

## A Newsletter for Fleet Emissions Inspection Facilities and Inspectors

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VEI Web site: [www.vei.azdeq.gov](http://www.vei.azdeq.gov)

### Editorial Desk

Welcome to the Fall 2010 "Fleets in Review." If you are reading this, you already realize that this newsletter is being distributed exclusively through the internet and posted on the ADEQ Web site. We hope that this is a convenient way for you to keep in touch with us. Currently, we have no other options, but, we would like to hear from you, if you like or dislike this method.

Budget is a real issue for you and for the State of Arizona right now. You may be aware that most state agencies are taking mandatory "furlough days". On these days our offices are closed. This affects the operation of the waiver lanes, our training classes and the dates of walk-in testing. ADEQ's contractor operated inspection stations, however, are not impacted by the furloughs and will remain open on those dates. They will maintain regular operating hours. We apologize for any inconvenience these changes are causing.

In this issue we conclude the ongoing review of the rules governing the Vehicle Emissions Program.

Previous issues of "Fleets in Review" are available online at [www.azdeq.gov/environ/air/vei/fleet.html](http://www.azdeq.gov/environ/air/vei/fleet.html).

### The Rules Corner

*This is a continuing discussion of the rules governing vehicle emissions inspections. How do we get these rules in the first place? Who enforces them? Who must follow them? We hope to answer these and other questions about the Arizona Administrative Code (AAC) in this column. Readers may look at the rules online or purchase a copy of them by going to the Secretary of State Web site: [www.azsos.gov](http://www.azsos.gov).*

In this issue we will conclude our overview, beginning with R18-2-1027.

### R18-2-1023. 1027, Registration and Inspection of Emissions Analyzers and Opacity Meters.

- A. An auto repair facility may apply at no charge for registration of emissions analyzers (NDIR) and opacity meters. Fleet applicants must register analyzers as a part of the permit process.
- B. Analyzers shall be calibrated at least monthly. Opacity meters shall be calibrated prior to the first inspection in any month.
- C. A registered analyzer shall meet the requirements of R18-2-1006(F)(7)(a). Calibration shall be verified by a state inspector and shall meet the tolerances specified.
- D. Each analyzer or opacity meter shall be issued a unique registration number by the Department. An inspection and calibration log shall be maintained and made available to the state inspector.
- E. State inspectors shall tag registered analyzers which fail inspection. The analyzer shall not be used for official purposes until the tag has been removed by the state inspector or an emissions analyzer repair person certified by the Department. The tag shall contain the following information: Analyzer registration number, statement of reason for failure, date of failure, signature if inspector, details of repairs performed to clear the failure (by repair person), Values of gases used to clear analyzer, analyzer readings of test gases and repair person's certification number.
- F. Owners of registered analyzers or opacity meters shall notify Department within seven days of the loss of any certified inspector (resignation, termination, retirement etc.). If no certified inspector is employed, certificate of registration shall be revoked by the Department.

### R18-2-1028. Certification of Users of Registered analyzers and Analyzer Repair Persons.

- A. A person may be certified if:
  1. He completes an application to the Department.

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2. He demonstrates proficiency by a score of 80 percent or higher on a Department administered exam.
- B. Certification shall be for a period of one year and may be renewed by compliance with (A) above.
- C. The person shall notify the Department within 7 days of his retirement, resignation or termination.
- D. A person may be certified to repair and remove red tags from an analyzer, if:
  1. Application is made to the Department.
  2. He demonstrates proficiency by a score of 80 percent or better on a department administered exam.
- E. Certification shall be valid for one year, and may be renewed.
- F. Each person certified shall receive a unique and nontransferable certification number.
- G and H. The Department may suspend, revoke, or refuse to renew a certification for cause.

### **R18-2-1029. Vehicle Emissions Control Devices.**

Emission control devices installed by the vehicle manufacturer shall be in operating condition or replaced with equivalent OEM or aftermarket devices.

