Clean Air Act Advisory Committee
Mobile Sources Technical Review Subcommittee
Ramada Inn - Detroit Metropolitan Airport
Detroit, Michigan
February 21, 1996

INTRODUCTION

Margo Oge, Director of the EPA Office of Mobile Sources, opened the meeting. She noted that Bob Sawyer, Randall Guensler and Virginia McConnell were unable to attend. Therefore, there were slight changes in the agenda. She welcomed the subcommittee and audience members and asked them to introduce themselves.

ACTION ITEMS

Modeling Workgroup: Lois Platte, EPA, will coordinate with the Modeling Workgroup and will bring back to the sub-committee a list of modeling improvements that are a high priority, but for which data are currently limited. After hearing input from sub-committee members on the MOBILE improvements list, she will determine if and how the list will be revised and report this back to the sub-committee.

ADMINISTRATIVE ITEMS

Sub-committee members asked about the availability of resources from EPA or others to assist with some of the data analysis. Margo Oge responded that although EPA is operating with a reduced budget, the committee's work is a high priority for her Office, and the Agency will work hard to find resources to assist the Workgroup members.

Margo Oge askedthat materials produced by the Workgroups for presentation and discussion in the full sub-committee meetings be supplied to the full subcommittee as soon as possible before each meeting so that members can review them and be prepared to respond. This may not be feasible in all cases but should be adhered to when possible.

WORKGROUP STATUS REPORTS

Following is a report from each of the Workgroups on the status of their work to date:

Certification Workgroup

Jane Armstrong, EPA, presented for the Certification Workgroup, of which she is the co-chair. Due to time constraints, Tina Vujovich is no longer the co-chair of this Workgroup. Kelly Brown, Ford, has accepted the position. The Workgroup has not formally met as of this meeting.

In late January 1996, EPA made a presentation to industry regarding proposals to reinvent the certification process. Some of those industry participants are also part of this Workgroup. EPA hopes that the certification Workgroup can add some fresh ideas to the process that is already underway. There will be a presentation later in the day to educate the sub-committee about the basics of the certification reinvention proposals. Pat Raher, Hogan and Hartson, asked about the role of the certification Workgroup with respect to the industry proposals, since the efforts are very similar and may be redundant. Margo Oge responded that the idea is to have representatives of this sub-committee (i.e., the Workgroup) put in a sufficient amount of time to bring forward some ideas to the sub-committee. The sub-committee will respond to those ideas.

Jane Armstrong expects that by this fall the group will have some agreement on what they want to do, and maybe some language for a preamble to a regulation. Regulatory changes will take a longer period of time. Her goal is to have this in place by the 2000 model year.

In-use Deterioration Workgroup

Bob Slott, Shell, presented for the Workgroup, which met on the previous day. The Workgroup is currently examining data from light-duty vehicles and determining what information can be obtained from available data and what future research or data gathering efforts should be undertaken. The Workgroup is concerned about the life of a vehicle (at least 150,000 miles). The Workgroup formed two teams. A data analysis team will look to the past and evaluate emission databases (e.g., IM240 and FTP databases). The other team will look to the future to determine what can be done. For example, Virginia McConnell, Resources for the Future, is examining the economic incentives that may be used to reduce in-use deterioration. Technology changes will also be examined. Work products are expected to be completed by February 1997.

Following are some of the questions that the Workgroup seeks to answer:

How do vehicle emissions deteriorate over time?

- What can we learn from the data?

What deterioration effects might result from technology, economic incentives or policy changes?
How will OBD affect vehicle design, maintenance, and repair?

- What does OBD test today, and what does it miss?
- Will the public accept a transponder in place of testing?
- Will the motorist be able to control whether the transponder is on or off?
- Can OBD replace inspection and maintenance?
- When will vehicle deterioration rates be low enough?
- What data will be needed to prove that rates are low?

One member asked about the life of the Workgroup since some of the work products may extend past the summer. Margo Oge noted the many delays faced by the Agency due to budget uncertainties. By Fall 1996, the sub-committee will be able to have a better understanding of in-use deterioration based on current data, and will bring this to the sub-committee. Workgroup activity will continue to go on after this even if the sub-committee is not extended. Katherine McMillan, EPA, noted that the full Clean Air Advisory Committee will probably be extended, in which case the sub-committee would likely be extended.

