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PHASE 2 RFG ADVISORY COMMITTEE

MEETING SUMMARY - JULY 19, 1994

Introduction

To ensure the smooth transition to Phase 2 reformulated gasoline (RFG), the RFG Advisory committee met on July 19, 1994, in the first of a series of planned meetings. The purpose of the Advisory Committee is to provide a mechanism for discussing issues and concerns with all parties affected by the plan to produce, distribute, and use reformulated gasoline in California. The Advisory Committee's Chairwoman is Miss Jacqueline Schafer, Chairwoman of the Air Resources Board (ARB). The committee consists of major California oil producers, most automobile manufacturers, automobile or fuel dispensing equipment manufacturers, transportation companies and others.

Miss Schafer began the meeting by welcoming the attendees. Pointing out the significant environmental and economic impacts of RFG, she stated that RFG is the critical half of the ARB's motor vehicle control strategy. Implementing the RFG regulation will result in 20,000 temporary jobs and hundreds of permanent jobs; also, many refineries will improve their overall efficiency with the modernizations required for producing RFG. Miss Schafer instructed that three subcommittees should be formed to provide technical review and expertise on compatibility, supply, and public education regarding RFG. All parties were encouraged to participate on the subcommittees. She acknowledged antitrust concerns of the oil companies and wanted to assure them we would work to avoid any conflicts with antitrust laws. She proposed that advisory committee meetings be held quarterly.

Overview of the Reformulated Gasoline Program

Mr. James Boyd, Executive Officer of the ARB, presented an overview of California's RFG program, ARB activities related to our RFG program, and the federal RFG program. He made the following points:

- Vehicles are major contributors to California's air quality problems (75% of ozone violations in CA).

- Vehicle and fuel programs are an integral part of our efforts to reduce air emissions.

- California's reformulated fuels program will result in significant and immediate emission reductions (an average of 310 TPD ozone precursors).

- The California RFG program is cost effective (approximately $4/lb.).

- ARB staff is committed to ongoing efforts to ensure a smooth transition to Phase 2 RFG through monitoring efforts, public education and performance testing.

- At this time, refiners are on schedule (10 of 13 refiners completed CEQA and 9 have air permits).

- The EPA is implementing Phase 1 and Phase 2 RFG programs effective January 1, 1995 and January 1, 2000 respectively.

- Periodic updates will be provided to the Air Resources Board about every six months on California's Phase 2 implementation issues including activities of the Advisory Committee.

Formation of Subcommittees

Mr. Peter Venturini, Chief of the Stationary Source Division for ARB, discussed the ARB recommendations for the roles and responsibilities of the subcommittees mentioned earlier. The subcommittees would be performance, supply [later renamed transition], and public education.

- The performance subcommittee would ensure performance and compatibility with motor vehicles and storage systems and advise ARB on the design of a vehicle testing program.

- The supply [transition] subcommittee would monitor supply, demand, distribution, and compliance. Also, the subcommittee would evaluate the adequacy of potential supply.

- The public education subcommittee would inform the public about the impacts and benefits of RFG.

Investigation of Compatibility and Performance

Mr. Dean Simeroth, Chief of the Criteria Pollutants Branch for ARB, presented information regarding the existing California vehicle fleet and RFG specifications. Further, he discussed current ARB investigations in this area and proposed a test program to identify potential compatibility problems with the introduction of RFG.

