

**Clean Air Act Advisory Committee
Mobile Sources Technical Review Sub-committee
Double Tree Hotel - Falls Church, Virginia
October 9, 1996**

INTRODUCTION

The Mobile Sources Technical Review Sub-committee held its sixth meeting at the Double Tree Hotel in Falls Church, Virginia on October 9, 1996. Mike Walsh, consultant, and Bob Sawyer, University of California Berkeley, chaired the meeting. Mr. Walsh opened the meeting by welcoming all attendees and noted the full agenda. In addition to several briefings, the Sub-committee is being presented with reports of preliminary findings and recommendations from of each of the four Workgroups. Mr. Walsh introduced the first speaker of the day.

BRIEFING ON LOW NO_x NAVISTAR ENGINE

Dr. Pranab Das, Navistar, presented information on Navistar's recent demonstration of a heavy duty engine (HDE) that meets the 2004 HDE Statement of Principles (SOP) emission standard. Dr. Das began by stating that Navistar produces approximately 1,000 engines per day, and Navistar's customer base is very interested in how the company will meet the 2004 standard. In September 1995, the company set the following goals:

- Demonstrate the 2004 emission standard: 2.5 g/bhp-hr NO_x + HC, 0.1 g/bhp-hr particulate, and HC < 0.5 g/bhp-hr;
- Demonstrate this standard without degradation of fuel economy or driveability; and
- Demonstrate this standard within three months (ending 12/31/95) using conventional technologies.

The technologies used to meet the standard include:

- Hydraulically actuated, electronically controlled unit injector¹;
- Advanced fuel system with mechanical rate shaping capability²;
- EGR (Exhaust gas recirculation);
- Mechanical waste gated turbocharger;
- Reduced mechanical parasitic losses (i.e., increase overall engine efficiency);
- Calibration optimization;
- Used a "projected" 2004 certification fuel (see below); and

¹ Allows command and control of injection pressure and injection timing.

² Navistar is working on electronic rate shaping.

- Oxidation catalyst³.

³ Navistar does not use a catalyst to meet 1994 standards.

Navistar has been able to demonstrate the following results.

	1996	1998	2004	Engine Type 2004	2004
NO _x (g/bhp-hr)	4.8	-	-	-	-
NO _x +HC (g/bhp-hr)	-	3.45	2.54	2.47	2.5
Particulate (g/bhp-hr)	0.9	0.9	0.126	0.118	0.099
BSFC (fuel efficiency*)	0.49	0.464	0.468	0.468	0.477
Fuel	base	California	California	low aromatics (~4%) low sulfur high cetane (56,57)	low aromatics (~4%) low sulfur high cetane (56,57) 2% oxygenate

* The smaller the number, the better the fuel efficiency

These parameters were repeated by two independent companies (unnamed) and Dr. Das stated that their results confirm the results shown above. The best results found by the independent labs are shown below.

2004 Engine	
NO _x (g/bhp-hr)	-
NO _x +HC (g/bhp-hr)	2.2 - 2.3
Particulate (g/bhp-hr)	0.085
BSFC (fuel efficiency*)	> 0.47
Fuel	low aromatic, low sulfur high cetane (56,57) 2% oxygenate

* The smaller the number, the better the fuel efficiency

Margo Oge, EPA, asked why Navistar chose to use a reformulated fuel when the SOP calls for engine technology changes, and what results were found by Navistar with Federal fuel. Dr. Das responded that Navistar chose to use the means at hand to meet the standard in the three month time frame. He is not proposing that a new fuel must be created; only that, given the changes and technologies listed above, Navistar is able to meet the 2004 standard eight years ahead of schedule. More research needs to be done. While he did not have the exact figures with him, he believes that the conventional federal fuel results were approximately 3.8 g/bhp-hr NO_x+HC and 0.12 (g/bhp-hr) particulate.

Steve Gerritson, LADCO, asked why particulates rise between the 1998 and 2004 engines. Dr. Das responded that the EGR system is the primary contributor to the increase in particulates.

John Kowalczyk, State of Oregon, asked about the increased efficiency using oxygenates. Dr. Das responded that the oxygenate quantity is small, and the combustion is better. In addition, the timing was recalibrated. He noted that a one or two percent loss in efficiency was noted in the results using oxygenates.

