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Petroleum Industry Research Foundation, Inc.

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New York, N. Y. 10168-0012

For your information . . .

The attached memorandum on accelerated retirement of old (and more polluting) vehicles is being circulated to interested parties in industry and government. We intend to expand it to a full report.

If you have any questions, do not hesitate to call.

John H. Lichtblau
March 4, 1992



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Background Memorandum

Scrapping Cars: Clean the Air, Help Detroit

The average age of cars on the road is increasing: from 6.5 years in 1980 to nearly 8 years in 1991. This has reduced new car sales and also disproportionately increased automotive air pollution, since old cars use more fuel and emit more pollution per gallon than newer ones. If we can find a way to accelerate the scrapping of old cars in running condition we would invigorate a very troubled U.S. key industry, and, more importantly, improve air quality quicker than most other measures currently in vogue. There are no negative sides to encouraging (but not mandating) accelerated car scrapping. The only question is, is it cost-effective? The answer, based on a small data base, is yes.

Let us first look at the numbers involved: approximately 32 million cars, or 36% of all passenger cars, are of 1979 or earlier vintage. About one-third of these cars do not have catalytic converters which became obligatory in 1975 and most were not designed to meet the fuel efficiency standards mandated since 1978.

Let us suppose that for a one-year test period an economic incentive is devised to remove 1 million old but running cars. A chain reaction of progressively newer vehicle purchases throughout the car market would eventually (but not immediately) lead to substantial new car sales. New car sales in the United States were just over eight million units in 1991. At its maximum potential, the increased demand from the accelerated scrapping would give an impressive boost to car manufacturers.

Now let us look at the air pollution impact of the additional scrapping, its principal public benefit. Probably the most interesting data on this subject were developed by Unocal, the West Coast-based oil company, in a recent pilot program in the Los Angeles Basin area "as a clean air initiative." The company and its program partners bought 8400 operating pre-1971 cars for scrapping and randomly selected 74 of them for testing of exhaust and evaporative emissions and running losses per mile.

The results showed surprisingly high pollution levels. The pre-1971 models emitted on the average 99 times as much hydrocarbon, 50 times as much carbon oxide and 11 times as much nitrogen oxide per mile as a new 1990 vehicle. Measuring the net pollution reduction involves estimating how the scrappers replaced those car miles. According to follow-up surveys, 46% purchased new or used cars (with a median model year of 1983), 42% used a car already owned, and 12% said they had not driven the scrapped car significantly and thus did not need a replacement.

The pollution reduction benefit is of course lowered when the scrapped cars are from more recent models years. Still, the average pollution rate per mile of a 1975 vehicle with its likely 75,000-plus mileage is a high multiple of that of a new 1991 car.

Automotive air pollution will be reduced throughout the 1990's even if no new action is taken because fuel-inefficient and high polluting vehicles are replaced on an ongoing basis by vehicles designed for higher efficiency and lower pollutant emission. However, anti-pollution measures already on the books, such as the low-emission and zero-emission vehicles, will have no significant environmental impact until well after the year 2000. Effective car scrapping incentives, on the other hand, would have immediate environmental benefits because the oldest, least efficient and most polluting "clunkers" are likely to be offered first for scrappage. These benefits could be further enhanced if the program favored cars registered in the EPA's designated air quality "non-attainment" areas which consume about half of all gasoline.

Pre-1980 cars have a scrappage rate of about 15%-16% per year; cars already destined for the junk yard are the least desirable target for the program. Requiring that offered cars be registered for at least 12 months, that they carry valid inspection stickers, that they be in operable condition are all criteria that would minimize the participation of vehicles that were going to be scrapped anyway but it can't be totally eliminate. According to some estimates, the scrapped vehicles in the Unocal program might have remained on the road for an average of another three years.

How much will the incentive program cost and who will pay for it?

The Unocal program offered \$700 for each car. Based on the public's response, this price was high enough; the program was oversubscribed. It was certainly above the average purchase price for cars of this vintage. If we apply this price to our scrappage goal of 1 million cars, the cost would be \$700 million plus administrative expenses. Since accelerated scrappage is clearly in the public interest, government funding is justifiable.

Another possible funding mechanism is the inclusion of scrapped cars in the *pollution rights trading* established under the federal Clean Air Act, where companies can attain compliance by buying pollution "rights" from companies whose pollution is below the required standard. A company may find that buying old cars for scrappage is a cheaper way to achieve compliance than reducing its own pollution further. The government's only

involvement would be allowing the mechanism's use under the pollution rights trading program, and specifying the credit for differing make and model years. Another mechanism discussed has been a gasoline tax, which would be somewhat less than 1¢/gallon.

The scrappage incentive program provides still another but much more modest benefit -- it reduces gasoline consumption, since the cars which replace the scrapped units are more fuel efficient. We estimate that each million cars scrapped will reduce gasoline consumption by 20,000 B/D. This is not very significant. But cumulatively it would become important.

Finally, there is the question whether the scrappage program is a temporary measure to remove the inefficient and high-polluting models of the 1960's and 1970's or whether it should be an ongoing program. It is true that the benefit diminishes as the post-1980 models become the targets. However, based on EPA data one can calculate that when the 1990 models have been driven 75,000 miles they too will emit several times as much pollution as when they were new. Thus, a case can be made for an ongoing car scrappage program. Will this be an incentive for car owners to hold on to their old cars, knowing a minimum price is still available tomorrow? Not if successive program years use a declining payment schedule for given model years.

Altogether, then, the program is viable, beneficial and in the national interest.

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