THE
NEVADA CLEAN AIR BULLETIN

Department of Motor Vehicles

MANAGEMENT SERVICES
AND
PROGRAMS DIVISION

555 WRIGHT WAY

CARSON CITY NV 89711

1st Quarter 2004

A NEVADA I/M PROGRAM INFORMATIONAL NEWSLETTER

INSPECTOR TRAINING

Emission inspector training requirements are in the process of being updated. The updates will become effective on June 1, 2004. Training updates are necessary to ensure industry members receive the latest information on new vehicle technology and Nevada emission control regulations.

The new training updates will focus on vehicle on-board diagnostics (OBD II) and the Worldwide emission test analyzer. Emission program information developed by the Department of Motor Vehicles training staff is being distributed to all approved emission training providers. Training information is also available on the Department of Motor Vehicles website at http://www.dmvnv.com.

Effective July 1, 2004, the Approved Emission Inspector Class One written exams will include new questions concerning on-board diagnostics and exhaust emission testing procedures. On or after this date, a Class One applicant, prior to taking the examination must show proof that he/she has successfully completed approved Class One and emission regulation training courses. A minimum of 20 hours classroom and practical training is recommended.

Approved Class One emission inspectors may attend the Department of Motor Vehicles regulation renewal class and take the Class One renewal exam 90 days prior to their license expiration. The Class One Approved Inspector renewal exam is also being updated with new questions about on-board diagnostics and emission testing procedures.

Approved Class Two emission inspectors must attend additional training and pass a Class Two written exam over and above the Class One requirements. Two training and examination options are available. Approved Class Two emission inspectors can attend 12 hours of approved “Refresher Training”, then,

take and pass the Automotive Service Excellence L1 test or the Department of Motor Vehicle's Class Two written renewal exam. Or, approved Class Two emission inspectors can choose to attend 20 hours of approved "Update Training", and then, pass the exam administered by the training provider.

All Class One and Class Two exams require a minimum score of 80% to pass.

CLASS ONE TRAINING OUTLINE

1. Understanding Emissions
    (a) Hydrocarbons
    Chemical description / Causes of excessive HC emission
    (b) Carbon Monoxide
    Chemical description / Causes of excessive CO emission
    (c) Carbon Dioxide
    Chemical description / Use in determining Exhaust dilution/Significance of high or low CO_2 level
    (d) Oxygen
    Chemical description / Significance of high or low O_2 level
    (e) Oxides of Nitrogen
    Chemical description / Causes of excessive NOx emission

2. Emission Component Identification
    (a) Air Injection / Pump and pulse air / description and purpose
    (b) Catalytic Converters / Describe types and function
    (c) Exhaust Gas Recirculation / Describe components and purpose
    (d) Evaporative control / Describe components and purpose
    (e) Fuel inlet restrictor / fillpipe restrictor / Describe types and function

Please note: Training related to the emission component identification will, in addition to basic emission component identification, also include the latest types of emission devices, including:
Electronic air injection systems
Catalysts with fore and aft oxygen sensors found on OBDII vehicles
Electronic exhaust gas recirculation systems
Evaporative systems found on OBDII vehicles
Introduction to Controller Area Network (CAN) communication protocol

3. Accessing Emission Control Information
    (a) Abbreviations
    (b) Emission label location and information areas
    (c) Reference sources, types, applications, and usage

4. Assessing Emission Component Condition
    (a) What constitutes tampering.
    (b) What equipment is required.

(c) Engine family codes.
(d) Visible smoke.
(e) Vehicle preconditioning / warm up.

5. OBD II Testing
   (a) DLC connector / locations and function
   (b) MIL / locations and functions
   (c) Readiness codes
   (d) Monitors and drive cycles
   (e) On board computer theory, open and closed loop

6. Nevada 2000 Emission Analyzer Maintenance and Operation
   (a) Start-up
   (b) Status Screen
   (c) Maintenance and Troubleshooting
   (d) Printer
   (e) Gas Calibration
   (f) Leak Check
   (g) Changing Gas Bottles
   (h) Data File Refresh
   (i) Vehicle Inspection
   (j) Tach Signal
   (k) Practical Demonstrations
   (l) OBD II Testing
   (m) Reprint VIR
   (n) Training Mode
   (o) Vehicle Diagnostics
   (p) Station Manager Access

