

## **CHAPTER 2 BACKGROUND OF THE HDVIP AND PSI PROGRAMS**

### **2.1 OVERVIEW**

Although heavy-duty diesel vehicles (HDDVs) have been significant contributors to the overall national emissions inventory of NO<sub>x</sub> and particulate matter, interest in controlling their in-use emissions has grown only during the last decade. This is partly because of the perception that diesel emissions do not deteriorate significantly with the age and use of the engine, and partly because test methods and standards to implement a diesel I/M program have not been established by EPA. In spite of these facts, there have been several programs to in-use heavy-duty diesel vehicles in since the 1970's. Arizona was the first to implement such a program in 1970, and four other states have active programs in effect today. Other states have had regulations on their books but have not (as of yet) had an active enforcement program.

California had a program that was operational between November 1991 and October, 1993, called the Heavy-Duty Vehicle Inspection Program (HDVIP). In contrast to other state programs, the HDVIP was preceded by extensive study of appropriate test procedures and pass/fail criteria required to implement a successful I/M program. A detailed survey of other states with heavy-duty diesel inspection programs revealed that actual failure rates in some programs such as Arizona were unrealistically low, at 1 to 3 percent of all HDDVs tested. In contrast, the HDVIP recorded substantially higher failure rates in the range of 30 percent. During the two years that the HDVIP was operational, the percentage of smoky trucks showed a significant decline, confirming the programs' effectiveness.

### **2.2 LEGAL BASIS FOR THE CALIFORNIA HDVIP**

California has led the nation in imposing stringent emission standards for new motor

vehicles, and

had viewed in-use emissions of heavy-duty diesel vehicles with increasing concern.

Analysis showed that this category of heavy-duty vehicles contributed to 20 percent of the statewide NO<sub>x</sub> emissions and 75 percent of the PM emissions from on-highway motor vehicles. Moreover, smoky trucks and buses were also a target of many complaints from the public.

In response to potential environmental and public health impacts from HDDV emissions, Senate Bill 1997 (Presley, Chapter 1544, Statutes of 1988) was enacted authorizing the ARB to design, implement and enforce the HDVIP. The HDVIP was implemented on November 25, 1991. This program was designed to significantly reduce excess emissions from heavy-duty vehicles resulting from poor maintenance and/or tampering. International (due to the implementation of NAFTA), interstate, and intrastate heavy-duty trucks and buses are subject to this program.

The primary goal of the HDVIP is to cite excessively smoking HDDVs operating in California, and the program largely achieved these goals as described in the following section of this document. The HDVIP was designed to be a roadside inspection program. Unlike registration-based inspection programs, the HDVIP targets all HDDVs traveling on California's roads, making in-state, out-of-state and out-of-country HDDVs equally likely to undergo inspection. Consequently, California trucks are not at a competitive disadvantage. The test procedure used was called the snap-idle test (now known as snap acceleration) and smoke measurement methods were based on the J1243 procedure prescribed by the Society of Automotive Engineers (SAE). In October, 1993, the ARB temporarily suspended enforcement of the HDVIP and redirected staff efforts to other issues.

In concert with the HDVIP, the Periodic Smoke Inspection (PSI) program was mandated by Senate Bill 2330 (Killea, Chapter 1455, Statutes of 1990) in an effort to promote self

enforcement of the smoke opacity standards by fleets. Under the PSI program, California based fleets with two or more HDDVs are required to conduct annual smoke opacity and tampering self-inspections. The ARB is required to audit these fleets by reviewing their maintenance and inspection records. In addition, the ARB was required to test a representative sample of HDDVs to ensure program compliance, using test procedures and standards identical to those specified in the HDVIP. Since the PSI program relied on the HDVIP regulations, it too is currently not enforced by ARB. In the interim, staff has allowed fleets to voluntarily follow existing program guidelines.

