eAir REPAIR

July 2009 edition

In this issue

Rejects Monitors & Mode 06

By: Scott Shotton from The Driveability Guys

Readiness rejects account for a significant portion of emission test failures in the Illinois vehicle emissions testing program. It is important to understand that the testing program is based on legislation that mandates certain functions to be monitored by the PCM. Yes, the PCM of any given vehicle controls whether a vehicle passes or fails. So, doesn't it make sense to know how that PCM works? Let's educate ourselves and use this system to our advantage.

Let me pose some questions to you… If you could see what level your child was performing at in a math class opposed to a simple pass or fail, would that information be an asset? In the same sense, would knowing what level a vehicle component or system is operating at also be valuable? Not just a pass or fail? Could this aid your diagnostics? To illustrate my point, here is an example: a customer brings a 1996 Ford Taurus in for an emissions failure. The code responsible for the failure is a P0420, 'catalyst efficiency below threshold bank 1.' To make matters more complex, the MIL is not commanded on when the car gets to you. So what do you do? Bolt on a new cat? What leg do you have to stand on that justifies catalyst replacement if the MIL went off? Mode $06 can give you that leg to stand on. The next image is the Mode $06 data for both converters on this vehicle.

Rear to front Switch Ratio Bank 1	10	11	<= 0.66:1	0.56:1
Rear to front Switch Ratio Bank 2	10	21	<= 0.66:1	0.39:1

Without knowing what these numbers technically mean, we can still make a judgment. Both converters need to score a value less than or equal to 0.66:1, as is stated by the second column from the right. The bank 2 catalyst scores a 39 (far right column), well within the passing limits. Bank 1 on the other hand scores a 56. Would it be safe to say that the catalyst for bank 2 has degraded to the point that it could result in a MIL command occasionally? Would catalyst replacement be justified in this situation? Do you have your leg? Imagine the size of your leg if you knew what these numbers mean.

To summarize, the OBD system performs tests called monitors: If a monitor fails, a code is set. In the case of this Taurus, the bank 2 catalytic converter marginally passed the last time the monitor ran. But is a "D" in math class really acceptable? Respectively, is a "D" for catalyst efficiency acceptable? In the case of monitors, Mode $06 is the technicians' eye regarding the results beyond pass or fail. Understanding it's advantages and downfalls can help to move a technician, or shop, ahead of the diagnostic curve.

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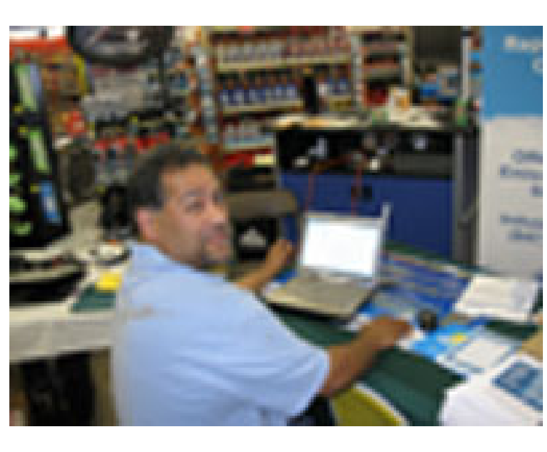
Join us at the Tool & Equipment Show

From: the Illinois EPA Repair Industry Outreach Team



Repair Industry Outreach attended the Tool & Equipment Show held June 18th at Pep Express Parts in Chicago. Repair Shops from the northwest side of Chicago had the opportunity to sign up on our website, the Dashboard, and review all it has to offer. Many shops and technicians took advantage of this opportunity and signed up for the FREE seminars.

Repair Industry Outreach will be at the next Tool & Equipment Show at Morton College on July 30th from noon to 6 PM, and at the Orland Park Civic Center on September 24th from noon to 6 PM. If you would like a personal demonstration of the many uses of the Dashboard website, please plan on visiting our booth. For more details, please call Outreach at (847) 758-3434 or the show's organizer, Mike Chuinard, at (630) 273-1161.

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The Chicago Automotive Networking (C.A.N.) Conference

From: Automotive Service Association of Illinois

ASA is hosting the Chicago Area Networking (CAN) Conference on October 17th and 18th in Rosemont, Illinois. A variety of topics will be covered for both technicians and shop managers.

For for details and registration information, **download the event flyer**.

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1998 Blazer monitor issue fixed

By: Bob Haines from Bob's Garage Inc.

