



INSPECTION UPDATE

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Winter 2016

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Inspection Update is a publication produced by Massachusetts Vehicle Check; a joint program of the Massachusetts Department of Environmental Protection (MassDEP), the Registry of Motor Vehicles (RMV) and Parsons Environment and Infrastructure Group, Inc.

Governor Baker Signs Legislation Supporting Innovative Transportation Options

Includes strongest state background check system in the nation for Uber, Lyft, Sidecar drivers

In August 2016, Governor Charlie Baker signed bipartisan legislation creating a modern statewide regulatory framework for transportation network companies (TNCs). The new legislation prioritizes public safety and recognizes Massachusetts' role as a leader in transportation innovation.

House Bill 4570, *An Act regulating transportation network companies* (<https://malegislature.gov/Bills/189/House/H4570>) includes support for transparent pricing, properly marked and inspected vehicles, clear insurance standards, authorization of service at Boston Logan International Airport and the Boston Convention and Exhibition Center (BCEC), and the strongest background check requirements in the nation.



"I am pleased to sign bipartisan legislation to ensure Massachusetts remains a leader for innovative new technologies, with safe and diverse transportation options and opportunities for hardworking individuals to earn a living," said Governor Charlie Baker. "This regulatory framework includes many of our own proposals to embrace disruptive technology and prioritize public safety to give consumers safe and reliable travel choices."

The new law gives the Massachusetts Department of Public Utilities (DPU) regulatory authority over TNCs, establishes minimum disqualifying offenses for drivers, and requires companies to maintain active rosters of their drivers. The law also stipulates that drivers must undergo a full state Criminal Offender Record Information (CORI) background check, including sex offender registry status, and a bi-annual national commercial background check conducted by the TNC. The legislation further closes existing insurance coverage gaps by setting adequate insurance liability and coverage requirements for TNCs and their drivers, including a guaranteed \$1 million minimum coverage as soon as a TNC driver accepts a request for a ride.

Under the new law, drivers for ride-hailing services must have their vehicles inspected through a mechanism to be determined by state officials and law enforcement. TNC drivers will have to put decals on their cars identifying them as ride-sharing drivers, although they will not need to get the commercial license plates required of taxis. TNC drivers will also have to pay higher commercial toll rates while transporting riders.

The law requires TNC drivers to accommodate riders with special needs, without additional charge. It also requires them to provide "clear and conspicuous transportation fare estimates" to customers and outlines the process TNCs must follow for keeping incident records and reporting these incidents to the relevant authorities.

The law does not restrict TNC services from picking up customers at Logan Airport and the BCEC. That decision will be up to Massport, the state agency that runs the airport and

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New Program Changes Beginning January 1, 2017

► Windshield Sticker Changes

- Green 2017 Vehicle Information Reports (VIR) and windshield stickers began shipping to stations in early December 2016.
- The first shipment will provide enough supplies to cover your station's anticipated vehicle inspection needs for approximately three months. Your station will automatically receive additional sticker shipments when your inventory indicates your station is down to its final book of stickers.
- If your station did not receive the new sticker shipment by December 19 or you have questions about the new green 2017 stickers, contact the Technical Help Desk at 877-834-4677.
- Keep all new stickers in their unopened, shrink-wrapped packaging and in a secure location until they are needed.
- Always load the workstation with the lowest sticker book number.
- Please set aside all unused orange 2016 stickers in a secure location at year's end. The Massachusetts Department of Transportation Registry of Motor Vehicles Division will come by to collect them.

► Program Changes

Effective January 1, 2017, all 2002 model year light-duty vehicles are exempt from the on-board diagnostics (OBD) emissions testing requirement. However, these vehicles are still subject to annual safety inspections. In addition, all 2002 model year diesel-powered vehicles over 10,000 pounds gross vehicle weight rating (GVWR) are still subject to the opacity emissions inspection requirement.