EGR-Ce-passive trap technology

Dr. Das noted that Navistar has been able to demonstrate the 2004 standard using a V8 engine and EGR-Ce-passive trap technology. Cerium is added to the fuel as a catalyst to oxidize particulates.

The trap is self regenerating. Following are the test results.

2004 Engine	
NOx (g/bhp-hr)	
NOx+HC (g/bhp-hr)	2.2 - 2.3
Particulates (g/bhp-hr)	0.01
BSFC (fuel efficiency)	not presented
Fuel/Technology	Federal fuel cooled EGR Ce-passive trap

* The smaller the number, the better the fuel efficiency

Dr. Axel Friedrich, Umweltbundesamt, asked about the health effects of Cerium. Dr. Das responded that several studies are underway to examine potential health effects. Mike Walsh noted that this Rhone-Poulenc (cerium catalyst) technology is not certified for use in the U.S. Navistar has not performed field testing using this technology.

Dr. Das noted that Navistar has accumulated about 500 hours on this engine and the EGR system is not optimized. Little consideration has been given to how this system would be created for a production vehicle. In response to a question from Mike Walsh, Dr. Das stated that the research focus over the next few years will be on the fuel system, including the injection rate and shaping. He also noted that there has been no analysis of particle size distribution. Air system control is also important. Many parameters will be evaluated to design a vehicle that meets the company's goals of delivering a marketable engine that meets emission standards along with customer needs such as cost, driveability, and maintenance.

Kelly Brown, Ford, asked about the Ce delivery system. Dr. Das responded that several options are possible including manufacturer formulation of Ce in the fuel, or a pump that doses the tank with an appropriate amount of CE when fuel is added to the tank. Dr. Friedrich noted that Rhone-Poulenc is proceeding on several health studies to determine if Ce is not a health hazard. He did note that dioxin formation is possible and is under investigation.

BRIEFING ON EUROPEAN ACTIVITIES

Dr. Axel Friedrich, Umweltbundesamt, discussed the current and future mobile source standards and technology changes that are in progress in Europe. He noted that benzene is of particular concern. The current standard is 10 g/T, but the long-term goal is 2.5 g/T. The current ozone goal is 100 mg/hr, but will probably be reduced. If fuels were reformulated to contain one percent benzene and 30 percent aromatics, benzene emissions could be reduced by 40 percent. The goal for hydrocarbons is to reduce emissions from 1.5 million tons to 300 tons. Until recently, only engine technologies have changed to meet emission standards. He believes that the changes in fuel will be the area where significant emission benefits will be realized. The current fuel standards proposed by the EC for gasoline and diesel are not very challenging.

He displayed projections of the effect on emissions from the proposed EC fuel standards. Using these projected standards, there is very little effect. He argued that a tighter fuel standard would have a much larger effect on emission reductions. The following table displays the EC standards for passenger vehicles.

	1994	2000	2005
CO	2.7	2.3	1.0
HC	0.341	0.2	0.1
NO _x	0.252	0.15	0.08

Dr. Friedrich believes that these standards are an improvement. The 2005 standard is roughly equivalent to the U.S. ULEV standard. He also noted that the 2000 standard may be changed by the Parliament to the 2005 standard shown in the table above. The Parliament may also examine the use of tax incentives to motivate the early and fast introduction of cars that meet the stricter standards. The incentive may approach \$600 U.S. to cover the cost of the technology, but no more. The following table displays diesel passenger car standards

	1994	2000
CO	1.06	0.64
HC+NO _x	0.71/0.91	0.56
NO _x	0.63/0.81	0.50
Particulates	0.08/0.1	0.05

Porsche and BMW are working on a diesel engine that can meet the standard with lower NO_x emissions than the CA ULEV standard. The additional technology adds approximately \$150 to the cost of the vehicle.

Changed Driving Cycle Test

The previous driving cycle test used 13 modes. It is an “old fashioned” steady state test that needed revision. Driving behavior was measured for heavy-duty vehicles and the results showed that many of the previous measurements of the old cycle did not measure actual driving practices. The new test is a dynamic cycle test that measures points, which vary by speed and load, that are more representative of actual driving habits. OICA (the European heavy duty manufacturers) developed a 13-mode steady-state test to simulate similar test points. The compromise is to use the 13-mode test, a smoke test, and the new transient test.