### **R18-2-1030. Visible Emissions; Mobile Sources**

- A. Excluding diesel powered or two stroke engine powered vehicles, a vehicle emitting any visible emissions for 10 consecutive seconds or more is "excessive."
- B. A diesel powered vehicle shall not exceed:
  1. 20 percent opacity for 10 consecutive seconds below 2,000 feet elevation.
  2. 30 percent opacity for 10 consecutive seconds above 2,000 feet and at or below 4,000 feet.
  3. 40 percent opacity for 10 consecutive seconds above 4,000 feet
- C. A vehicle that exceeds the standards in "B" above shall fail inspection under R18-2-1006.

### **R18-2-1031. Standards for Evaluating the Oxidation Efficiency of a Catalytic Converter**

- A. Vehicles requiring a catalytic converter (R18-2-1008) shall be tested using the following procedure (excluding idle only vehicles):
  1. Following an I/M inspection in a waiver lane, the vehicle shall remain on the dynamometer with engine idling and transmission in neutral. Vehicle must be at normal operating temperature.
  2. Test equipment shall remain at settings used for I/M test.
  - 3-4. With A/F sample tube inserted into tailpipe, inspector shall accelerate vehicle to 40 mph

(+/-2.5) and maintain speed for the duration of test.

5. During two minute stabilization period inspector shall monitor A/F analyzer to ensure that A/F is 14.0 or greater.
6. If 14.0 or greater inspector shall replace sample cone.
7. After stabilization, total HC and methane concentrations and A/F ratio shall be recorded for two minutes.
8. After sampling period, inspector shall disconnect and remove vehicle.
9. Mean total HC concentration shall be divided by mean methane concentration, to produce a ratio of total HC to methane. The ratio shall be applied to the formula: catalyst efficiency (%) =  $\frac{R}{100} + 100$
10. A vehicle passes if catalyst efficiency is 75 percent or greater.
11. Test result for a non-passing vehicle with a mean A/F equal to or less than 14.3 shall be inconclusive.
12. A vehicle fails if: A/F is greater than 14.3 and catalyst efficiency is less than 75 percent. Failing vehicle cannot be granted a waiver according to R18-2-1008.C.1.

- B.1. Description of the analytical equipment required to perform catalyst efficiency testing: Analyzer specifications, type of HC analyzer, Type of methane analyzer, A/F ratio determined by Universal Exhaust Gas Sensor.
- B.2. Analyzer Performance Verification and Calibration.

*(The details of R18-2-1031.B are not pertinent to the overview of the rules for our purposes)*

*R18-2-1031 is the last of the Arizona Administrative Code rules that we will cover in this discussion. We hope that this has been beneficial to you. If you wish to reference any of this discussion from past issues, please call up those issues on our Web site at: [azdeq.gov/enviro/air/vei/fleet.html](http://azdeq.gov/enviro/air/vei/fleet.html)*

### **The Controller Area Network**

"Controller Area Network" (CAN) is a serial bus system, originally developed for automotive applications in the early 1980s. CAN is a high-integrity serial data communications bus for real time applications. CAN operates at data rates of up to 1 megabit per second and has excellent error detection and confinement capabilities. CAN was originally developed by Bosch for use in cars, and is now being used in many other industrial automation and control applications. International standard = ISO-11898.

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CAN is now available from about 40 semiconductor manufacturers in hardware providing; the sending of a message; and the requesting of a message. The equivalent of the CAN protocol in human communication are the Latin characters (as used in our language). This means a CAN controller is comparable to a printer or a typewriter. CAN users still have to define the language/grammar and the words/vocabulary to communicate.

### Applications of the CAN protocol

The automotive industry uses CAN as the in-vehicle network (IVN) for: engine management, body electronics (like door and roof control, air conditioning, and lighting), as well as for entertainment control. The majority of the European carmakers use CAN based IVNs. American and the Far East passenger car manufacturers have also started implementing CAN based IVNs.

CAN networks used in engine management connect several electronic control units (ECUs). Most of the European automobile manufacturers have also installed CAN high-speed networks in their power-engine systems. In addition, most of the European passenger cars are equipped with CAN based multiplex systems connecting body electronic ECUs. These multiplex networks link door and roof control units as well as lighting control units and seat control units. Many of them use fault-tolerant transceivers compliant with ISO 11898-3. In North America, single-wire CAN networks are also used in body electronics. Some passenger cars implement a CAN based diagnostic interface, another application of CAN based networks in passenger cars is to connect infotainment devices (expect much more in this area).