Also beginning in 2017, the Massachusetts Vehicle Check emissions waiver and economic hardship repair extension minimums increase to the following:

Vehicle Age	Emissions Waiver Spending Minimum	Economic Hardship Repair Extension Estimate Minimum
Five model years old or newer	\$880	\$1,320
Six to 10 model years old	\$780	\$1,170
Greater than 10 model years old	\$680	\$1,020

The Year in Review: October 1, 2015-September 30, 2016

October 2016 marked the eight-year anniversary of the Massachusetts Vehicle Check program. Congratulations to all who contributed to another successful year! The following is a summary of program statistics* from Year Eight:

Number of vehicle inspections.....	5,226,642
Number of inspectors receiving initial training	1,610
Number of inspectors re-certified.....	3,995
Number of active Inspection Stations (excluding Motorcycle-only stations).....	1,763
Number of active Registered Emissions Repair Shops.....	150
Number of Motorist Hotline calls.....	9,998
Number of Technical Helpdesk calls.....	24,139
Number of registered vehicles in Massachusetts	5.6 million
Average age of vehicles in Massachusetts.....	9.17 years

Communities with the most registered vehicles:

1. Boston	342,247
2. Worcester	117,977
3. Springfield.....	96,313

Communities with fewest registered vehicles:

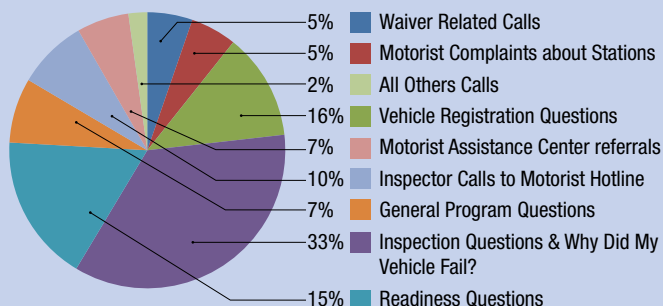
1. Gosnold	49
2. Monroe.....	157
3. Mount Washington	211

Communities with oldest average vehicles:

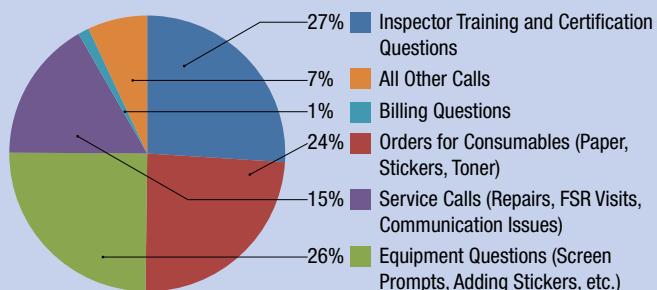
1. Aquinnah.....	14.18 yrs
2. Chilmark.....	14.58 yrs
3. Oak Bluffs.....	13.83 yrs
4. Nantucket.....	13.74 yrs

*Statistics as of September 30, 2016

Motorist Hotline Calls:



Technical Helpdesk Calls:



Inspection Procedure Reminders

► Workstation Printer Maintenance Reminders

Winter Reminders

The environment in most inspection stations can be too cold during the peak times in winter. The recommended operating environment for the workstation printer is between 50 and 89 degrees Fahrenheit (°F) and 20 percent to 80 percent non-condensing humidity.

If your station's inspection bay is not adequately heated or the workstation is near a garage bay door, then your station will likely experience problems due to moisture and temperature. Every time the bay door opens, the mixing of warm bay air and cold outside air can cause condensing moisture. Furthermore, the workstation printer will not perform as efficiently if the shop bay temperature falls below 45 °F. To prevent these problems, please follow these suggestions:

- Due to winter-time sub-freezing cold air temperatures, especially overnight, please allow time for the workstation components to warm up after you arrive in the morning and have turned the inspection bay's heat on.
- Before conducting your first inspection of the day, open the workstation cabinet door and allow heated air to circulate inside the cabinet to warm the printer.

