

Performance Subcommittee
Meeting Summary December 1, 1995

Introduction

The performance subcommittee discussed the following key issues regarding the California Reformulated Gasoline (CaRFG) performance and compatibility testing program:

- On-Road Test Program
- Off-Road Test Program
- State Fire Marshal Data
- Other Issues

Copies of presentations or materials given at this meeting are enclosed with this summary.

II. On-Road Test Program

Ford completed its analysis of the fuel pumps from the ARB and Texaco test programs and provided the ARB with their findings. Ford's analysis of these fuel pump incidents was discussed by the subcommittee. In the ARB test program, the vehicle with license plate number 2F49402 had a reported fuel pump failure; however, Ford's analysis of the fuel pump showed that it operated properly. The subcommittee agreed to remove that incident from the "fuel" pump category and to place it in the "other" category. Further, one other fuel pump from the Texaco Test Program was found to be in appropriate operating condition and that issue will be looked at by Texaco.

The General Motors bench testing is complete for the fuel system plastic materials and about 60 percent complete for the fuel system elastomers (further details of the status of the GM bench testing are attached). The final plastic material tested was a foamed nitrile float material used in older vehicles. Samples of this foam material were exposed to three CaRFG blends and two conventional fuels. The volume and density changes observed for these samples indicate no changes that would affect its performance. Since the last update, one more fuel system elastomer, a nitrile rubber, was completed on the three CaRFG fuels and in the Auto/Oil fuel RFA. In the previously reported elastomer tests, the material samples were exposed to the test fuel for 500 hours

then to low aromatic fuel for another 500 hours to simulate exposure of "used" elastomers to a low aromatic CaRFG formulation. The elongation results of this severe test indicate that the nitrile rubbers are unsatisfactory for high flex applications for all fuels tested -- conventional and CaRFG fuel. However, most vehicle manufacturers made material improvements in the early 1980's and the likelihood that nitrile rubbers are still in use is minimal. In the less severe reflux tests the elongation results in CaRFG fuels were more favorable than those of the conventional RFA fuel. Overall, these results indicate no real differences between the CaRFG fuel and the conventional RFA fuel. The results are discussed in more detail in the attachment.

III. Off-Road Test Program

The majority of the testing in off-road vehicles and equipment was complete in August, 1995. The results of these programs, CSU Fresno, CalTrans, Lake Tahoe and Lake Cachuma are currently being drafted for the CaRFG report. In these test programs, approximately 12,000 hours were logged on test fuel and about 25,000 miles on the snowmobile testing.

Andreas Stihl conducted testing on a chain saw and a weed trimmer. They reported no significant changes in technical parameters with the use of CaRFG; power characteristics and plug seat temperature were equivalent between CaRFG, Federal RFG and conventional fuel. Additionally, they found that hydrocarbon and carbon monoxide emissions remained unchanged with CaRFG in new engines. Based on testing of Federal RFG, they also reported difficulty starting engines using oxygenated fuels, and at higher ambient temperatures.

The results from the five remaining PPEMA member companies are still pending. Husqvarna's, Dolmar-Makita's, and Shin-Daiwa Kogyo's testing is on hold due to CARB certification efforts. Homelite and Poulan results are expected very soon.

IV. State Fire Marshal Data

The State Fire Marshal maintains a database of vehicle fire information that they will provide to the subcommittee at its request. The data contains current and historical

information on vehicle fires with details such as where in the vehicle the fire started, the likely cause of the fire and detailed vehicle information. One of the uses of this data is to see if the rate of vehicle fires changed with past gasoline regulations. Furthermore, the Fire Marshal will be able to identify vehicles prone to fires and monitor if there are any increases in fires during the change to CaRFG.

V. Other Issues

The ARB received a letter from the "Seep Subgroup" of the Technical Review Panel regarding their assessment of seeps. The subgroup consists of members from the domestic auto manufacturers and headed by Loren Beard, Chrysler. The subgroup inspected vehicles in the ARB test program on both the test and control fuel and some vehicles in the Detroit area. They conclude that seeps "do not represent an abnormal condition" and further recommend that seeps be removed from further consideration in the test program. (The letter is attached.)

The CaRFG report will be ready for approval by the subcommittee at the next full subcommittee meeting in February. We are planning to have a smaller meeting for those who are interested in commenting on the report, in mid-January, before presenting it to the full subcommittee.

On a side note, ARCO and Ultramar are proposing to conduct a fleet test program to further study the effects of a CaRFG oxygenated with ethanol prior to the 1996 winter season. The concept is still in its preliminary stages.

Attachments

[CBG Program Advisory and Subcommittee Activities](#)