Kelly Brown stated that the quality of IM240 data varies greatly from state to state, and it might not be a wise use of resources to draw in-use deterioration conclusions from IM240 data. Bob Slott noted that there is a tradeoff between the "elegance" of the test and the number of vehicles tested. FTP tests are more elegant but are prohibitively expensive, and less data exist. The Workgroup is "stuck" with available I/M databases and a few high quality, multi-year remote sensing databases. Therefore, the Workgroup needs to exercise quality control and be selective in the data they choose.

Pat Raher asked about the existence of databases that are not generally available (e.g., from manufacturers). The automakers noted that they have recently supplied several thousand data points (post-1985) to the Workgroup. Phil Lorang noted that the cars in these samples are only two or three calendar years old and were recruited (by mail or phone), and EPA has identified these as shortcomings. EPA would like to find other data to overcome these concerns. One of the roles of the Workgroup is to help define what data the Agency will require five years from now to understand deterioration rates.

Modeling Workgroup

Lois Platte presented for the modeling Workgroup. She noted that she will be taking over the

lead for this Workgroup from Phil Lorang. The Workgroup is focusing on four areas:

1. MOBILE Update Tasks

EPA prepared a list of about 90 tasks that could be performed to improve the MOBILE model. The Workgroup (10 participants) reviewed these tasks and ranked them into high, medium, and low priorities. Twenty items were ranked high priority, 25 medium, and the remainder were ranked low. The rankings are simply meant to list the priorities for improving the model. They do not consider the availability of data or the resources that would be required to complete the tasks. EPA is looking for research that has been done on these high priority items, and asked the sub-committee for any recommendations.

2. Model Validation

The Workgroup gathered information on current model validation techniques and has drafted recommendations for future model validation. The next step for the Workgroup is to review these recommendations and forward them to the subcommittee.

3. Model Review Procedures

The Workgroup has drafted a set of initial model review procedures and has considered the definition of "major" and "minor" model revisions and the level of review required for each. The Workgroup plans to rely heavily on the use of electronic media to widely disseminate and collect timely information. *Federal Register* notices and public workshops will continue to be used. CARB is supplying their procedures for outside review. EPA hopes that the full subcommittee will see a work product by April. Lois Platte noted that this group may also recommend review procedures for new test procedures or data collection efforts.

4. Remote Sensing Device Credit Statement

The Workgroup has prepared a statement that lists concerns and questions on the EPA proposed RSD credits to be put into the MOBILE model, and EPA has responded. The Workgroup encourages EPA to complete the RSD credit initiative provided that the Agency agrees to make adjustments and provide credits for situations not covered by the formula, when such adjustments and credits are supported by data or experience.

Joe Somers, EPA, presented a summary of the RSD credit effort to date. He discussed studies correlating RSD measurements with IM240-type measurements that show what percent of excess emissions are identified. Technical experts agree that these should be used in the formula for RSD credits. He presented the basic credit formula for a biennial program with remote sensing:

$$RS\ Credit_{m,p} = B_{m,p} + (A_{m,p} - B_{m,p}) * F_m * E_{m,p}$$

Where:

B = credit granted for the regular I/M program
A = credit granted for an annual inspection program
F = percentage of the fleet scanned at remote sensing sites
E = effectiveness factor (identification and repair of high emitters)
m = model year
p = pollutant

At its next meeting, the sub-committee is expected to make a decision of whether or not to endorse the final RSD Credit product. Interested parties should contact Joe Somers or Lois Platte at EPA with concerns prior to this meeting.

The sub-committee discussed the modeling presentation. Bill Becker, STAPPA and ALAPCO, stated that in his view, some of the tasks ranked low or medium priority are high priority. Lois Platte reiterated the ranking process and stated that the Workgroup participants developed this list. Bill Becker said that some of these items are higher priority to him and that ranking them will rely on the perspective of each person. The voting system used for ranking may not have adequately represented all views. Tom Cackette, CARB, asked whether the Workgroup has considered who the users of the model are; there are others besides SIP developers who use the model. Increasing the user-friendliness may broaden the constituency of the model to planners, engineers, and policy-makers. Margo Oge stated that, in her view, the sub-committee may want to have input into the ranking of MOBILE updates. Lois Platte suggested that the sub-committee wait until the Workgroup performs research into these issues so they have more data with which to rank the items.

Lois Platte added that the initial list of recommended improvements came from a meeting of stakeholders, and there will be a workshop held this year to present EPA's plans and seek additional comments.