Printer Replacement Reminders

If a service call related to poor printer performance results in a decision to ship a replacement printer, these Lexmark and Okidata printers are shipped with the toner cartridge/photoconductor kit pre-installed. If a service call related to poor printer performance results in a decision to ship a replacement toner cartridge or photoconductor, these parts are shipped separately.

All inspection stations that receive a printer replacement should follow the instructions provided with the replacement printer. Please be sure to remove the toner cartridge/photoconductor assembly from its original printer (the one being returned to SGS Testcom) for use in the newly received replacement printer. Failure to remove the toner cartridge/photoconductor assembly from its original printer could result in residual ink being scattered inside the original printer during shipment, and result in a damaged printer invoice.

Note: Before calling the Technical Help Desk for printer service, stations should verify whether the toner or photoconductor warning lights are on. Please remember to inform the Hotline staff if either the toner, photoconductor or both lights are on, so that if a new toner cartridge and/or photoconductor is needed, it is ordered and delivered for use with the replacement printer.

► Get Local Approval, Notify MassDEP before Heating with Waste Oil

Waste oil is combustible and may pose a fire hazard if not handled properly. It also can be contaminated with

heavy metals, gasoline, chlorinated solvents and other toxics, which is why the Massachusetts Department of Environmental Protection (MassDEP) enforces specific handling, storage, transportation, recycling and disposal requirements. If you are planning to install a space heater that burns waste oil in your business, be sure to choose equipment that meets MassDEP standards and notify the agency before you begin using the system. You will also need to obtain local fire department approval to store waste oil fuel and comply with MassDEP rules for handling it. See the MassDEP fact sheet at <http://www.mass.gov/eea/docs/dep/recycle/laws/spacehtr.pdf> for additional information.

Governor Baker Signs Legislation Supporting Innovative Transportation Options

(Continued from page 1)

has authority over the convention center. Currently, taxis that operate at Logan have to obtain badges and undergo additional background checks. Massport could impose those same requirements on TNC drivers. In addition, TNC drivers will still not be allowed to pick up passengers who flag them on the street.

The legislation also establishes a ride-for-hire task force consisting of state transportation, regulatory and public safety officials, legislators, local officials, law enforcement, accessibility advocates, and industry representatives to actively review ride-for-hire regulations and make recommendations to ensure consumer protection, public safety and economic competitiveness.

"The Department of Public Utilities looks forward to implementing one of the most comprehensive ride-for-hire laws in the country," said DPU Chairman Angela O'Connor. "The new division within the Department will support innovation and encourage the success of this cutting edge industry while ensuring a strong commitment to public safety."

Spokespeople for TNCs said they welcome the new regulations, which will ensure that their services are recognized as legitimate businesses.

The law establishes a one-year period to promulgate the new regulations, and to allow companies and drivers to gradually implement changes. This timeframe will ensure that there is no interruption in existing TNC services. To cover structural and oversight costs associated with the new law, DPU's new division will collect a 20 cent per ride assessment from TNCs. By statute, the assessment shall not be charged to the rider or driver, and will sunset after ten years. This assessment will provide support for state and local infrastructure projects, as well as furnish assistance through Mass Development to new technology and service improvements for small businesses operating in the taxi, livery or hackney industries.

Registered Repair Technician Updates

► Emissions Repair Success Ratings Reminder

For Registered Emissions Repair Shops that have entered repair data, the Third Quarter 2016 Emissions Repair Success Ratings are now available on Vehicle Inspection Reports and on the Repair Shop Locator, found at:

http://www.massvehiclecheck.state.ma.us/find_emissions_repair.php.

Each repair shop is responsible for entering its vehicle repair information for any given month *by the tenth day of the following month*. For more information about repair data entry, visit: http://www.massvehiclecheck.state.ma.us/inspection_repair_data_entry.php

► Fall 2016 Training Recap

In September 2016, the Massachusetts Vehicle Check program offered a Registered Repair Technician ongoing training module titled "SAE J2534 and OBD Re-flashing." Instructor Jerry "G" Truglia trained a total of 63 Registered Repair Technicians and six non-Registered Repair Technicians who attended the seminars at four Motorist Assistance Centers (MACs).