<u>CLASS TWO TRAINING OUTLINE</u>

1. Combustion / Compression
   (a) Air composition and temperature / pressure relationships
   (b) Static and dynamic vacuum and compression tests
   (c) Power balance / computerized relative compression tests
   (d) Effect of valve timing on compression and emission gases
   (e) Diagnosis of compression / combustion related emission problems

2. Electrical Theory
   (a) Electrical theory
   (b) Electronically controlled emission devices
   (c) Volt / ohm meters and scope applications
   (d) Identification and interpretation of circuit failures
   (e) Wiring diagrams as a diagnostic tool

3. Ignition systems
    (a) Spark production and distribution
    (b) Ignition systems and their effect on emissions
    (c) Spark timing control methods / knock sensors
    (d) Distributor-less / wireless ignition theory
    (e) No-start diagnosis
    (f) Primary / Secondary ignition system testing

4. Air / fuel & Emissions systems
    (a) Fuel characteristic / altitude and air fuel ratio
    (b) Carburetion principles and adjustments
    (c) Fuel injection operation, testing, diagnosis, and repair
    (d) 5 gas emissions theory HC, CO, CO2, NOx, and O2
    (e) Positive Crankcase ventilation and early fuel evaporation
    (f) Catalytic Converter theory, operation, and testing
    (g) NOx and Exhaust Gas recirculation theory, operation, and testing
    (h) Air Injection Systems operation and testing
    (i) Emissions label and vacuum diagrams

5. Computerized engine controls
    (a) Need for and benefits of computer control
    (b) On board computer theory open and closed loop
    (c) Operation and diagnosis of sensors and actuators
    (d) Computerized air, fuel, and spark controls
    (e) Interpretation of diagnostic trouble codes
    (f) Scanner diagnostics and scope interpretations

6. OBD II
    (a) MIL location, function and diagnosis
    (b) DLC location, function and diagnosis
    (c) DTCs, SAE J2012
    (d) Readiness codes
    (e) Monitors
    (f) Drive cycles and Trips
    (g) Enabling and Blocking conditions
    (h) 1 and 2 Trip faults
    (i) Pending and History codes
    (j) Freeze Frame
    (k) Reprogramming

A list of training facilities and their approved courses is available to all applicants. To obtain a copy, contact your local DMV Emissions Lab.

"CANS"

When OBDII was established in the mid 1990's, the vehicle manufacturers had a choice of four different types of communication protocol. These four communication protocols are J1850-PWM, J1850-VPW, ISO-9141 and ISO-14230. Such protocols were generally manufacturer proprietary and in the past had created some complications in repair, inspection and maintenance of motor vehicles. In the very near future, vehicle manufacturers will use one type of communication protocol called Controller Area Network (CAN). CAN will simplify the complexity of current engine management systems and provide for more accurate testing and maintenance of motor vehicles.

Controller Area Network (CAN) has been a popular method of computer protocol in other non-automotive related industries and is now starting to be used within the motor vehicle industry. Earlier OBDII systems typically use one central computer, which controlled every vehicle function. CAN is a distributed system which may consist of several computers on a single vehicle, each computer having its own area of responsibility. CAN only requires two wires run between each system. CAN is a high-speed data link that runs fifty times faster than the above mentioned protocols found on most OBDII vehicles in use today. The faster speed, combined with new data parameters defined for CAN, will give repair technicians the ability to see data much faster and achieve more accurate problem diagnosis. A few vehicle manufacturers have started using CAN for their 2003 and 2004 models. All vehicles must use CAN protocol by the 2008 model year.

The use of CAN by vehicle manufacturers has created a problem for emission programs testing OBDII vehicles with existing analysis equipment, including Nevada. The OBDII scanner boards in the existing NV2000 emission analyzers will not communicate with most CAN vehicles, due to the increased speed. Therefore, Nevada DMV needs to determine a course of direction, to make certain motorists will be able to obtain an emission test for their CAN equipped vehicles. The emission testing industry received a guaranteed life span of six years for the NV2000 emission analyzers. DMV hopes a mandatory upgrade to a new scanner board will not be implemented until at least sometime during 2007.

