

BACKGROUND ON VW TURBO DIESEL
INTEGRATED RESEARCH VEHICLE

In November 1970, shortly after beginning the U.S. Family Sedan ESV Project, The Secretary of Transportation signed a bi-lateral Memorandum of Understanding with the Federal Republic of Germany (FRG) for cooperative interchange of safety performance information based on development of complete experimental safety vehicles. The impetus for this agreement, and subsequent agreements with the governments of Japan, Great Britain, France, Italy, and Sweden, was the Road Safety Pilot study initiated under the NATO Committee on the Challenges of Modern Society. Under this agreement the automotive industry of FRG began to develop complete safety vehicle designs and to exchange technical information on highway safety, with the U.S. and other program participants. In October 1971 the FRG and Daimler Benz A.G. hosted one of the six International ESV Conferences which have provided the major forum for this technical interchange. In addition to these conferences numerous exchange visits of government and industry have been made.

In the FRG a specification for a European sized safety vehicle was prepared and cars were developed by Opel (2600 lbs), VW (3200 lbs) and Mercedes (4620 lbs). The development of these cars, all targeted for Level III ^(50 mph barrier) safety protection, was supported entirely with industry funds. Subsystems level research was carried out

by other FRG firms (Porsche, BMW) and accident studies were conducted by the insurers. Subsequently, Volkswagenwerk AG extended their research to a lower weight class car with Level II ^(40 mph barrier) safety and in 1974 they developed the ESVW II in the 2000 lbs. class. The Volkswagen Rabbit incorporated some of the safety features demonstrated in this smaller vehicle.

With the initiation of the U.S. Research Safety Vehicle Project in January 1974, safety vehicle research programs recognized the need for improved automotive safety performance to be compatible with environmental protection, energy conservation, and consumer economic considerations. Volkswagen was selected by DOT as one of the five Phase I contractors and was paid \$600K for their work in that phase. Although they were not selected to continue in the RSV Project, they did continue work for DOT in assessing advanced engines suitable for integrated research vehicles.

As part of this technology assessment for DOT on engines, VW developed a research turbocharged diesel engine. This engine was installed initially in a production Rabbit and evaluated by DOT. This car, which meets current safety requirements, demonstrated fuel economy at 50 MPG. EPA combined cycle, with emission levels of .41CO, g.OO2 and 1.5 Nox. The final hardware from this assessment program calls for the integration of this engine into the previously developed ESVW II car with Level II Safety. This integrated test vehicle

represents a significant achievement in harmonizing societal goals in safety and fuel economy with those in engine emissions and consumer acceptance. The vehicle has attained Level II safety with advanced passive belts and will reach 55 - 60 MPG fuel economy while emissions are held significantly lower than current standards permit. This integrated car is to be delivered to DOT on June 28 for non-destructive evaluations. It will be equipped with advanced passive belts.