In November 2016, the Massachusetts Vehicle Check program offered a Registered Repair Technician ongoing training module titled "Domestic and Asian EVAP Systems." "G" Truglia trained a total of 46 Registered Repair Technicians and 5 non-Registered Repair Technicians at four Motorist Assistance Centers (MACs).

► 2017 Ongoing Training Courses

All current Registered Emissions Repair Technicians are required to attend one four-hour ongoing training seminar each year to maintain their status in the Massachusetts Vehicle Check Program. In the next six months, Parsons is offering two 2017 quarterly seminars from 6:00 PM to 10:00 PM at Motorist Assistance Centers (MACs) located across the state.

Course Name	Locations and Dates
Spring 2017 – Labscope Usage and Interpreting Waveforms	Medford MAC - March 13 Fall River MAC - March 14 Shrewsbury MAC - March 15 West Springfield MAC - March 16
Summer 2017 – OBD II Diagnostics and Troubleshooting	Braintree MAC - June 5 Pocasset MAC - June 6 Shrewsbury MAC - June 7 West Springfield MAC - June 8

All Training Seminars for Registered Repair Technicians are offered free of charge. The applications for these courses are available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html.

Should you need help registering or have any questions, please contact our Registered Repair Coordinator at (781) 794-2961. Space is limited to 35 technicians per class; please enroll as soon as possible to secure a place.

► OBD Diagnosis and Repair Training

On-Board Diagnostics (OBD) Diagnosis and Repair Training is designed for motor vehicle repair professionals who are seeking to become Massachusetts Registered Emissions Repair Technicians.

This class is open to all technicians, including those studying to take the A8 Engine Performance or L1 Advanced Engine Performance Specialist National Institute for Automotive Service Excellence (ASE) tests. In other words, you do not need to be ASE-certified repair technician to take this course.

OBD Diagnosis and Repair Training is a 28-hour course consisting of 20 hours of classroom lecture and eight hours of hands-on training and examination. The class provides foundational information concerning the diagnosis and repair of OBD-equipped vehicles. The course fee is \$600. The next class is being offered in April.

Course Name	Locations and Dates
April 2017 – Braintree MAC	Monday - Wednesday, April 10 - 12, 8:00 AM - 5:00 PM Thursday, April 13, 8:00 AM - 12:00 PM

The application for this course is available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html. If you have questions or need help signing up, please contact our Registered Repair Coordinator at (781) 794-2961.



In November 2016, Jerry "G" Truglia provided five repair technicians with lecture, quiz, and hands-on OBD diagnostics and repair training.

Inspection Update Profile

Raymond Moloney, Owner
Blackstone Automotive, Blackstone, MA



Blackstone Automotive's Service Manager Jaime LeMay and Owner Raymond Moloney.

Q: What services does Blackstone Automotive offer?

A: Blackstone Automotive is a Massachusetts Registered Emissions Repair Facility. We perform pre-check inspections for both Massachusetts and Rhode Island. Our National Institute for Automotive Service Excellence (ASE)-certified master technicians can perform a variety of auto repairs using high-quality aftermarket or original equipment parts.

Q: What are your roles and responsibilities as owner?

A: As an owner, I am on the floor in the shop all day. My daughter Jaime LeMay runs the office; she is both the service advisor and bookkeeper. Part of my job is to oversee my two technicians in the garage and perform computer diagnostic work.

Q: How many employees do you have? What are their roles?

A: I have three employees—two technicians, and one service advisor. My son, Michael Moloney, has been working with me as a technician for the past 20 years; he graduated from Blackstone Valley Regional Vocational High School. My other mechanic, Ricky Fluette, performs maintenance service and general repairs.

Q: How did you get your start in the automotive industry? What made you want to open your own business?

A: I attended Framingham's Joseph P. Keefe Technical High School where I was placed in a Co-op in my Junior year at RH Long Motor Sales, also in Framingham. I was there conducting repairs from 1978 to 1986. I had a lot of training through the dealership and General Motors, so I became an ASE Master Technician. After that I went into business for myself. We have been a family owned and operated business since 1986.