### **2.3 HDVIP/PSIP ENFORCEMENT**

During the spring of 1989 to November 25, 1991, the ARB staff conducted "pilot" and "pre-enforcement" programs to develop the formal enforcement program and gain voluntary industry compliance prior to HDVIP implementation. At the conclusion of the "pre-enforcement" program, the failure rate was 34 percent; considerably lower than the failure rate during the "pilot" programs. The enforcement phase of the HDVIP was implemented on November 25, 1991. During its two years of operation, the failure rate continued to drop and was 18.5% in 1993 (see Table 2-1). This corresponds to a 35 percent reduction in the failure rate resulting in annual reductions of NO<sub>x</sub> and particulate matter emissions of 19 tons per day (4 percent) and 32 tons per day (39 percent), respectively, at a cost-effectiveness of \$0.44 and \$0.47 per pound, respectively, compared to \$2.30 per pound for the current Smog Check program. It should be noted that the vast majority of trucks cited had smoke opacity over 85 percent, as shown in Figure 2-1.

Vehicles were tested at California Highway Patrol (CHP) inspections facilities and weigh stations statewide as well as at random roadside locations. The test included a "snap-acceleration" stationary vehicle test utilizing an electronic smokemeter and an engine/emissions controls system tampering inspection. The owners of vehicles failing the prescribed test procedures were issued citations which require the expeditious repair of the vehicle and carry civil penalties ranging from \$300 to \$1800 per violation. Failure to clear

**citations could result in the vehicle being removed from service by the California Highway Patrol (Health and Safety Code section 44011.6(I) and Vehicle Code section 27159). Vehicle owners could appeal citations through the ARB's Administrative Hearing Program.**

**Figure 2-1**

<b>Table 2-1</b> <b>Heavy Duty Diesel Vehicle Inspection Program Enforcement Statistics</b> <b>November 25, 1991 through October 15, 1993</b>				
<b>Year</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>Totals</b>
<b>No. Of Inspections</b>	857	18,239	19,851	38,947
<b>No. Of Citations</b>	383	4,431	3,679	8,493
<b>Failure Rate</b>	44.7%	24.3%	18.5%	21.8%
<b>No. Cleared</b>	20	2,716	3,620	6,356 (75%)
<b>No. Appealed</b>	3	487	*669	1,159
<b>Penalties Assessed</b>	114,900	1,341,700	1,156,700	2,613,300
<b>Penalties Collected</b>	9,300	856,598	1,209,102	2,075,000 (79.4%)

\* 667 in 1993; 2 in 1994.

Source: ARB Mobile Source Operations Division, HDVIP Status Reports.

To date, HDVIP civil penalty assessments exceed \$2.6 million and collections exceed \$2.0 million (see Table 2-1). These monies are deposited into the Vehicle Inspection and Repair Fund (VIRF) and Diesel Emission Reduction Fund (DERF). The VIRF monies are used to support the HDVIP and the Smog Check Program. The DERF monies are used to support clean diesel fuels and technology research, as mandated by Assembly Bill 1107 (Moore, Chapter 940, Statutes of 1989).

Although the HDVIP has been one of the ARB's most successful and cost-effective air quality programs, the "snap idle" test (now referred to as "snap acceleration" test) has been the focus of much controversy. The California Trucking Association (CTA) has

argued that the test incorrectly fails clean trucks. This debate has been ongoing since the program's implementation in 1991 and has been litigated four times. In all cases, the test has been upheld by numerous California Courts including the California Supreme Court. The only remaining case is *Vivano et.al. v. ARB*. This case involved 386 citations with an average smoke opacity of 89%. CTA's Petition for Administrative Mandamus and sanctions against ARB counsel were denied during a hearing, and this case is currently on appeal at the Third District Court of Appeals.

As noted, the PSI program has not yet been actively enforced by ARB. However, it is believed that self inspection by fleets contributed significantly to the observed reduction in the percentage of the fleet that was smoky, since the reduction in the number of smoky trucks fleetwide is far greater than the number of citations issued.