I thought I would share this one with the group. A couple of weeks ago, a 1998 Blazer came in that had been rejected seven times for readiness. It was the usual story; the vehicle had been to a few shops, some parts had been installed, yet it never got any better. It only set the O2 monitor. After seven official rejects (there were many more due to no repair forms filled out etc.), there was only one common factor, the O2 monitor was the only one ready.

I knew that I had an enabling criteria issue, so I checked the usual suspects: misfire, thermostat operation, fuel trim issues, IAT and ECT synch for cold starts, etc. Nothing was coming up as an issue, so it was time to check each sensor down the list. Immediately I noticed the KOEO MAP values were wrong. The MAP read 67 kPa . This was an impossible KOEO value, it should have read 100 kPa.

Running, the MAP was only slightly off at idle at 41 kPa which should have been around 33-36 kPa depending on conditions. Baro was dead on at 100 kPa, so I had to wonder if I had an intermittently inaccurate MAP sensor. I did a few reference voltage and ground tests and determined the MAP sensor had an in-range failure.

A few minutes later I had a new Delco MAP sensor installed, I checked it and all was well. I decided to run the "service bay EVAP test" on the Tech2 to get the EVAP monitor ready. (By the way, Snap-on has adapted this test now for most GMs on the latest update.) I thought I was home free. The test began to run until I got the error message "fuel tank vacuum too high-test aborted." What? Stuck vent valve? Hmm...

Turns out there was one more problem. The FTP sensor was stuck at -13.98" H2O. Now I had to pull the tank down? In this case, you only have to lower the tank to gain access to the FTP sensor. With as many GM fuel pumps that we replace, there are always a few FTP sensors around. So I unplugged the old FTP and plugged in a different FTP sensor, which read exactly the same false values. With the harness disconnected, the FTP was 7" H2O. I had a 5 volt reference at the harness connector so I grounded the sensor ground and BINGO! The FTP sensor value was a perfect 0" H2O.

Somewhere in the harness the FTP sensor had lost its sensor ground, so instead of wasting valuable time and money, I just 'teed' in the FTP ground to the fuel level sensor ground which was just a couple of inches away and soldered with a soldering pen (no flame!) due to the proximity of the fuel tank fumes. This gave me enough time to cool the engine so I had a cold start. Within one minute of starting the engine, the O2 heater monitor was ready. Great!

I shut the key off and set up for the service bay EVAP test, which ran the EVAP monitor with no codes. At this point, it was ready for the emissions test because the O2 monitor was already set. Just for fun, I took the long way to the test station and set the CAT and EGR monitors. I like to run all the monitors if possible just to avoid future problems with customers.

I hope that this may help some techs out there who get stuck on a monitor issue involving in-range failures of sensors that DO NOT set codes but keep monitors from running!

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Repair Data Online

From: the Illinois EPA Repair Industry Outreach Team

How many people in your shop are authorized to enter the repair data?

Many shops have made it their policy to have only one person enter the repair data online, but what happens when that person is out of the office sick or on vacation? It may not be a bad idea to have more than one person with the authorization to enter repair data.

How do I add additional names?

Just email Outreach at epa.repair.outreach@illinois.gov. with the name of that additional person(s), and we will make that authorization change for your shop.

How can I tell who has entered repair data online?

From the example below, you will notice on your shop's Grade Details in the "Repaired By" column, the technician's ID is noted..

Current Report- Repairs From 1/1/2009 To 6/30/2009

Grade Details

A=93-100%
B=84-92%
C=75-83%

	ShopId	PhoneNumber	Garage Name	Address	City	State	ZipCode	Successful Repairs	Total Repairs	Repaired "Yes"	Repaired "No"	SuccessRate %	Grade
⊟	RP0000	(847) 000-0000	X-Auto Services	227 E Road	Arlington Heights	IL	60004	13	13	13	0	100	A