Q: Are you a Registered Repair Technician?

A: Yes.

Q: How has being a Registered Repair Technician (RRT) helped your business?

A: Being a RRT has helped us reinforce to our regular customers that we can properly complete their vehicle repairs. They have the confidence that they don't have to go back to the dealership. We show our customers that there are capable repair shops like ours that do just as good work, if not better than dealerships.

Q: Have you attended any of the ongoing training? How else do you keep up with changes in vehicle technology and emerging technologies in the Industry?

A: We have been a Registered Emissions Repair facility for the past 16 years, so I take part in the mandatory Massachusetts Vehicle Check trainings. However, most of my education takes place online through Advanced AutoParts classes and ACDelco.

Q: What are some of your most challenging vehicle repairs?

A: We have the most challenging repairs during intermittent failures or when a customer tries to fix their own vehicle. Often, someone else will have previously cleared the vehicle's check engine light before they bring it to us, or they put in an interior part that caused the problem or made it worse.

Q: What should motorists begin to do to ready their vehicles for winter?

A: We perform a winter seasonal safety check, which includes a check of vehicle batteries, tires, coolant, brakes, and wiper blades. This is part of a mail campaign that we send out, so we see about four or five customers a day bringing these mailers into the shop during late fall or early winter.

Q: How do you advertise your business?

A: In addition to sending mailers, we advertise in the local newspaper and word-of-mouth. A lot of customers we have are families, so I've watched a lot of them grow-up through the years from strollers to vehicles now. We also just recently redesigned our website and we keep it broad to help customers find information that they need and to answer questions. We are also currently working on a Facebook page.

Q: What is your business motto?

A: Perform honest work and repair it right the first time.



Motorist Assistance Center Repair Technician's Corner

► Graphing Idle Air Temperature Sensor Values Key to Diagnosing Readiness Trouble



2003 GMC Safari. Source: www.cars.com

This vehicle case study involves a 2003 GMC Safari van that a used car lot purchased at auction and then sold to a motorist. The van was unable to pass an inspection in Massachusetts because the vehicle did not meet the emission monitor readiness criteria. The vehicle had failed the On-Board Diagnostics (OBD) inspection off and on for years, because the catalyst and evaporative monitors were continually "Not Ready."

The vehicle previously failed with the Check Engine light commanded on and a stored P0113 Diagnostic Trouble Code (DTC). The P0113 DTC is defined as "Intake Air Temperature (IAT) Circuit - High Input." This DTC should set if an IAT was accidentally left unplugged, which is not an unusual situation when a vehicle is undergoing repairs. After three inspection attempts with an insufficient number of emission monitors ready over the course of more than two weeks, the vehicle was automatically referred to the Motorist Assistance Center (MAC).

The motorist had the MAC L-1 technician talk to the used car lot staff that had sold the vehicle. According to them, the Safari had recently had some repairs done, so they thought that the vehicle was ready for re-inspection and did not require further service. The MAC L-1 cleared the van's MAC referral flag and told the motorist to seek a re-inspection at their convenience. However, the van continued to have readiness problems.

Clearly, something was still wrong that was causing the vehicle's readiness monitors to not be ready. A General Motors (GM) vehicle of this vintage is pretty easy to set readiness for the catalyst monitor; however, the evaporative system monitor is generally too difficult to set to "Ready" at a MAC because motorists generally can't leave their vehicles at the MAC for extended lengths of time. But, the 2003 model year vehicle is allowed one monitor to be "Not Ready" for an inspection.

The motorist made an appointment so that a MAC L-1 could evaluate the vehicle. Before operating the Safari on the dyne, the L-1 checked for any current or pending codes in OBD II Generic mode and took a quick glance at the OBD data stream for any unusual data values that might prohibit monitors from running. The good news was that there were no pending DTCs, no irregular data stream values, and the engine's operating temperature was normal.

