SUMMARY OF BOARD ITEM

ITEM # 03-1-5:

Public Meeting to Update the Board on the Status of California's M17 SIP Strategy to Reduce Emissions from On-Road Heavy-Duty Diesel Vehicles In-Use

STAFF RECOMMENDATION:

This item is to update the Board on the status of California's M17 SIP Strategy to reduce emissions from on-road heavy-duty diesel vehicles in-use. Thus, no Board action is necessary.

DISCUSSION: Measure M17, of the 1994 Ozone State Implementation Plan, calls for exhaust emission reductions from heavy-duty diesel engines (HDDE) in order to attain the federal ozone ambient air quality standard.

> Currently, with the exception of testing for exhaust opacity, California does not have an inspection and maintenance program for heavy-duty diesel vehicles similar to the light-duty Smog Check program. ARB staff have been procuring, testing and repairing heavy-duty diesel trucks to determine if significant NOx reductions can be achieved from such a program. The results of the testing done to date and the conclusions that can be drawn will be presented by staff.

Also, there is no effective in-use program to ensure compliance with the HDDE emission standards throughout the useful life of the engine. ARB's existing in-use compliance regulations call for testing diesel engines on an engine dynamometer. Because of costs and other issues, very few heavy-duty diesel engines have been tested in-use so far. In 2000, the Board adopted an additional test procedure applicable to 2005 and later MY HDDEs that allows testing the engine on both a chassis dynamometer or with an onboard measurement system at a substantial cost savings. A manufacturer-run HDDE in-use compliance program would make use of these potential cost savings while providing ARB with more and better data than it could expect to obtain on its own.

In addition, staff will be developing heavy-duty onboard diagnostic (HD-OBD) requirements for heavyduty vehicles. The adopted 2007 HDDE emission standards will require the use of exhaust aftertreatment systems. Adopting HD-OBD requirements for heavy-duty vehicles will ensure that emission control systems operate throughout their useful life. When a malfunction occurs, the OBD system detects the malfunction, alerts the driver by illuminating a dashboard warning light, and stores diagnostic information that can be retrieved by repair technicians to identify the likely cause of the malfunction. OBD systems have been required on all gasoline and light and medium duty diesel vehicles since the 1996 model year.

SUMMARY AND IMPACTS:

Staff has been collecting and analyzing data to determine the feasibility of developing a heavy-duty diesel inspection and maintenance program targeting NOx reductions, and the results will be shared with the Board. If NOx emission benefits can be achieved by this program, the staff will develop proposed regulations and a timeline for implementation.

A manufacturer-run HDDE in-use compliance program is being developed in cooperation with the engine manufacturers. Staff will propose regulations that will implement the program as a pilot program in California in 2005 and 2006. The pilot program will be mainly for generating data and gaining experience of testing HDDE on road with on-board measurement systems. No enforcement action will be taken by the ARB solely on the basis of pilot program data. A fully enforceable manufacturer-run in-use compliance program would begin nationally in 2007.

Also, ARB staff is developing heavy-duty on-board diagnostic (HD-OBD) requirements to monitor emission control systems' effectiveness. The HD-OBD system will ensure that emission control system malfunctions are detected as they occur, thereby allowing prompt repair and fewer emissions throughout the life of the vehicle. The HD-OBD requirements will be proposed to the Board later this year with implementation to begin with the 2007 model year engines.

NOTICE OF PUBLIC MEETING TO UPDATE THE BOARD ON THE STATUS OF EFFORTS TO REDUCE IN-USE NOX EMISSIONS FROM ON-ROAD HEAVY-DUTY DIESEL VEHICLES (Element M17 of the California SIP)

The Air Resources Board (the Board or ARB) will conduct a public meeting at the time and place noted below to consider ARB staff's update on the status of efforts to reduce in-use NOx emissions from on-road heavy-duty diesel vehicles. This item addresses element M17 of the California State Implementation Plan (SIP), is informational only, and no regulatory action will be taken.

DATE:	January 31, 2003
TIME:	9:00 a.m.
PLACE:	Air Resources Board Central Valley Auditorium 1001 I Street Sacramento, California 95814

This facility is accessible to persons with disabilities. If accommodation is needed, please contact ARB's Clerk of the Board at (916) 322-5594 by January 21, 2003, to ensure accommodation. Persons with hearing or speech impairments can contact us by using our Telephone Device for the Deaf (TDD) at (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

Background

Reductions in mobile source emissions are essential to the attainment of the federal and state ozone air quality standards. Diesel engines used in heavy-duty on-road vehicles and off-road equipment are the largest source of ozone-forming nitrogen oxide (NOx) emissions. The 1994 State Implementation Plan (SIP) for ozone identified several approaches to reduce NOx and other emissions from heavy-duty on-road diesel vehicles. One approach is to adopt more stringent emission standards for new heavyduty diesel engines used in on-road vehicles. Since approval of the SIP, the Board has twice adopted more stringent emission standards which will result in a 50 percent reduction in NOx emissions of 2004 models, and another 90 percent reduction in both NOx and particulate matter (PM) emissions of 2007 models.

Another approach is to reduce emissions from the fleet of heavy-duty diesel vehicles already on the road. On-road vehicles may have elevated emissions due to malmaintenance, defective parts or an emission control system design which is not durable. One SIP measure, M17, called for developing a new, in-use program to address the excess emissions of on-road heavy-duty diesel vehicles. This program could include a new field test to screen heavy-duty on-road vehicles that have high NOx emissions, and require their repair. It could also include a testing and recall program similar to that currently in place for light-duty vehicles. Such a program could identify 20 engines whose emission control systems lack in-use durability, and require recall and installation of more durable parts. The program could also require the installation of onboard diagnostics (OBD) on new heavy-duty diesel engines. OBD can identify individual emission control parts and systems that have failed or are not operating properly. In combination with other programs, repair of the defective parts or systems could be assured. Finally, ARB agreed to pursue financial incentives for advanced heavy-duty technologies capable of emissions below the required standards for new engines.

