

STATEMENT OF DR. JAMES D. PALMER, ADMINISTRATOR, RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY, SUBCOMMITTEE ON ENERGY DEVELOPMENT AND APPLICATIONS, JUNE 7, 1979

Mr. Chairman, I am James Palmer, Administrator of the Department of Transportation's Research and Special Programs Administration. Thank you for the opportunity to appear before this Committee. I will describe Secretary Adams' initiative to improve auto fuel efficiency and thereby reduce the nation's dependence on foreign oil supplies.

The Research and Special Programs Administration carries out research programs directed at building a technological base on which decisions can be made to assure efficient and safe future transportation systems. The Secretary has requested that my Administration assist him in carrying out his automotive initiative. This initiative is directed toward significantly improving the fuel efficiency of the national auto fleet in the post-1985 period, thereby conserving petroleum resources. Not only is there a continuing need to support this effort to conserve energy for conservation's sake, but success in this area will allow pursuit of an orderly program to develop alternative fuels.

The hard facts concerning automobile energy usage are:

- The 6.5 million barrels of oil per day consumed in the U.S. automobiles including light trucks, is equivalent to 35% of all U.S. oil consumption, 60% of all U.S. production.

- With nearly 90 percent of personal travel now by automobile, even great success with the Department's current efforts at increasing mass transit development and usage will still leave the automobile as the major source of personal transportation and the major user of petroleum in the year 2000.

In an era of decreasing petroleum availability and increasing environmental constraints, it appears unlikely that the auto industry and its suppliers will be able to develop by themselves the kind of knowledge base needed for the auto of the 1990's - one which can lead to the kind of sophisticated innovations needed to minimize petroleum utilization without compromising mobility, cost, and safety. The technology for the cars of the 1990's may not be greatly improved over that of the 1980's, unless there is a major new commitment to advancing the state of the art. The integration of national objectives of energy conservation, environmental protection, and safety into a coherent long-term program requires perspectives and responsibilities well beyond those of the private automobile companies, whose objectives are rooted in the marketplace.

Secretary Adams, recognizing the fragile nature of our petroleum supply and the potential impact of a long-term petroleum shortage on the nation's mobility, delivered a speech at the Detroit Economic Club on December 5, 1978, which called for "the auto industry and Government to stop butting heads and to start working together." He went on to say that:

"The fuel economy standards now posted, as difficult as they may be to meet, will not suffice. I am aware of the school of thought that says energy supplies will be adequate for as long into the future as we can see. I do not have that confidence. And as Secretary of Transportation I can't take that chance -- nor, in my opinion, can our society."

The Secretary made the point that we are engaged now in a holding action. He said, "We are not solving our basic energy problem; we are only deferring it. It is now how much fuel we save this year, or the next, or in 1985 that matters in the long run. What concerns me, and must concern you, is what the auto industry will be able to build and what people can buy in a decade."

The Secretary concluded by asking that industry and academia join with Government in an intellectual consortium dedicated to a giant step for mankind's surface transportation needs.

As the first step in the implementation of the automotive initiative, Secretary Adams asked RSPA's research arm, the Transportation Systems Center in Cambridge, Massachusetts, to convene a conference in Boston in February, 1979, to establish basic research directions for advanced auto technology. The Conference was attended by more than 700 experts from industry, academia, consumer groups, and the Government. The Conference was chaired for Secretary Adams by Dr. Raymond Bisplinghoff, Chairman of the National Research Council Committee on Transportation. Dr. Bisplinghoff was asked by the Secretary to respond to two basic questions:

- Is it realistic through development and application of advanced auto technology to achieve a total motor vehicle system with less dependence on imported petroleum than that which has been legislatively mandated by the mid-1980's and which, at the same time, satisfies emissions and costs?
- Does the Federal Government have a role in stimulating advanced technology relative to the automobile?

The consensus of the conferees to each of these questions was a clear and unequivocal yes. The nation can reduce its dependence on imported petroleum through technology; and a leadership role is acceptable, and expected, for the Federal Government in planning and funding a cooperative program of basic research appropriate to automotive technology.

The final report on the Boston Conference, which has been submitted for the Record, assessed the opportunities presented in the nation by a program of basic research in automotive technology. The report outlined a comprehensive research agenda that includes research topics and tasks considered most important for the future evolution of automotive technology. And, it concluded with a survey of some of the requirements which are considered important for successful implementation of a program of directed basic research.

