eAirREPAIR

May 2010 edition

Man-Made Problems: Tampering with Wiring Harness

By: Jeff Katz from Katz Automotive Inc., Elgin IL

Vehicle: 1999 Pontiac Grand Prix

Symptom: Multiple fails/rejects OBD emission tests

History: Relatively new plugs, wires, O2 sensors, multiple repair attempts from various sources, PCM re-flash, multiple fails, rejects, and waivers

Sometimes the tough problems are man-made. We had a 1999 Grand Prix with a failed emissions test, whose owner was on her last temporary trip permit and just wanted her license plate renewed. It looked innocent enough. That is, until we pulled the history on the Dashboard. The car tested multiple times since 2007 and was either rejected, failed, or issued a waiver. Surprisingly, it had never passed an Illinois emissions test. The customer stated she had purchased the car used and had made multiple unsuccessful attempts to repair it over the years.

We always start emissions repairs with a visual inspection, a scan, TSB check, and a look at the vehicle history on the Dashboard. Visual and TSB checks didn't reveal anything obvious. The scan revealed a reoccurring P0650 (MIL malfunction) and a P0420 along with a mix of different DTCs including P0306, and a P1870, any of which illuminate the MIL. The history revealed a mix of DTCs. It had fresh plugs and wires. Other repairs had been made, and we couldn't duplicate the P0306 or P1870 DTCs, so we concentrated on the P0420 and P0650. There were multiple fails for both, but a new CAT took care of the P0420 leaving us with the P0650 to address.

The odd thing was that the MIL worked normally when starting the car. It turned on with KOEO and off with KOER; however; in the scan data list, the MIL was always commanded on. Additionally, when commanded on or off with a scan tool, the MIL didn't respond. It's a simple series circuit that runs from the fuse to the IPC to the junction block, to complete the ground via the PCM. Our suspicions were a bad PCM or IPC. We split the circuit at the junction block and tested the PCM's ability to operate the circuit. We connected a test light between battery positive and the MIL command wire in the junction block. We then used the scan tool to command the MIL on or off. It worked normally and since the MIL turned on with KOEO, we knew the power feed circuit to the MIL/IPC circuit was also good. This only left the IPC itself or wire from the IPC to the junction block as faulty. We removed the IPC. It looked OK but the wire was open so we started to unwrap the instrument cluster wiring harness. We found the MIL command wire had been cut inside the harness behind the IPC. The IPC side of the wire was spliced into an adjacent wire so the MIL appeared to work normally. The PCM control side of the wire was left open, and the harness was taped. That's why the PCM couldn't control the MIL.

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Got a Case History
» Share your case history and tips.

This was clearly a case of tampering! Was this done by someone with intricate knowledge of which wire to splice so the MIL would appear to work correctly or was it done by a lucky backyard fly-by-night guy? We'll never know, but sometimes the tough problems are man-made.

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When My Phone Rings

By: Dave Alder from Applus Technologies, Inc.

Think Outside your Shop for Help

My phone rang the last day of the month at 5:03 PM with a shop owner at the other end of the line in a panic because the motorist's plates were expiring at midnight, and the emissions test facility was closing in 57 minutes. He was in a panic because the shop had possession of the car for over 3 weeks. A 2001 vehicle is allowed one monitor to show "not ready," and this vehicle had two that were not ready for CAT and EVAP. I asked him if he did a service bay EVAP test with his scan tool. His scan tool did not have that capability. I told him that the shop down the street owns the scan tool to do a service bay EVAP test, and the test could be completed in a matter of minutes. The tech followed my advice, took the vehicle to the other shop where they performed the service bay EVAP test, and took the vehicle to the testing station where it passed the emissions test before 6 PM.

The point I am trying to make here is to utilize the resources of fellow technician's knowledge and tools. Not every shop owns every scan tool. If you get in a bind, don't hesitate to call another shop. Don't be afraid to ask for help. You might be surprised with the help you may receive. Another resource that often gets overlooked is the mobile diagnostic companies that will come to your shop with a wide-variety of scan tools and a wealth of knowledge, and finally do not forget the Dashboard Forum as an excellent resource to assist you in diagnosing and repairing emissions related repairs.

That's it for this month. Please call me at (847) 616-6064 or email me at dalder@applustech.com if you have any questions. If you have a good question, it may appear in a future issue to share with fellow technicians and shop owners!

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Dashboard Tip of the Month

From: the Illinois EPA Repair Industry Outreach Team

Online Seminar Registration

Please assist us by registering online so we can provide adequate room size and seating as well as training materials for all that attend.

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Metro East Outreach Training Seminar

From: the Illinois EPA Repair Industry Outreach Team

Be sure to check the schedule in this newsletter for the Mass Airflow and Fuel Trim diagnostics seminar .

Dave Alder & Scot Manna at the registration table in Collinsville on April 28th for the Mass Airflow and Fuel Trim Diagnostics seminar.

Enthusiastic group of technicians from Metro East learning about the importance of mass airflow and fuel trims on OBD vehicles.

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2010 Seminar Schedule

All seminars are from 6 pm – 10 pm on dates below.
They are sponsored by the Illinois EPA for the repair industry, and they are free!

2010 Complete Seminar Schedule Registration

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Location

NORTH | SOUTH | EAST | WEST | METRO EAST

OBD Code Repair Using Labscopes

This seminar is devoted to helping technicians develop a plan for successfully repairing OBD emission failures using labscope testing strategies. OBD testing will be reviewed and actual failure case studies will be looked at to help understand the test capabilities of scopes and probes. Using computerized information systems and code charts will be discussed to make diagnosing OBD code problems easier.