One problem faced by Europe is that, while emission standards are becoming more stringent, VMT is increasing significantly. Dr. Friedrich displayed some scenarios that show emission effects using the current standards. He also noted that a large trial (approximately 600 to 1000 vehicles) will begin soon, using urea as a catalyst. Urea is used because use of ammonia would be dangerous. A small catalyst can change urea to ammonia in the vehicle. Catalyst durability appears to be fine using this method. This catalyst also increases overall fuel efficiency (approximately 10 to 15 percent) and therefore pays for itself in a short time period. He thinks that this is a promising technology because of its effects. No additional substances (e.g., potential health threats) have been found in the exhaust. This may be the next generation of technology to lower NO_x and particulate emissions. He also noted that they are developing an OBM (on-board monitoring) system that actually measures emissions in the exhaust.

BRIEFING ON IN-USE ISSUES FOR HEAVY DUTY VEHICLES

John Anderson, EPA, discussed the current heavy-duty engine (HDE) regulatory program, the in-use questions, and a description of EPA’s proposed regulatory agenda in this area. The current program focuses on certification. It is primarily a self-certification program. There is an assembly line testing component that acts as a spot check for compliance. Manufacturers also perform voluntary testing and supply these results to EPA. regarding diesel engines, they are known technology and normally do not experience in-use deterioration problems. HDE testing is expensive, so large demands have not been placed on manufacturers.

Questions exist about the actual in-use deterioration emissions of heavy-duty vehicles. Mr. Anderson displayed a graph of emissions by driving conditions (i.e., rural, urban, and congested urban). The emissions in g/mile change dramatically under these different conditions. He noted that this information is from a limited test and should not be extrapolated to a broader set of vehicles. It does,

however, raise several questions for which EPA is seeking an answer. EPA knows very little about the differences in emissions due to highway driving as opposed to city driving. The Agency also knows very little about tampering.

An initiative has been proposed to assess the in-use emissions of heavy-duty vehicles under a number of driving conditions. If high emissions are found, durability, tampering, and related issues will be analyzed. Direct tampering surveys, useful life measurements, and maintenance and rebuild practices will be examined.

Mr. Anderson summarized by stating that EPA has limited in-use data. The Agency needs better data to understand how heavy-duty engines fit contribute to the overall mobile source inventory. It is unclear what resources the Agency will have to fund this effort. EPA is beginning discussions with engine manufacturers, the American Trucking Association, NESCAUM, CARB, and several states to identify partners and programs that are already in progress. A more detailed plan will be produced after these initial discussions are completed. Margo Oge added that the next step is to put forward a proposed plan and seek assistance from manufacturers, states, and other interested groups.

PRESENTATION AND DISCUSSION OF DRAFT SUB-COMMITTEE REPORT CHAPTER ON THE HEAVY ENGINE WORKGROUP

Glenn Passavant, EPA, presented the activities of the Heavy Duty Engine (HDE) Workgroup. The Workgroup has made significant progress in its efforts. In July of 1995, a Statement of Principles (SOP) was signed that put in place a standard for the 2004 model year. The SOP discussed the potential for engine and fuel changes, and outlined a review of these potential changes in 1999. The group has 31 members who represent key stakeholders. Several of the members are part of a data analysis group who have met to discuss past research and attempt to compile overall fuel effect results. The full Workgroup has meetings scheduled for October 18 and 29 to discuss recent research and mechanisms to proceed with further research. Phase I of the effort is to validate an engine at SWRI to see whether it is a suitable transparent test tool. The goal is to test the sensitivity of engines to extreme fuel changes. A series of three fuels are being tested on the SWRI engine and at least one of each engine manufacturer's research engines. Once Phase I is complete, the data will be analyzed and a decision will be made whether to continue with Phase II research on a broader fuel matrix or other parameters. If all goes well, the effort will be complete by Fall of 1997. In response to a question from Mike Walsh, Mr. Passavant responded that particulates are being measured during the transient tests. The SWRI engine is only being tested using a steady state test.