The program is to be adopted by the Board by January 2004, and is to achieve emission reductions of ten tons per day NOx, and one ton per day reactive organic gases (ROG), by 2010.

Summary of Presentation

Staff will present to the Board a progress report on efforts to develop a program to reduce in-use NOx emissions from on-road heavy-duty diesel vehicles. The elements of the program being evaluated are: 1) a field testing program to identify on-road heavy-duty diesel vehicles with excessive NOx emissions that would complement the current ARB program that inspects for visible smoke emissions; 2) an in-use compliance program that tests specific engine models to determine if their emission control devices and systems have remained effective during the vehicles' useful life; and 3) a regulatory requirement that new diesel engines used in heavy-duty on-road vehicles be equipped with an OBD system that provides a real time assessment of each emission control device or system and warns the operator when a defect or malfunction has occurred.

For more than a year, staff has been testing and repairing heavy-duty diesel trucks in an effort to determine whether significant NOx reductions can be achieved by adding a field test for NOx to the current smoke inspection program. The testing and evaluation is designed to quantify the excess NOx emissions from the current in-use fleet of heavy-duty diesel vehicles, determine if a field screening test can accurately identify the higher emitters, and assess the effectiveness and cost of emission-reducing repairs. Staff will present the results of the study and discuss the feasibility of implementing a field inspection program for NOx.

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In March of 2002, ARB staff began working with the U.S. Environmental Protection Agency (EPA), Engine Manufacturers Association (EMA), and diesel engine manufacturers to develop a manufacturer-run, in-use compliance program. In this proposed program, the engine manufacturer would test engines of the same model to determine if they are in compliance with the emission standards to which they were designed. If high emissions and a defective design are identified, the manufacturer would recall all trucks using that engine, and modify them to comply with the emission standards. ARB may also test engines and order a recall if appropriate. Critical to this program are the Not To Exceed (NTE) test procedures previously adopted by the Board, which allow a simplified method of determining in-use compliance. The ARB and EPA staff, and EMA, are close to reaching concensus on how such a program could be implemented. We will be proposing regulations to implement this program later this year. The program would begin as a pilot in California for the 2005 and 2006 model years, and would become fully enforceable with the 2007 model year. U.S. EPA also intends to adopt this in-use compliance program effective with the 2007 models.

Staff is also developing a proposed regulation that would require new diesel engines used in heavy-duty trucks to be equipped with an OBD system, beginning with the 2007 models. OBD systems are comprised mostly of software in the on-board computer that monitors virtually all emission-related components for malfunctions. When a malfunction occurs, the OBD system alerts the driver by illuminating a dashboard warning light, and stores diagnostic information that can be retrieved by repair technicians to identify the likely cause of the malfunction. The OBD system can be used during field inspections to screen out those vehicles in need for repair. It can also be used to identify engines models with high failure rates of emission control parts, resulting in compliance testing and a possible recall. OBD systems have been required on all gasoline and light and medium duty diesel vehicles since the 1996 model year, and have proved to be highly effective. The ARB staff plans to bring an OBD regulation for heavy-duty vehicles to the Board for consideration later this year.

Availability of Documents and Agency Contact Person

Copies of the presentation prepared by staff may be obtained from the Board's Public Information Office, 1001 "I" Street, 1st Floor, Environmental Services Center, Sacramento, CA 95814, (916) 322-2990. The presentation may also be obtained electronically from the ARB internet site http://www.arb.ca.gov/msprog/onroadhd/hdiut.htm

To obtain these documents in an alternate format, please contact the Air Resources Board ADA Coordinator at (916) 323-4916, TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

Further inquiries regarding this matter should be directed to Mr. Stephan Lemieux, Manager, On-Road Heavy-Duty Diesel Section, at (626) 450-6162, or <u>slemieux@arb.ca.gov</u>, or Mr. Don Chernich, Manager, Heavy-Duty Diesel Inspection and Maintenance Development Section, at (916) 322-7620, or <u>dchernic@arb.ca.gov</u>.

Submittal of Comments

Interested members of the public may also present comments orally or in writing at the meeting, and in writing or by e-mail before the meeting. To be considered by the Board, written comments not physically submitted at the meeting must be received **no** later than 12:00 noon, January 30, 2003 and addressed to the following:

Postal mail is to be sent to:

Clerk of the Board Air Resources Board 1001 "I" Street, 23rd Floor Sacramento, California 95814

Electronic mail is to be sent to: <u>m17hdde@listserv.arb.ca.gov</u> and received at the ARB no later than 12:00 noon, January 30, 2003.

Facsimile submissions are to be transmitted to the Clerk of the Board at

22 (916) 322-3928 and received at the ARB no later than 12:00 noon, January 30, 2003.

The Board requests, but does not require, 30 copies of any written submission. Also, the ARB requests that written and e-mail statements be filed at least ten days before the meeting so that ARB staff and Board members have additional time to fully consider each comment.

No amendments to the current on-road regulations discussed in this notice will be considered or adopted by the Board at this meeting as part of this agenda item.

CALIFORNIA AIR RESOURCES BOARD

Michael P. Kenny Executive Officer

Date: January 14, 2003

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <u>www.arb.ca.gov</u>.