Presented by: Scot Manna

ID	Date	Location
M704	August 25, Wednesday	Truman College

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OBD Repairs Using Scan Tools

This seminar will show repair technicians the capabilities and enhanced functions of a variety of aftermarket and factory scan tools for system testing and OBD vehicle repair. Emphasis will be placed on bi-directional controls for testing and diagnosis found in many of the scan tools available today. Graphing, scan data analysis, and testing strategies will be discussed. The goal is to get the most from these tools and shorten diagnostic times. Actual vehicle case studies will be shown to illustrate these points.

Presented by: Scot Manna

ID	Date	Location
M804	August 26, Thursday	Truman College

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Communication Protocol Testing for OBD Failures

This seminar will review proper testing techniques for communication issues with the PCM and various modules as it relates to OBD failures. The communication topology that will be discussed will focus on GM, Ford, and Chrysler systems. This is a "must attend seminar" for serious OBD repair technicians.

Presented by: Ken Zanders

ID	Date	Location
Z504	September 8, Wednesday	Prairie State College

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Diagnostic Techniques for OBD Failures

This seminar will focus on the use of OBD scan data, freeze frame, and failure records as a means to a successful OBD repair. The Illinois "Dashboard" website will also be included in the diagnostic process. The overall goal of this presentation is to emphasize efficiency in testing and repair techniques for OBD failures.

Presented by: Ken Zanders

ID	Date	Location
Z204	June 9, Wednesday	Technology Center of DuPage

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Using Mode $06 Data for OBD Diagnosis and Repair (NEW)

Monitors are the key to OBD emissions testing success. Mode $06 displays the monitor's results beyond a simple pass or fail. Using Mode $06 data can expedite some emissions repairs and can even make diagnosis of some readiness rejects possible. This class starts with a brief overview of Mode $06 data and how to decipher its meanings. Time will be spent on the do’s and don’ts including the grey areas of invalid data. Many actual vehicle case studies will be used to illustrate the practical applications of using Mode $06 data for successful OBD diagnosis and repair. Different scan tools and information resources will also be discussed.

Presented by: Scott Shotton

ID	Date	Location
S905	August 3, Tuesday	State of Illinois Complex, Collinsville
S906	August 10, Tuesday	Morton College
S907	September 14, Tuesday	Technology Center of DuPage
S908	October 19, Tuesday	Joliet Junior College

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Mass Airflow and Fuel Trim Diagnostics (NEW)

This seminar will help the driveability and emission technician make accurate decisions regarding diagnosing Mass Airflow sensor problems and fuel trim issues. A three-step procedure for testing Mass Airflow sensors will be illustrated. Fuel trim operation and strategies will be discussed as well as using fuel trim values to help diagnose driveability problems. Vehicle repair case studies will be used to enhance understanding.

Presented by: Scot Manna

ID	Date	Location
M604	June 17, Thursday	Kennedy-King College
M605	September 16, Thursday	Joliet Junior College
M606	September 21, Tuesday	Morton College
M607	September 23, Thursday	Moraine Valley Community College

M608	October 13, Wednesday	Lake County High School Tech Campus
M609	November 15, Monday	Technology Center of DuPage
M610	December 13, Monday	Prairie State College

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Advanced Communication Protocol Testing for OBD Failures (NEW)

This seminar will take a more in-depth look into communication issues. Case studies will be reviewed with a strong emphasis on labscope and advanced techniques leading to repair. This class was designed for the serious emission and driveability specialists.

Presented by: Ken Zanders

ID	Date	Location
Z101	June 7, Monday	State of Illinois Complex, Collinsville
Z102	August 2, Monday	Oakton Community College
Z103	August 5, Thursday	Prairie State College
Z104	September 9, Thursday	Lake County High School Tech Campus
Z105	October 4, Monday	Kennedy-King College
Z106	November 8, Monday	Truman College
Z107	November 9, Tuesday	Morton College
Z108	December 6, Monday	Moraine Valley Community College
Z109	December 8, Wednesday	Technology Center of DuPage
Z110	December 9, Thursday	Joliet Junior College

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Four Wire Air:Fuel Sensor Diagnostics (NEW)

Over the last ten years, four wire air:fuel sensors have slowly started to replace oxygen sensors. While these sensors look similar to a conventional oxygen sensor, operation and testing techniques are significantly different. This class will discuss operation and testing of air:fuel sensors used by Toyota, Nissan, Honda, and Subaru. The class will discuss in detail air:fuel sensor operation and air:fuel sensor testing. Testing techniques will include the use of a labscope, scan tool (fuel trims and rear oxygen sensor), and a gas analyzer.

Presented by: John Thornton

ID	Date	Location
T102	September 2, Thursday	McHenry County College
T103	October 7, Thursday	Morton College
T104	November 4, Thursday	Moraine Valley Community College
T105	December 2, Thursday	Oakton Community College

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Articles Needed for eAir Repair

From: the Illinois EPA Repair Industry Outreach Team

We are always looking for short articles of interest for eAir Repair. Many of you have gathered information for successful emissions repairs. It is time to share those tips with your fellow technicians. Please help us out by writing a brief story (a couple of paragraphs) about your success or fix.

Those tips can be e-mailed to epa.repair.outreach@illinois.gov.

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