DMV staff is researching, as an interim measure, the feasibility of implementing a rollover from OBDII inspection to a tailpipe inspection whenever an emission inspector experiences a no-communication between a known CAN vehicle and NV2000 analyzer. DMV staff is checking with the USEPA to find out if such an interim measure would be acceptable for a limited period of time.

The Reno DMV emission technician staff has found that a few, but not all CAN vehicles, have been equipped with an interface, which will allow communication with current scanner boards. The Porsche Cayenne is one CAN model vehicle that can communicate with existing NV2000 scanner boards.

DMV will keep industry members updated on the progress for dealing with Controller Area Network issues within the Nevada Motor Vehicle Emission Inspection Program. A listing of CAN compliant vehicles can be found in this bulletin.

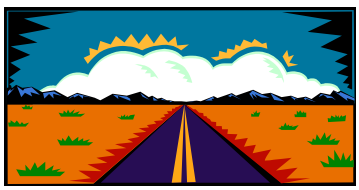
ELECTRONIC DATA TRANSMISSION SYSTEM

At a recent workshop held in Las Vegas to discuss draft language for a new regulation, a couple of station representatives remarked about the network transaction fee paid to MCI. These station representatives remarked that the "cost of MCI is breaking them" and that "long distance calling is down to three cents per minute". There is much, much more involved with the database network system than phone calls. The Nevada Department of Motor Vehicles would like to take this opportunity to explain some of what is provided for the $1.03 per call fee, which makes the program much easier for NVDMV, motorists, and station operators.

Alternate services rely upon real time transmission of data from emission station emission analyzers to the NVDMV vehicle registration database. Alternate services are the provisions where motorists can renew their vehicle registration through the Internet or telephone. Without having real time transmission of emission data from station emission analyzers to the DMV database, these features would not be available and the lines at the DMV would be much longer. And, for transmitting well over one million vehicle test records during 2003, the process was very efficient. There was no Vehicle Information Database (VID) downtime during 2003.

Licensing transactions of emission stations and emission inspectors are also handled through the MCI system. Before an inspection station can even test motor vehicles for emissions, very important information is entered into the database system by DMV staff and remotely sent to the emission station's analyzer through an initialization process. When an emission inspector receives their emissions license or transfers employers, their licensing information is sent real time to the place of work. And whenever NVDMV wants to send out program information to emission stations right away, the database network system provides the capability to send the ET Blasts you see on your emission analyzer's screen from time to time. The fee, additionally, pays for ongoing hardware and software maintenance, maintenance contracts, network and application monitoring, MCI and Worldwide application development, quality control test environments, station owner and DMV customer service contact center, and so on. Bottom line, it would take much longer to complete these tasks if the emission analyzers were not networked to a central database.

NVDMV is responsible for monitoring program success through reports that are sent to the USEPA and other air quality agencies. NVDMV uses approximately 30 different report applications to monitor program success. These applications were all developed by MCI. In addition to these current applications, MCI is required to develop new applications as requested by NVDMV. Currently, there are several new applications in the process of being developed, which will enhance NVDMV ability to more efficiently handle regulatory activities. Although quite comprehensive, sometimes these "canned reporting applications" cannot provide all of the information needed for DMV to adequately supply reports to other agencies. When additional reports are required, MCI has on staff data analysts that prepare and send "ad hoc" reports to NVDMV which are then distributed to the requesting agency.



Without the network system, emission stations would not be able to obtain their Vehicle Inspection Report (VIR) reports through the emission analyzers, called ACH (automated clearing house). This service is handled by MCI at no cost to emission stations.

Nevada's Emission Program is a medium size program. There are many states with bigger programs, many states with smaller programs. Bigger states, such as California, may have lower per call fees than here in Nevada. But the amount of personnel MCI has to employ to handle program issues is essentially the same for smaller programs as for bigger programs.

During 2001, a new statute was put into effect, which requires the electronic transmission fee to be specifically printed onto the VIR report. Since implementation of this statute, the fees shown on the VIR reports are itemized to show test cost, VIR cost, and electronic transmission cost.