The existing fleet of 23 million on-road and 6 million off-road vehicles and engines consume approximately 36 million gallons of gasoline per day. This large number and diversity of engines present potential compatibility problems with the introduction of RFG. To identify potential problems, the ARB will conduct a vehicle testing program. Regarding this, the following issues were discussed:

- Related studies and ARB internal workgroup investigations

- Testing issues, i.e., material compatibility and vehicle

performance

- Vehicle fleet selection criteria

- Sample size and data collection

- Lab testing and vehicle testing

- Phase 2 test fuel criteria

- Amount of fuel required for the test program

General Motors Presentation

Dr. Gerald Barnes, Manager of Alternative Fuels and Heavy-Duty Activities for General Motors Corporation, discussed potential Phase 2 gasoline issues and testing. He stated the automobile industry has, in general, supported the use of RFG as a means of reducing emissions in both new and existing vehicles. Specific concerns with an RFG fuel are as follows:

- A reduced lubricity leading to wear in fuel pumps and injectors

- Incompatibility with elastomers leading to swell, shrinkage, or other changes

- Corrosion of metallic parts, particularly when the alcohols are used as oxygenates

- Intake deposits that will affect vehicle performance

- Driveability as related to low temperature performance and cold starting

- Impact of RFG on fuel economy since most of the proposed changes will reduce the fuel's energy content

- Fuel switching, i.e., the use of federal fuels in California vehicles and the impact on vehicles equipped with OBD II systems

- Additional cost of RFG

GM and others have conducted both bench and vehicle testing of fuels in anticipation of the introduction of Phase 2 RFG. Testing thus far has not shown any problems with Phase 2 RFG. Some testing includes the following:

- GM has simulated a 100,000-mile durability test using an entire fuel system.

- Ford tested for metallic wear using various fuel compositions.

- Nearly all of the major auto manufacturers have tested for elastomer compatibility; and, all are testing for durability certification.

- The GM/WSPA/ARB low RVP fuel tests included vehicles dating back

to a 1969 model.

- ARCO has marketed fuels similar to, if not identical to, phase 2 fuels.

Mr. Barnes also suggested additional vehicle testing using a representative mix of vehicle fueling technologies and model years including older vehicles. He also suggested testing under different ambient temperature conditions using fuels of different compositions.

ARCO Presentation

Mr. Jack Segal, Manager of Fuels Development for ARCO Products Company, presented ARCO's experience with their EC series of gasolines. The EC fuels are similar to RFG and have been used in southern California for a number of years.

EC-1, introduced in 1989, was a replacement for the leaded regular gasoline and was designed for pre-catalytic cars and trucks: the older fleet. ARCO is still selling EC-1 today for use in off-road vehicles and engines. The EC-P fuel, introduced in 1990, was intended for the premium market. When ARCO introduced the EC-P, they formed a committee to monitor complaints; to date, there have been almost no complaints. ARCO is supplying a Phase 2 RFG to the Federal Express Clean Fleet Program; twenty-one of the vehicles using RFG have been running for two years without incident.

Mr. Segal displayed a slide comparing the EC fuels with Phase 2 RFG; the fuels are very similar. Of the eight regulated parameters, four are being met by the EC fuels: aromatics, oxygen, benzene, and T50; the other four parameters are not that far off. He also proposed fuel parameters for fleet compatibility testing, and noted that fuel is going to be an expensive part of a test program.

General Discussion

After the foregoing presentations, Miss Schafer opened the meeting to questions and comments. Many participants voiced support for the advisory committee and what the committee hopes to accomplish. The auto manufacturers and others also expressed support for the use of RFG as a means of achieving emission reductions. Many of the oil refiners added that they felt ready for the introduction of RFG in 1996 and did not anticipate problems. There was also general support for a vehicle test program and public education. Some participants supported the investigation of supply and demand; however, as noted previously, the oil companies had serious concerns regarding antitrust issues and were uncertain about participating in these discussions. Other comments included the following:

- The subcommittees should set up a timetable with completion dates for reporting to the advisory committee.

- Miss Schafer agreed that, at the least, the performance subcommittee should prepare a report on their findings.

- Various members expressed concern regarding the EPA RFG and the implications its introduction will have on California RFG.

- The increase in price of gasoline is a concern especially for those representing fleets.

- The auto manufacturers "fuel economy" will remain unchanged since the test fuel will remain the same; however, RFG has a 2%-4% lower energy density and will lower the user's fuel economy.

CBG Program Advisory and Subcommittee Activities