FORMATION OF NEW WORKGROUP ON IMPLEMENTATION OF PHASE II REFORMULATED FUEL

Margo Oge introduced the proposal and the need for a new Workgroup to address implementation of Phase II RFG. Phase I of the federal reformulated fuel program began in January, 1995. Many complications and problems arose. EPA is currently preparing for the January 2000 introduction of Phase II of the program. Phase II is expected to achieve reduce VOC approximately 25 percent, air toxics 20 percent, and NO_x five to seven percent. The purpose of the new Workgroup is to prepare now for introduction of the Phase II program.

The proposed Workgroup has two components: a technical component and a public education/outreach component. The technical work includes evaluating the fuel efficiency and potential impact on engines. Ms. Oge noted that API has petitioned EPA to re-evaluate the need for the NO_x reduction component of the Phase II program. This petition will not be part of the new Workgroup's charge; there is a regulatory process in place to handle it. The workgroup will assist the Agency in implementation of the program. Debbie Wood-Webber, EPA, continued the presentation.

California has a reformulated fuel program that also has two phases. The second phase began in June of 1996 and California began preparing for the implementation two years before its introduction. They convened a 70 member group with broad representation so that key audiences could be reached and participate early in the process. Three subgroups were created: (1) testing, (2) supply, and (3) public education. The testing component included: six months of fleet testing prior to the introduction of Phase II, including 800 test vehicles of varying makes, mileage, and age; five million miles; and 600 control vehicles. Both the automobile and oil industries performed complementary testing. The supply group analyzed the ability of refiners to provide an adequate supply. The public education group prepared an outreach plan using public opinion polls (1100 individuals) and focus groups. In addition, videos, fact sheets, and media footage were prepared for specialized audiences. The state legislature was briefed and the early organization and preparation allowed each stakeholder to be part of the consensus process and deliver the same consistent, concise message to their constituents at the start of the program.

EPA envisions convening key stakeholders in a similar process. Working backwards from the January 2000 date, EPA would like to be ready nine months prior to introduction (March 1999). EPA needs to know how much additional testing will be required given the extensive testing that has already occurred in California, and what training materials and testing requirements will be needed to obtain the information that these educational materials will provide. Ms. Wood-Webber stated that local testing may be performed so that information is developed from several different areas. Furthermore, testing may include different fuels (e.g., ethanol) and winter testing will probably be performed. Ms. Wood-Webber asked for volunteers to assist this new workgroup and noted that Chuck Freed will chair the workgroup with an additional member to be named later.

Steve Gerritson, LADCO, noted that several governors are interested in broadening the use of reformulated fuels and this interest should be incorporated into the new Workgroup's public education efforts. Mike Redemer, Texaco, added that the Department of Energy should be involved in the workgroup to discuss any supply issues.

FORMATION OF NEW WORKGROUP ON AMBIENT EFFECTS STUDIES FOR OXYGENATED AND REFORMULATED GASOLINES

Margo Oge introduced Phil Lorang, EPA. Mr. Lorang stated the need for technical advisors to design a field study to evaluate the oxygenated fuel program. EPA has a winter oxygenated fuel program and would like better information on the CO benefits of the program. Earlier this year, an interagency group examined the oxygenated fuel program and the National Academy of Science (NAS) reviewed the results. The NAS recommended that an additional study be undertaken to better isolate the effects of the fuel. EPA recently analyzed ambient CO data and found an effect, but the peer review process identified factors that may limit the results.

EPA is interested in pursuing this issue but would like to design the study in such a way that appropriate explanatory variables and statistics are used to allay the current concerns. Mr. Lorang expects that the end result will still come from a retrospective, statistical review of ambient data as opposed to laboratory data. Mr. Lorang asked for recommendations or volunteers to assist in this effort. No chair has been identified or assigned as of yet.

PRESENTATION AND DISCUSSION OF DRAFT SUB-COMMITTEE REPORT CHAPTER ON THE COMPLIANCE REINVENTION WORKGROUP

Andy Brooks, EPA, presented a summary of the Compliance Workgroup report. The goal of the Workgroup is to streamline EPA's vehicle compliance program by eliminating processes that are not adding value, thereby reducing the resources that EPA and industry expend on this program. An additional goal is to improve the in-use durability of vehicles over their lifetime. In February, the Workgroup developed a Statement of Principles (SOP). Although not all stakeholders signed the SOP, they agreed to its goals. These goals are to: give the manufacturers more opportunity to control the timing

of the certification process; change the focus of compliance from certification to in-use; and maintain an effective fuel economy and compliance program.