Research needs and opportunities were identified in the following areas:

- Thermodynamics, Combustion, Heat Transfer, and Fluid Flow;
- Structures and Materials Selection;
- Energy Storage;
- Engine/Fuel Interactions;

- Materials Science and Processing;
- Controls Research;
- Friction and Wear; and
- Acoustics and Vibration.

The proposed research on engine/fuel interactions is particularly important to the considerations of this subcommittee in that work on alternative fuels and improved auto engines must be carried out together - engine and fuel research are interdependent.

The Boston Conference participants strongly affirmed the proposition that the development and application of advanced technology could result in significantly improved motor vehicles. The conferees recognized that a program of basic research will not be a panacea for solving all problems in personal transportation, many of which have social, economic, and political dimensions. Nevertheless, such a program is a fundamental prerequisite to the advancement of our ability to deal with motor-vehicle-related problems.

Since the Conference on Basic Research Directions for Advanced Automotive Technology, Secretary Adams has led a Federal interagency working group, and in cooperation with the science advisor to the President, Dr. Frank Press, has held continuing discussions with auto industry leaders and others in an effort to develop the general principles of a cooperative automotive basic research program.

On May 18, 1979, President Carter, accompanied by Secretary Adams, Secretary Schlesinger, and Dr. Frank Press, met at the White House with the heads of the U.S. automobile industry and other top academic and government leaders and endorsed the concept of a cooperative basic auto research program.

The goals of the program are:

- to attract bright minds and new trainees to enter the disciplines that are the feedstock of new automotive technology;
- to raise the level of sophistication on automotive technology and to develop an informed technical community;
- to establish a continuing count of innovative ideas and approaches to the design problems inherent in developing vehicles to transport people and goods; and
- to develop a process that facilitates the delivery of the results into the automobile industry.

Basically, this program is part of the President's commitment to a strong basic research program addressing areas of national concern and needs of all sections of the economy.

The following principles for the basic research initiative were agreed to at the White House meeting:

- Focus on basic research which contributes substantially to improved auto technology;
- A pluralistic approach involving a range of university, industry, and Federal laboratories. An important result of the university work will be an increased supply of engineers;

- Personnel exchanges, especially between industrial and university laboratories, to maintain the flow of information and the transfer of new engineering knowledge;
- Wide and open dissemination of results to all interested parties subject to appropriate patent provisions;
- A level of effort and timing determined by the capacity of the science and engineering community to absorb new funds and the competing demands on corporate and Federal resources;
- Industry cost sharing is an important feature of this effort. Mechanisms will be established for industry contributions through direct grants to universities, increases in effort at automotive industrial laboratories, and other arrangements;
- The implementation and management strategy has not yet been determined. However, to help insulate the program from the political and technological pressures of the fuel economy, safety and emissions regulatory programs, the initiative will not be managed by a regulatory agency; and
- Decentralized project selection mechanisms, with an agreed upon general agenda of research areas.

During the next four months Secretary of Transportation Brock Adams and Dr. Frank Press, the President's Science Technology Advisor, will work with leaders of the automotive industry including material and component suppliers, with universities, Government agencies and laboratories, and with other interested parties to develop the details of a cooperative Basic Automotive Research Program, incorporating the principles agreed to at the White House meeting.

The Secretary's automotive initiative and today's hearings have the same goal. Each is looking for viable approaches to mitigate the transportation fuel dependence on foreign oil supplies. The Secretary's automotive initiative is directed to the reduction of foreign oil demand through improvement in auto fuel efficiency. Although the present hearings of this subcommittee are directed towards and assessment of fuel supply alternatives to foreign oil, it is clear that a successful automotive initiative will not only conserve fuel but allow for a more orderly and effective transition to alternative fuels. Public policy should embrace both improved auto fuel efficiency and development of an alternative fuel program to reduce our dependence on our fragile petroleum supplies. The nation must balance the economic, social and environmental consequences associated with the introduction of new alternative fuel technologies with those associated with the introduction of new energy efficient motor vehicle technology. We cannot afford to take only one approach at the expense of another, but must address these problems with a total system approach.