Emission station profits come from the testing fees. The VIR fees and the electronic transmission fees received from motorist for each emission test are administrative fees required for program operations. At this time, the only option to collect the fees for the data network system is direct billing to emission stations. With regards to billing, many emission station operators have commented that they cannot understand MCI's monthly bill. The station operator comments, NVDMV received, have been passed along in a survey recently conducted for MCI by an independent research firm, so they can find out how to better serve their customers. Representatives for MCI have asked NVDMV to ask emission station operators what they would like to have shown on their monthly bill. If you have any ideas on billing please fax them to (775) 684-4563, Allen Nicholson, or mail to:

Attn: Allen Nicholson
Dept of Motor Vehicles
Management Services Division
555 Wright Way
Carson City, NV 89711-0900

NVDMV realizes the $1.03 per call fee increases the cost of emission testing for Nevada motorists. Although many services are obtained from the current network system, NVDMV staff members are currently in the process of conducting a feasibility study to determine future services and benefits that can be gained from the networking data system. The information obtained from this feasibility study is intended to assist with developing an improved networking system that will effectively serve all interested parties involved with the Nevada Motor Vehicle Emissions Program for many years to come.

ABNORMAL WORLDWIDE PURGE ISSUE

The DMV published an article in the previous Clean Air Bulletin about emission station owners who were experiencing an abnormal sequence of purging while inspecting vehicles with the NV2000 Worldwide emission analyzers. We are pleased to report the Northern Region Worldwide service technician has located the reason for the purge anomaly. Changing over to another Comm-Port corrects the purge anomaly from occurring.

By this time, most Worldwide analyzers have been changed over to the correct Comm-Port and the purge anomaly is no longer occurring. If your Worldwide analyzer is still experiencing this abnormal

purge, please contact service at (909) 599-6431 and speak with the Service Director about having the Comm-Port switched.

DIESEL AROUND THE WORLD

European counties have embraced diesel passenger vehicles as an effective means to improve fuel economy overall and to reduce greenhouse gas emissions associated with global climate change. Restrictive emissions regulations have prevented widespread diesel vehicle use in the United States. Sources predict that by 2006, nearly half of all cars driven in Europe will be diesel powered. Automakers operating in the U.S. have all but stopped selling diesel passenger vehicles, as federal regulations are based on diesel fuel's reputation as a dirty fuel. The decline in sales of diesel passenger vehicles in the U.S. continues despite the improvements in engine and fuel technology that has reduced harmful particulate matter emitted by diesel engines.

As reported in The Wall Street Journal, Mercedes-Benz will introduce a diesel sedan in the U. S., in 2004. The sedan will be a turbocharged version of its E class sedan and will be sold as a 2005 model year vehicle. The vehicle is reported to average 34 miles per gallon, which is a 20% improvement from the comparable gasoline version. The selling price has not been advertised as yet.

Some diesel powered cars are reported to get as much as 30% better fuel economy than gasoline powered vehicles. The downside has been diesel vehicles emit higher levels of smog causing pollutants.

Mercedes isn't the only automaker getting ready to market diesel vehicles in the U. S., as its corporate sister, Daimler-Chrysler, is tooling up to start selling diesel powered versions of the Jeep Liberty SUV.

INCENTIVES FOR DUAL FUELED VEHICLES EXTENDED FOR 4 YEARS

It has been reported the National Highway Traffic Safety Administration has extended the incentive plan for automakers to manufacture dual fuel vehicles until 2008. These vehicles are capable of operating on both alternative and conventional fuels.

Dual fueled vehicles have been a topic of criticism by many environmentalists and other groups because drivers of these vehicles, for the most part, fill them with conventional fuel. It is believed that the incentive extension will contribute to an increase in the use of ethanol, despite the lack of gasoline stations offering alternative fuels. The automakers of these vehicles receive more credits towards meeting Corporate Average Fuel Economy (CAFÉ) standards. The incentive is part of the Alternative Motor Fuels Act that was passed in 1988.