Industry, EPA, and CARB have reached consensus on the vast majority of the issues involved in this effort, although some issues are still open. The result is that the Workgroup is recommending to the Sub-committee that the best next step is to have EPA and CARB write regulations to implement the changes that the Workgroup has scoped out in their report for model year 2000 and later vehicles. The detailed recommendations are contained in the Workgroup's report.

Dave Kulp, Ford, spoke next about the issues on which the Workgroup has not yet reached consensus. Some of these issues are open because there has not been enough time for the Workgroup to address them. Mr. Kulp distributed a table that compares the current EPA/CARB proposal with the industry's proposal for each of the outstanding issues, and discussed each issue.

Bob Sawyer asked if the Compliance Workgroup plans to dissolve, given that the recommended next step is to move into the regulatory process. Kelly Brown, Ford, replied that his belief is that the Workgroup will stay intact to serve as an advisory committee to EPA and address some of the issues that will arise. Margo Oge replied that EPA's view is that a formal committee that has advisory capacity is not needed, although a working group is still critical to the process. Therefore, the Workgroup, as an advisory committee, will dissolve. Additional activity conducted by the members of the Workgroup will likely occur on an ad-hoc basis, but will not involve the full Sub-committee. It was also suggested that the Workgroup make it clear in their report that their activity focused on light-duty vehicles and not heavy-duty.

BRIEFING ON ISSUES OF EVAPORATIVE SYSTEM INSPECTIONS IN I/M PROGRAMS

Marty Reineman, EPA, presented an overview of In-Use Evaporative Emissions activities at EPA. In the 1992 I/M rule, the IM240 test cycle specifies that EPA encourages states to conduct evaporative emissions tests in addition to exhaust tests. Two types of evaporative emission tests were described in the rule, referred to as the pressure test and the purge test.

The pressure test measures loss of pressure over time. The original pressure test was performed from the canister direction of the vehicle, with the gas cap left on. Since this time, EPA has realized that this procedure is technically flawed for many vehicles. The original guidance has been supplemented with a pressure test from the fill pipe direction with an additional recommendation of a functional gas cap test. However, problems still remain. On some vehicles, the hardware is inaccessible from under the hood. Furthermore, evaporative emission control systems vary significantly among vehicles. These factors make evaporative emission inspections time-intensive and costly. EPA is currently attempting to improve the pressure tests. A lookup table is being populated with evaporative emission test-specific data, and the 25 high sales volume vehicles that have previously been untestable are being examined to determine if there is a way to test these vehicles, using a special tool or additional training.

The purge test that was originally proposed has been problematic for states to conduct. The test checks the canister purge system. Several problems exist with this test. In many instances the test is intrusive, requiring the removal of a hose which can damage old or brittle hoses and evaporative system components. The test can also require a relatively significant amount of time to conduct.

In the process of looking further into the evaporative emission problem, EPA has determined that a large problem in this area is that of trace liquid leaks. These leaks appear to be a very large portion of uncaptured evaporative emissions, and neither the purge nor the pressure tests find them. Trace liquid leaks are distributed across fuel system type and model year rather than by vehicle technology. This is a new problem to EPA and no practical in-use testing program currently exists.

EPA has been working with a purge test in the past 8 months that is referred to as the helium tracer method. This test injects helium into the vapor space of the fuel tank. While the vehicle is running,

the helium is purged through the canister system into the intake, through the combustion chamber, and out of the tailpipe. If helium is measured in an appreciable quantity from the tailpipe, this indicates that the purge system is working. Unfortunately, this measure is prone to false-failure determinations, and has in the past been shown to increase CO emissions. EPA is uncertain at this point if this test can be successfully used to test evaporative systems. There is currently no backup test procedure if it is not successful, and a concept needs to be developed.

Mr. Reineman asked for comments about the direction that EPA is headed on this evaporative emissions issue. Margo Oge stated that she wants to raise the awareness of this issue outside of the OMS lab in Ann Arbor and seek the input of industry and the States. EPA has limited technical expertise within the lab and would like the advice of industry and other experts. One Sub-committee member suggested that if the time required to perform evaporative tests is substantial, then I/M programs could perform an exhaust emission test one year and an evaporative emissions test the next year, alternating them over the life of the vehicle. Bob Sawyer suggested that the In-use Deterioration Workgroup place this issue on their agenda to be addressed at their future meetings. Ms. Oge suggested that the Workgroup obtain the representation of the technical experts from the state of Arizona that have been working on this issue.