LicensePlate	Vin	Make	ModelYear	VehicleModel	RepairsDone?	TestType	VirNumber	StationID	RepairedDate	TestDate	RepairedBy	OverallResult
A390828	2T1BR12E0YC335807	TOYT	2000	UVL	YES	OBDII	V070139438384	7	JUN/17/2009	JUN/18/2009	RT001	PASS
BSL018	1ZWHT61L9X5757748	MERC	1999	CU6	YES	OBDII	V080436770439	8	MAY/18/2009	MAY/18/2009	RT001	PASS
HLU326	1ZWFT61L6X5664290	MERC	1999	CU6	YES	OBDII	V080335564875	8	MAY/04/2009	MAY/04/2009	RT001	PASS
Y106179	3N1BB51D41L121865	NISS	2001	SSE	YES	OBDII	V070335555057	7	MAY/04/2009	MAY/04/2009	RT001	PASS
BEACON	1G6KF57983U186508	CADI	2003	D/T	YES	OBDII	V080434077026	8	APR/17/2009	APR/17/2009	RT001	PASS
H339580	1C3EL55R25N658208	CHRY	2005	STO	YES	OBDII	V080430464905	8	MAR/06/2009	MAR/06/2009	RT001	PASS
87246R-B	1FTYR10V8XPA38667	FORD	1999	RNG	YES	OBDII	V080330361502	8	MAR/05/2009	MAR/05/2009	RT000	PASS
8482971	1MELM6244VH633449	MERC	1997	X73	YES	OBDII	V080433552826	8	MAR/03/2009	APR/11/2009	RT001	PASS
WAX924	2G1WH55K4Y9158149	CHEV	2000	IPL	YES	OBDII	V080227441130	8	FEB/04/2009	JAN/30/2009	RT001	PASS
5718237	9BWDE61J444021175	VOLK	2004	GTI	YES	OBDII	V080427445566	8	JAN/30/2009	JAN/30/2009	RT001	PASS
9097013	1HGCG16551A005970	HOND	2001	UEX	YES	OBDII	V070126744053	7	JAN/22/2009	JAN/22/2009	RT000	PASS
T771367	JTDBT123410112976	TOYT	2001	ECH	YES	OBDII	V040326586723	4	JAN/20/2009	JAN/20/2009	RT001	PASS
2890130	1FAFP53S8XA109235	FORD	1999	SCS	YES	OBDII	V070426833522	7	JAN/19/2009	JAN/23/2009	RT001	PASS

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August 2009 Seminar Schedule

All Seminars are from 6-10 pm on dates below.

They are sponsored by the Illinois EPA for the repair industry and they are free!

- 2009 Complete Seminar Schedule

Diagnostic Techniques for OBD Failures

<table>
<tr><td colspan="3">This seminar will focus on the use of OBD II 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.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>K104</td><td>Aug 3, Mon</td><td>College of DuPage</td></tr>
</table>

Communication Protocol Testing for OBD Failures

<table>
<tr><td colspan="3">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.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>K202</td><td>Aug 4, Tues</td><td>Moraine Valley Community College</td></tr>
</table>

OBD Code Repair Using Lab Scopes

<table>
<tr><td colspan="3">This seminar is devoted to helping technicians develop a plan for successfully repairing OBD emission failures using labscope testing strategies. OBDII 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.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>S101</td><td>Aug 10, Mon</td><td>Collinsville</td></tr>
</table>

OBD Repairs Using Scan Tools

<table>
<tr><td colspan="3">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.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>S201</td><td>Aug 11, Tues</td><td>Collinsville</td></tr>
</table>

Waveform Analysis

<table>
<tr><td colspan="3">The emphasis of this seminar is on real world application of labscopes and graphing scan tools for driveability diagnostics. Discussion topics will include scope features that aid diagnosis, waveform capture and storage techniques, graphing scan tool and scope analysis case studies, and a live demonstration using PowerPoint to build a case study. Creating repair files using PowerPoint is one of the best ways to build a repair database for later review or for in-shop technician training.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>S502</td><td>Aug 13, Thur</td><td>Lake County HS Technology Campus</td></tr>
<tr><td>S503</td><td>Aug 27, Thur</td><td>Prairie State College</td></tr>
</table>

Readiness Monitor Challenges

<table>
<tr><td colspan="3">This seminar will address the growing problem of OBD emissions test rejects due to monitor status being "not ready." The new changes in the testing program will make first retest rejects count against a shop's Repair Effective Index (REI), so making sure monitors run to completion is critical. Case studies of vehicles with difficult to set monitors will be studied. A strategy for addressing vehicles that won't run monitors will be discussed along with using scan tools and Mode 6 to help determine a solution to this often challenging problem.</td></tr>
<tr><th>ID</th><th>Date</th><th>Location</th></tr>
<tr><td>S405</td><td>Aug 18, Tues</td><td>Universal Technical Institute</td></tr>
</table>

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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. We all have information and tips on successful emissions repairs. It is time to share them with your fellow technicians. Please help us all out by writing a brief story (a couple of paragraphs) about your success or fix. Don't worry about grammar or punctuation.

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

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