Heavy Duty Engine Workgroup

Glenn Passavant, EPA, presented on the status of the Heavy Duty Diesel Engine (HDDE) Workgroup. The Workgroup has recently been constituted and has a broad representation of interests. The three co-chairs are John Wall from Cummins, Tom Bond from BP Oil, and Alan Lloyd from the Desert Research Institute.

A first draft of the Workgroup's charter has been created, but it needs further internal review. The charter currently states that the Workgroup is charged with developing emissions performance information and with assessing the impact of diesel fuel modifications on low-emission heavy duty diesel engines. The assessment process will evaluate existing data on low- emission HDDEs, and testing of appropriate diesel fuel formulae on prototype and production intent HDDEs capable of approaching the 2.0 gram/bhp hr NOx standard. The next step is to hold a meeting on March 14th, 1996.

OMS FUELS PROGRAM OVERVIEW

Sue Willis, EPA, presented a summary of the Agency's fuels programs. The purpose of the presentation is to give all sub-committee members a common understanding of the Agency's current activity in the fuels arena. The current EPA fuel programs and a brief discussion of each follow.

Lead Phaseout: This program reduced lead levels from about 2.2 grams/gallon in 1977 to 0.1 grams/gallon in 1986. A ban on lead in gasoline went in effect in January 1996.

Gasoline Volatility Control: A large difference in Reid Vapor Pressure (RVP) existed between volatility of certification fuel and actual in-use fuel. This program set standards for RVP that significantly reduced emissions of HC at a cost of one to two cents per gallon. This program highlighted to EPA the impact that fuel composition can have on vehicle emissions.

Diesel Fuel Sulfur: This program highlighted the impacts of diesel fuel quality on emissions. Sulfur control reduces sulfate-particulates and SOx, and became effective nationwide in Fall 1993. The program affects only on-road diesel fuel and costs about two to three cents per gallon.

Gasoline Detergent Additives: This program started with voluntary participation from industry and became a requirement in January 1995. Additives control driveability problems arising from port fuel-injector deposits and intake valve deposits. Reductions in VOC, CO, and NOx occur at a cost of less than one cent per gallon.

Fuel and Fuel Additive Registration and Health Testing: This program has required information on fuels and fuel additives that are introduced into commerce, in order to determine the health effects of emissions.

Oxygentated Fuels Program: This is a wintertime program to reduce CO emissions from vehicles by 15 to 20 percent. It is currently implemented in 28 nonattainment areas, at a cost of about two to four cents per gallon.

Reformulated Gasoline and Anti-dumping: This is a year-round program required in ozone nonattainment areas. Other areas can opt-in to the program. The program reduces VOC, NOx, and toxic emissions, and covers 25 to 30 percent of U.S. gasoline. The costs through 1999 are three to five cents per gallon, and beyond 1999, an additional one to two cents per gallon. The Anti-Dumping program requires all conventional gasoline to be no dirtier than a refiner's 1990 gasoline. This is intended to prevent the shift of highly polluting fuel components from reformulated gasoline into conventional gasoline.

The current trends in fuels were then presented. There is a slight trend towards lighter fuel, which appears to be preferable from a vehicle operation standpoint. There is also interest in going to lower RVP gasoline to achieve emissions reductions. Current thoughts in the fuels area are focused on low-sulfur gasoline, diesel fuel modifications, and "Phase III" RFG. These are only thoughts, and EPA and the industry are not thoroughly investigating them. Margo Oge added that the current agency effort with regard to low-sulfur gasoline is to conduct a joint mobile/stationary source urban toxic study, and as part of that effort, to look at low-sulfur gasoline as one of the various control methods. In addition, EPA has asked the White House science group to help EPA determine the air quality benefits of the oxygenated programs.

CRC REAL WORLD EMISSIONS STUDY PRIORITIES

Bob Slott, Shell Oil, presented on the emissions study programs conducted by the Coordinated Research Council (CRC). The objective of the presentation is to seek the comments of the sub-committee on CRC's proposed 1996-97 projects. The results of this discussion will be presented to the CRC board on March 26. Bob Slott requested that if anyone on the sub-committee has comments, they should talk to him by March 15.