PRESENTATION AND DISCUSSION OF DRAFT SUB-COMMITTEE REPORT CHAPTER ON THE MODELING WORKGROUP

Randy Guensler, Georgia Institute of Technology, presented an overview of the Modeling Workgroup report. The Workgroup's charter covers four areas: providing input on modeling methods and EPA products; helping to prioritize what should be done for MOBILE6; developing a peer review process for the MOBILE model; and taking on any activities assigned to the Workgroup by the Sub-committee.

The Workgroup products contained in the report include an emissions model validation statement, a statement on model review procedures, a prioritized list of potential projects to update the MOBILE model (MOBILE6), a research survey that was implemented by the Workgroup and results of the survey, and a statement on EPA interim remote sensing credits. Mr. Guensler covered the Workgroup's activity in each of these areas. The Workgroup report also contains suggested areas of future work. These include: continue to gather and disseminate existing model data; discuss and evaluate alternative modeling approaches; continue to identify and prioritize model improvements and research needs; and recommend a general research plan to meet these research needs.

Margo Oge commended the Workgroup for the progress they have made. This is the first time EPA has gone through this type of process when updating their models. Bob Sawyer commented that an important issue often raised is the lack of documentation for the MOBILE model. Mr. Guensler replied that this is an issue that he would like to take back to the Workgroup. He added that EPA is attempting to de-archive many of their modeling data sets and put the information into a format that can be used for this purpose. Virginia McConnell asked if the Workgroup has looked into the behavioral assumptions that are implicit in the model and whether there are additional data that can be used to improve those assumptions. Mr. Guensler replied that some of this has been done, but there are many more behavioral issues that need to be examined. He would like guidance from the Sub-committee as to which topics are ideal to look at over the next year. The Sub-committee suggested that it may be useful to examine mobile source modeling procedures in other parts of the world to see what can be learned. Bob Sawyer raised the philosophical question of whether the MOBILE model can serve the purposes for which it is being used: developing inventories, as a regulatory tool for adopting programs to get credits, and microscale modeling. He asked if, for example, the model serves some purposes better than others, does this create conflicts in the development of the model?

PRESENTATION AND DISCUSSION OF DRAFT SUB-COMMITTEE REPORT CHAPTER ON THE IN-USE DETERIORATION WORKGROUP

Bob Slott, Shell Oil, presented the findings and recommendations of the In-Use Deterioration Workgroup. The Workgroup report contains several specific recommendations for EPA. Mr. Slott stated his hope that EPA would come back to the Sub-committee by April 1997 and let them know what the Agency's plans are regarding the recommendations. The Workgroup surveyed several vehicle emission databases to develop their findings. They found that vehicles are cleaner and more robust today than they were in the past. Vehicle manufacturers have refined emission control technologies and as a result, vehicle emission control systems work better. Therefore, it makes less sense to test all vehicles in the fleet as the number of vehicles that are contributing most of the emissions becomes smaller and smaller. Because of this, the Workgroup has made a major recommendation that OBDII be used as a substitute for traditional I/M now, and continued if justified by field programs. However, pre-OBDII vehicles are expected to need traditional I/M or similar testing.

Mr. Slott discussed the types of emissions databases that exist and the characteristics of each from an in-use emissions deterioration analysis perspective. He stated that tens of thousands of vehicles are needed to accurately characterize in-use emissions. However, the amount of quality data in existence is small. For evaporative emissions analysis, even less data exist. Vehicle emissions are also affected by human factors in many ways, including driving style, vehicle maintenance practices, and attitude towards repairs. In many cases, the vehicles most in need of repair are owned by those least able to afford the cost of repair. Mr. Slott went through each of the recommendations contained in the Workgroup's report.

Margo Oge responded that, in light of the long list of recommendations, it would be useful for OMS staff if they have a sense from the Workgroup of the priority of each recommendation. In addition, some of the recommendations appear to be very difficult to implement, and it would be helpful for the Workgroup to think thoroughly about how to make them implementable. Lastly, Ms. Oge suggested that the Workgroup consider recommending a partnership involving EPA and other appropriate stakeholders to work on these issues, given EPA's limited resources.

