20.

Test ID	Comp ID	Definition	Units
Enhanced Evaporative Emissions System Monitor #1 (.020" Leak)			
$26	$00	Phase 0 Initial tank vacuum and minimum limit	in H20
$26	$00	Phase 0 Initial tank vacuum and maximum limit	in H20
$27	$00	Phase 2 0.040 cruise leak check vacuum based-up and max 0.040 leak threshold	in H20
$28	$00	Phase 2 0.020 cruise leak check vacuum bleed-up and max leak threshold.	in H20
$2A	$00	Phase 4 vapor generation maximum change in pressure and max threshold	in H20
$2B	$00	Phase 4 Vapor generation MAP rise max threshold	in. H2O
$2C	$00	Phase 2 0.O20 idle check max leak threshold	in. H2O
$2D	$00	Phase 2 0.020 idle check no leak threshold	in. H2O

*Conversion for TID's $26-$2D: take value, subtract 32,768 then multiply by 0.00195 to get in. of H2O. Result will be + or

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Secondary Air injection Systems Monitor			
$30	$11	HO2S11 voltage for upstream flow	
		test and rich limit	Volts
$30	$11	Ho2S21 voltage for upstream flow	
		test and rich limit	Volts
$30	$00	H02S lean time for upstream flow	
		test and time	Volts

- Conversion for TID $30: multiply by 0.00098 to get volts
- Conversion for TID $31: multiply by 0.125 to get seconds

Test ID	Comp ID	Definition	Units
Catalyst Monitor			
$10	$11	Bank 1 switch ratio and max limit	Unitless
$10	$21	Bank 2 switch ratio and max limit	Unitless
$10	$10	Bank 1 index ratio and max limit	Unitless
$10	$20	Bank 2 index ratio and max limit	Unitless

- Conversion for TID $10: multiply by 0.0156 to get a value from 0 to 1.0 volts

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Oxygen Sensor Monitors "Lack of switching response rate"			
$01	$11	H02S11 voltage amplitude and threshold	Volts
$01	$21	H02S21 voltage amplitude and threshold	Volts
$03	$01	Upstream O2 sensor switch point voltage	Volts

- Conversion for TID's $01-$03: multiply by 0.00098 to get volts

Test ID	Comp ID	Definition	Units
Oxygen Sensor Monitors "Rear hO2S Check".			
$03	$02	Downstream O2 sensor switch point voltage	Volts

- Conversion for TID $03: multiply by 0.00098 to get volts

Test ID	Comp ID	Definition	Units
Exhaust Gas Recirculation System Monitor "DPFE EGR Hose Operation"			
$41	$11	Delta Pressure for upstream hose test & threshold	in. H2O
$42	$11	Delta pressure for upstream hose test & threshold	in. H2O
$41	$11	Delta pressure for downstream hose test & threshold	in. H2O
$42	$12	Delta pressure for downstream hose test and threshold	in. H2O

- Conversion for TID $41: if value is greater than 32,767 the value is negative. Take value and subtract 65,536 then multiply result by 0.0078 to get in. of H2O.If value is 32,767 or less, the value is positive. Multiply by 0.0078 to get in. of H2O.
- Conversion for TID $42: Take value, subtract 32,768 and then multiply by 0.0078 to get in. of H2O. The result will be either positive or negative.

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Exhaust Gas Recirculation System Monitor "Flow check"& "Stuck Open"			
$4A	$30	Delta pressure for flow test and threshold	in.H2O
$49	$30	Delta pressure for flow test and threshold	in.H2O
$4B	$30	EVR duty cycle for flow test threshold	in.H2O
• Conversion for TID $4A: if value is greater than 32,767, the value is negative. Take value and subtract by 65,536 then multiply by 0.0078 to get in. of H2O. If value is less than 32,767, the value is positive. Multiply by 0.0078 to get in. of H2O. • Conversion for TID$4B: Multiply by 0.0000305 to get % duty cycle. • Conversion for TID $49: take value and subtract 32,768 then multiply by 0.0078 to get in. H2O. Can be either + or- value.			
$45	$20	Delta pressure for stuck open test and threshold.	Volts
• Conversion for TID $45: Multiply by 0.0156 to get A/D counts)0-1024) or 0.0000763 to get volts.			
$4E	$31	Sum of MAP and IMAP max threshold	in. Hg
$4E	$B1	Sum of MAP and IMAP minimum threshold	in. Hg
$4F	$10	EGR on MAP max threshold	in. Hg
• Conversion for TID $4E and 4F: multiply value by 0.0078125 to get inches of Hg. Result will be positive.			

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Exhaust Gas Recirculation System Monitor New "ESM CAN System"			
$43	$11	Delta pressure sensor voltage for upstream hose hose test and threshold.	Volts
$43	$12	Delta pressure sensor voltage for downstream hose test and threshold.	Volts
• Conversion for TID $43: Multiply by 0.0156 to get A/D counts (0-1024) or 0.0000763 to get voltage.			
$32	$82	Delta pressure for upstream hose test threshold.	kPa
$32	$83	Delta pressure for downstream hose test and threshold	kPa
$32	$84	Delta pressure for stuck open test and threshold	kPa
$32	$85	Delta pressure for flow test and threshold.	kPa
$45	$20	Delta pressure for stuck open test and threshold	Volts
• Conversion for TID $45: Multiply by 0.0156 to get A/D counts (0-1024) or 0.0000763 for voltage.			

Ford Mode $06 Data

Test ID	Comp ID	Definition	Units
Misfire Monitor			
$50	$00	Total engine misfire and emission threshold misfire rate.	%
$53	$00-$0A	Cylinder specific misfire and catalyst damage threshold misfire rate (200 revolution counters)	%
$54	$00	Highest catalyst damage misfire and catalyst damage threshold misfire rate (200 revolution)	%
$55	$00	Highest emissions threshold misfire and emission threshold misfire rate (1,000 revolution counter)	%
$56	$00	Cylinder events tested and number of events required for a 1,000 revolution test.	%

- Conversion for TID's $50-$55: multiply by 0.000015 to get percent.
- Conversion for TID $56: Multiply by 1 to get ignition events.

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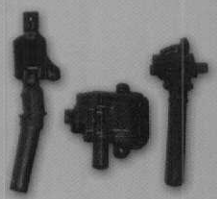

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