### Questions & Answers

*In this column staff will answer recurring questions about emissions related problems and their solutions. We encourage you to submit your queries to VEI at (602) 771-3950 and ask for a technician. Questions of a common nature will also be addressed here.*

**Question:** . For government fleets, is it "Acquisition Date" or "In-Service Date" that determines when emission testing is due?

**Answer:** . The emissions testing "due-date" is determine by "Acquisition Date" (as in when the government entity took title to that vehicle) not the "In-Service Date," even if the vehicle was not put into service until months later.

**Question:** What is the cut-off GVWR for OBD vehicles?

**Answer:** A GVWR of 8,500 pounds or less is required for OBD tested vehicles. Diesels are not OBD tested, regardless of the GVWR.

*Below: Arnold's Auto Center, located at 870 W. Apache Trail, Apache Junction. Michael Coria is the fleet agent and vehicle emissions inspector. Congratulations Arnold's Auto Center for excellent compliance with vehicle emissions inspection regulations.*



# 2010 Emissions Class Schedule

NOVEMBER 2010	
Fleet	Dates
Gov/Fleet Shop and Dealer "CFD" and "CF" Licensing	2 - 4
Gov/Fleet Shop "FD" Licensing	*3 - 4
Tucson "CFD" Licensing	16 - 17
Holiday Office Closed	25
Furlough Day Office Closed	26
<b>ATTENTION! No Walk-in testing for the week of Nov. 22-26</b>	

DECEMBER 2010	
Fleet	Dates
Gov/Fleet Shop and Dealer "CFD" and "CF" Licensing	7 - 9
Gov/Fleet Shop "FD" Licensing	*8 - 9
Tucson "CFD" Licensing	14 - 15
Furlough Day Office Closed	23
Holidays Office Closed	24, 31
<b>ATTENTION! No Walk-in testing for the week of Dec. 20-24</b>	

# 2011 Emissions Class Schedule

JANUARY 2011	
Fleet	Dates
Gov/Fleet Shop "CFD" Licensing	4 - 6
Gov/Fleet Shop "CF" Licensing	4 - 5
Gov/Fleet Shop "FD" Licensing	*5 - 6
Dealer "CF" Licensing	11 - 12
Tucson-All Licensing Class	25 - 26
WALK-IN TESTING (Fridays)	7, 14, 21, 28
Holiday Office Closed	17

FEBRUARY 2011	
Fleet	Dates
Gov/Fleet Shop "CFD" Licensing	1 - 3
Gov/Fleet Shop "CF" Licensing	1 - 2
Gov/Fleet Shop "FD" Licensing	*2 - 3
Dealer "CF" Licensing	8 - 9
Tucson - No Classes	
WALK-IN TESTING (Fridays)	4, 11, 18, 25
Holiday Office Closed	21

MARCH 2011	
Fleet	Dates
Gov/Fleet Shop "CFD" Licensing	1 - 3
Gov/Fleet Shop "CF" Licensing	1 - 2
Gov/Fleet Shop "FD" Licensing	*2 - 3
Dealer "CF" Licensing	8 - 9
Tucson-All Licensing Class	22 - 23
WALK-IN TESTING (Fridays)	4, 11, 18, 25

APRIL 2011	
Fleet	Dates
Gov/Fleet Shop "CFD" Licensing	5 - 7
Gov/Fleet Shop "CF" Licensing	5 - 6
Gov/Fleet Shop "FD" Licensing	*6 - 7
Dealer "CF" Licensing	12 - 13
Tucson-All Licensing Class	26 - 27
WALK-IN TESTING (Fridays)	1, 8, 15, 22, 29

\* Strongly Recommended/Optional attendance for "FD" Licensing

\* NOTE: If attending the Wednesday-Thursday class for "FD" the start time for Wednesday class is 10 a.m.



Fleets in Review is a publication of



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Publication Number: N 10-03