The L-1 drove the van on the dynamometer and performed the GM drive cycle, but was unable to set either the catalyst or evaporative monitors to "Ready," even though there were no pending DTCs. Using the enhanced portion of the OBD scan tool, the L-1 then observed that the vehicle had a stored historical DTC.

The vehicle did not exhibit any transmission issues on the dyne, but a P0894 transmission-related code was stored in the powertrain control module's (PCM) memory. Because historical DTCs can sometimes prevent monitors from running, the L-1 cleared the historical code and performed a complete drive cycle again. Both the Oxygen Sensor and Oxygen Sensor Heater monitors ran easily enough, but the Catalyst and Evaporative monitors were still "Not Ready."



The 2003 GMC Safari had a historical P0894 Transmission-Related Diagnostic Trouble Code stored in PCM memory.

The L-1 next reviewed the drive cycle and enabling criteria for the Catalyst monitor. The drive cycle is fairly simple: After operating at highway cruise speed of 55 miles per hour (mph) for at least five minutes with a fully warmed up engine, decelerate the vehicle to a stop (0 mph) and keep the vehicle engine at idle with the vehicle transmission in Drive for at least two minutes. Based on the L-1's past experience with GM vehicles, the Catalyst monitor will always set using this prescribed drive cycle; as soon as the vehicle is decelerated to idle and still in gear, the Catalyst monitor runs pretty quickly, within about 30 seconds or so.

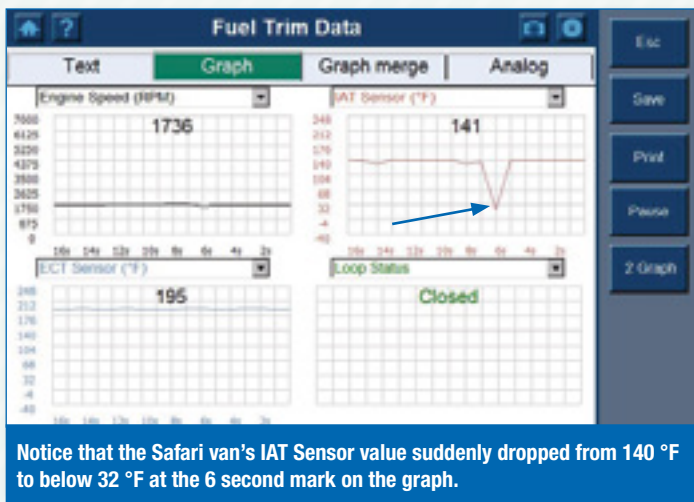
The enabling criteria for the Catalyst monitor to run are shown below.

Motorist Assistance Center Repair Technician's Corner

(Continued from page 6)

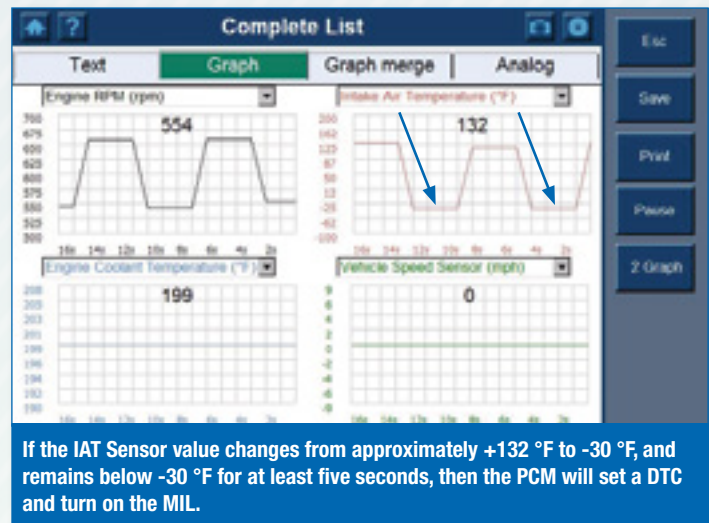
- The barometric pressure is greater than **74 kilopascals (kPa)**;
- Engine coolant is at operating temperature **71-120 °C (160-248 °F)**;
- The intake air temperature (IAT) is between **-15 to +75°C (5-167 °F)**;
- The engine is in Closed Loop Fuel Control;
- The engine has run for **6-8 minutes** off idle in order to initiate test; and
- The battery voltage is between: **11-18 volts**.

