State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-550

Relating to Exemptions Under Section 27156
of the California Vehicle Code

Advanced Flow Engineering
Magnum Force Intake System

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the installation of the Magnum Force Intake System, produced and marketed by Advanced Flow Engineering, 191 Granite Street, Corona, California 92879, has been found not to reduce the effectiveness of the applicable vehicle pollution control systems and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for the vehicles listed in Exhibit A.

The Magnum Force Intake System includes the following main components: open-element cotton gauze air filter, intake system tubing, crankcase ventilation hose (as applicable, which may be silicone, and a color other than black), assorted brackets, and hardware.

This Executive Order is valid provided that the installation instructions for the Advanced Flow Engineering Magnum Force Intake System will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the Advanced Flow Engineering Magnum Force Intake System, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

This Executive Order shall not apply to any Advanced Flow Engineering Magnum Force Intake System advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

Marketing of the Advanced Flow Engineering Magnum Force Intake System using any identification other than that shown in this Executive Order or marketing of the Advanced Flow Engineering Magnum Force Intake System for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

This Executive Order does not constitute any opinion as to the effect the use of the Advanced Flow Engineering Magnum Force Intake Systems may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on an examination of the On-Board Diagnostic II (OBD-II) system of a 2002 model-year GM Suburban (engine family 2GMXA05.3185, MDV3, ULEV) in the modified configuration, and an engineering evaluation of the emissions impact of the device if measured using the Cold-Start CVS-75 Federal Test Procedure.

If evidence provides the ARB with reason to suspect that the Magnum Force Intake System will affect the durability of emission control systems, Advanced Flow Engineering shall be required to submit durability data to show that the durability of vehicle emission control systems are not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

The ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF ADVANCED FLOW ENGINEERING'S MAGNUM FORCE INTAKE SYSTEM.

No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a ten-day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 12TH day of December, 2002.

Allen Lyons, Chief
Mobile Source Operations Division

Exhibit A

P/N	MFR	Model	Model-Year	Disp.
50-10082	Ford	F150 Pick-up	1997-2003	4.6, 5.4 L
50-10082	Ford	Expedition	1997-2003	4.6, 5.4 L
50-10082	Lincoln	Navigator	1998-2003	4.6, 5.4 L
50-10142	Jeep	Wrangler TJ	1997-2002	4.0 L
50-10191	Ford	F-250 Powerstroke	2002	7.3 L
50-10191	Ford	F-350 Powerstroke	2002	7.3 L
50-10191	Ford	Excursion Powerstroke	2002	7.3 L
50-10212	Dodge	1500 series Ram Pick-up	2002	4.7 L
50-10232	Jeep	Liberty	2002	3.7 L
50-10331	Ford	F-250 Superduty	1998-2002	5.4, 6.8 L
50-10331	Ford	F-350 Superduty	1998-2002	5.4, 6.8 L
50-10331	Ford	Excursion	2000-2003	5.4, 6.8 L
50-10091	Cadillac	Escalade	2002	5.3, 6.0 L
50-10091	Chevrolet	Avalanche 1500	2002	5.3 L
50-10091	Chevrolet	Avalanche 2500	2002	8.1 L
50-10091	Chevrolet	Silverado 1500	1999-2002	4.8, 5.3 L
50-10091	Chevrolet	Silverado 1500 HD	2001-2002	6.0 L
50-10091	Chevrolet	Silverado 2500	1999-2002	5.3, 6, 8.1 L
50-10091	Chevrolet	Silverado 2500 HD	2001-2002	6.0, 8.1 L
50-10091	Chevrolet	Silverado 3500	2002	6.0, 8.1 L
50-10091	Chevrolet	Suburban 1500	2000	5.3 L
50-10091	Chevrolet	Suburban 2500	2000	5.3 L
50-10091	Chevrolet	Suburban 2500	2000-2002	6.0 L
50-10091	Chevrolet	Suburban 2500	2001-2002	8.1 L
50-10091	Chevrolet	Tahoe	2000-2002	4.8, 5.3 L
50-10091	Chevrolet	Pick-Up HD Chassis Cab C3500	2002	8.1 L
50-10091	GMC	Denali	2001-2002	6.0 L
50-10091	GMC	Sierra 1500	2000-2002	4.8, 5.3 L
50-10091	GMC	Sierra 1500 HD	2001-2002	6.0 L
50-10091	GMC	Sierra 2500	2000-2002	5.3, 6.0 L
50-10091	GMC	Sierra 2500	2001-2002	8.1 L
50-10091	GMC	Sierra 2500 HD	2001-2002	6.0, 8.1 L
50-10091	GMC	Sierra 3500 HD	2002	6.0, 8.1 L
50-10091	GMC	Yukon 1500	2001-2002	4.8, 5.3 L
50-10091	GMC	Yukon 2500	2000	5.3 L
50-10091	GMC	Yukon 2500	2000-2002	6.0 L
50-10091	GMC	Yukon 2500	2001-2002	8.1 L
50-10091	GMC	Pick-Up HD Chassis Cab C3500	2002	8.1 L