CRC is an organization jointly funded by automobile and oil companies to conduct research on fuels, lubricants, and automotive equipment. Its purpose is to provide statistically valid, publicly available data on fuel, lubricant, and vehicle system interactions in order to provide customer satisfaction in driving performance and to lower emissions.

The following six projects were described:

Shed study of evaporative emissions: This project will focus on light duty trucks. One hundred vehicles will be tested; 33 from model year 1971 to 1977, 33 from 1980 to 1985, and the rest from 1986 to 1991 (fuel injected only). Protocols on how to obtain trucks, which trucks to obtain, and the type and amount of fuel have been determined. The program is waiting approval.

Open Path Optical Sensing for Evaporative Emissions: This project will apply open path remote sensing techniques that have been developed for stationary source monitoring to vehicles. This technology will be applied to measure diurnal evaporative emissions in the real world to capture data from over 2000 in-use vehicles.

Test Cars with Broken PCV Valves: This project will test three cars with broken PCV valves and two cars without broken PCV valves. The PCV valves will be purposely broken. The justification for doing this is that PCV valve emissions will be more important as cars get cleaner. There are very little data on how many PCV valves are broken.

Testing for Particulates from Light Duty Gasoline Vehicles: The purpose of this project is to increase the knowledge of particulate emissions from LDGVs. Very little data currently exists on this subject, and no

one knows how serious these emissions are.

Vehicle Emissions and Repair Analysis of Central I/M Databases: The purpose is to increase knowledge on vehicle deterioration and repair effectiveness. Centralized I/M databases will be analyzed from selected states.

Multi-Year Remote Sensing Detectors at Remote Sites: Based on Stedman remote sensing studies performed in Denver. Further sites will be identified and states will be contacted to make data available.

Bob Slott summarized the six projects and discussed how those projects correlate with the modeling Workgroup's high and medium priority needs. Many of these studies will provide useful data to validate the MOBILE model.

VEHICLE COMPLIANCE ASSURANCE PROGRAM (CAP)

Jane Armstrong, EPA, presented on EPA's draft concept of the Vehicle CAP. The goals of this program are to redirect manufacturer and EPA efforts to in-use compliance, give manufacturers control of certification timing, and to maintain the integrity of existing EPA compliance and fuel economy programs.

The current certification program requires a lot of time and resources. The number and complexity of tests pose certain burdens, and special vehicles are required to be built. The information requirements of the program are extensive.

The grouping system for vehicles undergoing certification may be broadened beyond the current grouping method of engine "families." For example, GM currently has around 40 engine families. Under the new concept, they will have about five to seven groups. Many of the additional requirements of the current program will be consolidated or condensed.

The type of fuel that vehicles will be tested with is important. Some of the states have commented to EPA that the fuel used during certification testing should be real-world commercial fuel. EPA understands the issues with fuels. A standard fuel is used in order to allow a test to be repeatable. This issue will have to be addressed in the future.

Some Workgroup members are concerned that consolidating the number of vehicle categories that are certified together may result in a greater number of vehicles being recalled if in-use emissions are a problem. This is counter-productive to reducing the number of engine families.

Margo Oge reminded the group that the goal of the certification process is to shift the limited resources to areas where they are going to be most effective. The Workgroup should keep this in mind during their streamlining process.

INNOVATIVE PROGRAMS AND MARKET INCENTIVES

Virginia McConnell, Resources for the Future, spoke very briefly about her ideas of market approach policies to control vehicle emissions. Since she was communicating by phone she broadly stated her ideas for policies and asked the group about their ideas that should be included and/or excluded from examination. She also asked that sub-committee members interested in this topic contact her sometime after the meeting.

These types of market approaches may be the only hope to address in-use emissions from older vehicles. These cars are often exempted from state I/M programs. As an example, a vehicle deposit was mentioned. Hypothetically, the deposit would be part of the purchase price and would stay with the vehicle until the end of its useful life. The deposit could be a savings bond that grows over the life of the

vehicle. Towards the end of the life of the vehicle (when most emission problems occur), the final owner would determine that the value of the bond is worth more than that of the vehicle, and could “cash in” the vehicle. The vehicle would then be scrapped and the owner would receive the value of the bond.

Virginia McConnell is scheduled to make a presentation to the sub-committee at the next meeting. Any members who wish to be involved should contact her.

Margo Oge thanked the members for participating and then adjourned the meeting.

Mobile Sources Technical Review Subcommittee
List of Members or Member Alternates Attending
February 21, 1996

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