Knowing that he needed more real time information, the MAC L-1 decided to use his scan tool to graph certain parameters that might help determine if a problem is occurring. Remembering that that the vehicle had previously failed the OBD test with a P0113 IAT DTC, the L-1 decided to graph the IAT sensor's readings to see if there might be something going on with the sensor.



As he could see from the graph results, it looked like the IAT signal was dropping out intermittently. The dropout was happening so fast that it would be very unlikely to see the drop while watching the data stream; instead, only by graphing the data could you detect the dropped IAT sensor value. The L-1 then checked under the hood. He found a shiny new IAT sensor, but when he wiggled the connector and wiring while watching the scan tool, the scan tool showed that something was still amiss.

So the next question the L-1 had to answer was "Why, with such an erratic signal, am I not getting either a pending DTC or a command to turn on the malfunction indicator lamp (MIL)?" So he researched the P0113 DTC running and setting criteria and discovered the answer.



The enabling criteria for the IAT sensor test to run and set a DTC are shown below.

- DTCs P0101, P0102, P0103, P0116, P0117, P0118, P0125, P0128, P0502, P0503 are not set;
- The engine run time is more than **120 seconds**;
- The vehicle speed sensor (VSS) indicates that the vehicle speed is less than **11 km/h (7 mph)**;
- The engine coolant temperature (ECT) is more than **60 °C (140 °F)**;
- The mass airflow (MAF) value is less than **15 grams per second**; and
- The PCM detects that the IAT Sensor parameter is less than **-38°C (-36°F)** for more than **5 seconds**.

So with the IAT signal not staying below -36 °F for longer than five seconds, the PCM would not set a DTC or turn on the MIL. However, with the IAT sensor reading dropping below 5 °F, the Catalyst monitor would not run.

The used car lot staff were advised of the erratic IAT sensor readings and decided to pick up the van and provide a full refund to the motorist. The vehicle was then returned to the auction center. Perhaps one of you may read this article and get an easy diagnostic head start if this Safari rolls into your shop.

This case study did not result in the van with a passing sticker, or a happy ending for the motorist, although they were able to get their vehicle purchase refunded. However, this case demonstrates the importance of all repair technicians remembering to graph sensor data on diagnostic scan tools or labscopes in combination with research about monitor enabling criteria when diagnosing a stubborn sensor or readiness monitor problem.

MASSACHUSETTS**VEHICLE CHECK**

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Inspection Update**Massachusetts Vehicle Check Program**

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2017 Program Changes and Workstation Printer Maintenance Reminders Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance			Count
Non-Commercial Safety Inspections	1,300,436	4.2%	
Commercial Safety Inspections	45,229	5.0%	
7D Safety Inspections	571	1.9%	
OBD Emissions Inspections	1,024,621	5.0%	
Opacity Emissions Inspections	26,463	1.7%	
Emissions Waivers Issued	2		
Repair Hardship Extensions Issued	11		
Hotline and Training Statistics			Count
Motorist Calls Received	2,830		
Inspection Station Calls Received	7,110		
Initial Non-Comm. Inspectors Trained	267		
Initial Commercial Inspectors Trained	55		
Initial 7D Inspectors Trained	21		
Initial Motorcycle Inspectors Trained	4		
Enforcement Statistics			Count
Violations Issued to Inspectors			104
Violations Issued to Stations			122
Inspector Privileges Revoked			2
Inspector Required to Retrain			4
Inspectors Suspended			18
Stations Suspended			29
Penalties Assessed			\$0
Licensed Stations			Count
Class A Stations			1,167
Class B Stations			196
Class C Stations			29
Class D Stations			307
Class E Stations			9
Reg. Emissions Repair Shops			150

For period 7/1/2016 through 9/30/2016



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