OBD CAN Equipped Vehicles 2003/2004 Model Years Revised October 14, 2003								
MDYR	MFRN	DIV	PNAME	SHAPE[(a)]	NCYL[(b)]	DISPLR	TRANY[(c)]	FULTYPE[(d)]
2003	Ford	Ford	Focus	1	4	2.3	E	1
2003	Ford	Ford	Focus	2	4	2.3	E	1
2003	Ford	Lincoln	LS	1	6	3.0	A	1
2003	Ford	Lincoln	LS	1	8	3.9	A	1
2003	Ford	Ford	Thunderbird	1	8	3.9	A	1
2003	Ford	Ford	F-250	3	8	6.0	E	3
2003	Ford	Ford	F-350	3	8	6.0	E	3
2003	Ford	Ford	Excursion	4	8	6.0	A	3
2003	General Motors	Saturn	ION	1	4	2.2	E	1
2003	Mazda Motor Corp.	Mazda	6	1	4	2.3	E	1
2003	Mazda Motor Corp.	Mazda	6	1	6	3.0	E	1
2003	Porsche	Porsche	Cayenne S	4	8	4.5	A	1
2003	Porsche	Porsche	Cayenne Turbo	4	8	4.5	A	1
2003	SAAB	SAAB	9-3	1	4	2.0	E	1
2004	Chrysler	Dodge	Durango	4	6	3.7	A	1
2004	Chrysler	Dodge	Durango	4	8	4.7	A	1
2004	Chrysler	Dodge	Durango	4	8	5.7	A	1
2004	Ford	Ford	Focus	1	4	2.3	E	1
2004	Ford	Ford	Focus	2	4	2.3	E	1
2004	Ford	Ford	Taurus	1	6	3.0	A	1
2004	Ford	Ford	Taurus	2	6	3.0	A	1
2004	Ford	Mercury	Sable	1	6	3.0	A	1
2004	Ford	Mercury	Sable	2	6	3.0	A	1
2004	Ford	Ford	Thunderbird	1	8	3.9	A	1
2004	Ford	Lincoln	LS	1	6	3.0	A	1
2004	Ford	Lincoln	LS	1	8	3.9	A	1
2004	Ford	Ford	Explorer	4	6	4.0	A	1
2004	Ford	Ford	Explorer	4	8	4.6	A	1
2004	Ford	Ford	F-150	3	8	4.6	A	1
2004	Ford	Ford	F-150	3	8	5.4	A	1
2004	Ford	Ford	E-250	6	8	6.0	A	3
2004	Ford	Ford	E-350	6	8	6.0	A	3
2004	Ford	Ford	F-250	3	8	6.0	E	3
2004	Ford	Ford	F-350	3	8	6.0	E	3
2004	Ford	Ford	Excursion	4	8	6.0	A	3
2004	General Motors	Saturn	ION	1	4	2.2	E	1
2004	General Motors	Cadillac	CTS	1	6	3.6	A	1
2004	General Motors	Cadillac	SRX	4	6	3.6	A	1
2004	General Motors	Cadillac	SRX	4	8	4.6	A	1
2004	General Motors	Buick	Rendezvous	4	6	3.6	A	1
2004	General Motors	Cadillac	XLR	1	8	4.6	A	1
2004	Mazda Motor Corp.	Mazda	6	1	4	2.3	E	1
2004	Mazda Motor Corp.	Mazda	6	1	6	3.0	E	1
2004	Mazda Motor Corp.	Mazda	6	2	4	2.3	E	1

2004	Mazda Motor Corp.	Mazda	6	2	6	3.0	E	1
2004	Mazda Motor Corp.	Mazda	3	1	4	2.0	E	1
2004	Mazda Motor Corp.	Mazda	3	1	4	2.3	E	1
2004	Mazda Motor Corp.	Mazda	RX-8	1	R	1.3	E	1
2004	SAAB	SAAB	9-3	1	4	2.0	E	1
2004	Toyota	Lexus	LS430	1	8	4.3	A	1
2004	Toyota	Toyota	Prius	1	4	1.5	A	1
2004	Volvo	Volvo	S40	1	5	2.4	A	1
2004	Volvo	Volvo	S40	1	5	2.5	A	1

(a) 1=sedan, 2=station wagon, 3=pickup, 4=sport/utility vehicle, 5=minivan, 6=full-size van

(b) R=rotary

(c) A=automatic, M=manual, E=either

(d) 1=Gasoline, 2=natural gas, 3=Diesel