Mr. Gerritson requested clarification of one of the recommendations that suggests that states justify the emission reductions they receive from their IM240 programs. Currently, states are awarded SIP credit for I/M programs without having to collect data and prove that the programs work. The Workgroup recommended that states collect such data to justify the credit they receive. Mr. Gerritson stated that the emission reduction numbers that EPA determined would result from IM240 programs have been justified. Bob Slott replied that currently the program is a "safe haven" for states. If they implement the IM240 program, they get a specified credit, regardless of what the program does. The recommendation takes a different approach and says that credit should be determined by the output of the program, rather than the input. States would be rewarded based on their performance, rather than by going through the motions of operating a program. Bill Becker, STAPPA, questioned the cost-effectiveness of this recommendation and the fact that agencies across the Country would have to perform a periodic audit of their programs. In response to some of the incentive conclusions of the Workgroup, Mr. Gerritson also stated that in his experience, economic incentive programs do not pay for themselves and result in costs for the implementing agency.

DISCUSSION OF DRAFT EXECUTIVE SUMMARY AND STEPS FOR SUBMISSION TO CLEAN AIR ACT ADVISORY COMMITTEE

Mr. Sawyer and Mr. Walsh will take the draft Workgroup reports that have been submitted and summarize them into an annual report from this Sub-committee. This report will be delivered to the full Clean Air Act Advisory Committee prior to the Committee's December meeting. Sub-committee members should identify items in the Workgroup reports that they do not agree with and make those issues aware to Mr. Sawyer and Mr. Walsh.

MEETING WRAP-UP

The next Sub-committee meeting is tentatively scheduled for January 15, 1997. The Sub-committee will exist through June 1997, and probably beyond that. Tentative dates for future meetings are April 16, 1997, July 16, 1997, and October 15, 1997. The January meeting will be in Washington D.C.

Bob Sawyer requested that the Sub-committee to be briefed on OBDII and what has been learned about the on-board diagnostics experience from both a regulatory and a technology perspective. Doug Teague, Chrysler, said he would be responsible for discussing OBD from the technology side.

Bill Becker suggested the Sub-committee be briefed on the ECOS process that will be taking place over the next 18 months regarding I/M evaluations. Mr. Becker also announced that STAPPA is sponsoring a National Motor Vehicle Emissions Control Conference on December 9-11, 1996 in Tampa, Florida. The conference will be policy oriented, addressing fuels, I/M, heavy- and light- duty initiatives and technologies, public education, and health effects. If attendees are interested, they can call the STAPPA office at (202) 624-7864 for an announcement and brochures.

Bob Sawyer adjourned the meeting.

**Mobile Sources Technical Review Sub-committee Meeting
Double Tree Hotel - Falls Church, Virginia
October 9, 1996
List of Members or Member Alternates Attending**

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Bill Becker	STAPPA	(202) 624-7864
Bruce Bertelsen	Manufacturers of Emissions Controls	(202) 296-4797
Kelly Brown	Ford Motor Company	(313) 322-0033
Gregory Dana	Assoc. of International Automobile Manufacturers	(703) 525-7788
John Fisher	Detroit Diesel	(313) 592-7276
Stephen Gerritson	Lake Michigan Air Directors Consortium	(708) 296-2181
Richard Gibbs	New York Dept. of Environmental Conservation	(518) 485-8913
Randall Guensler	Georgia Institute of Technology	(404) 894-0405
John Johnson	Michigan Technological University	(906) 487-2576
John Kowalczyk	Oregon Dept. of Environmental Quality	(503) 229-6459
Virginia McConnell	Resources for the Future	(202) 328-5122
Margo Oge	EPA Office of Mobile Sources	(202) 260-7645
Mike Redemer	Texaco	(914) 253-7909
Robert Sawyer	UC-Berkeley	(510) 642-5573
Robert Slott	Shell Oil	(713) 241-3413
Doug Teague	Chrysler	(810) 576-2923
Tina Vujovich	Cummins	(812) 377-3101
Michael Walsh	Consultant	(703) 241-1297
Al Weaverstad	General Motors	(313) 566-7707