EVALUATION SUMMARY

Manufacturer Name: Advanced Flow Engineering

Name of Device: Magnum Force Intake System

Background:

Advanced Flow Engineering of 191 Granite Street, Corona, California 92879, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Advanced Flow Engineering Magnum Force Intake System designed for the vehicles listed in Exhibit A. The vehicle application includes those certified to the Ultra-Low Emission Vehicle (ULEV) standards.

Recommendation:

Grant exemption to Advanced Flow Engineering as requested and issue Executive Order D-550.

Device Description:

Advanced Flow Engineering's Magnum Force Intake Systems are air intake systems specifically designed for installation on the vehicles listed in Exhibit A. The installation of the kit does not require any major modifications to the stock motor, except for the modification of the factory air intake system to accommodate the Magnum Force Intake System air filter and plumbing. On some models, relocation of the crankcase ventilation hose is required. In these cases, the Magnum Force Intake Systems are supplied with crankcase ventilation hoses (as applicable, which may be silicone, and a color other than black). The filter element used in the Magnum Force Intake Systems is an open-element, cotton gauze unit, designed to be less restrictive than the stock air filter.

The Magnum Force Intake Systems are intended to increase the vehicles' volumetric efficiency and power output at particular engine loads and throttle openings. At heavy engine loads and increased throttle openings, the airflow into the engine is increased because the Magnum Force Intake Systems are less restrictive than stock air filters. This allows more air to enter the engine, which is compensated by the vehicle engine control module with an increase in fuel flow, resulting in a higher power output. However, the fuel enrichment is limited and the typical net effect is an overall leaning effect of the fuel mixture. The leaning effect is manifested in a marginal, but measurable, NOx increase. Worst-case vehicles are examined for their certification emissions. In cases where certification emissions have values low enough to accommodate any small increase in emissions (in this case NOx), emission testing is deemed not required.

Discussion/Basis for the Recommendation:

A 2002 model-year GM Suburban (engine family 2GMXA05.3185, MDV3, ULEV) was used for the evaluation of the Advanced Flow Engineering Magnum Force Intake System. The test vehicle was certified to the Medium-Duty Vehicle 3 Ultra-Low Emission Vehicle (MDV3, ULEV) standards, and was equipped with an enhanced evaporative system. Testing consisted of one CVS-75 Federal Test Procedure (FTP) in the modified configuration (Magnum Force Intake System installed) to set all On-Board Diagnostics (OBD) II readiness indicators. Testing was conducted at California

Analytical Instruments. No emissions measurement was required since similar systems have been tested previously and have shown to marginally increase the NOx when tested in accordance with the CVS-75 FTP. This marginal increase in NOx is due to a leaning effect of the less restrictive intake system. Since the affected vehicles have certification values that are considerably below the standards, they can accommodate any small increase in NOx emissions.

Based on the test results and examination of the OBD II system, the staff concludes that Advanced Flow Engineering's Magnum Force Intake Systems meet the requirements for a VC 27156 exemption for the vehicles listed in Exhibit A.

Exhibit A

P/N	MFR	Model	Model-Year	Disp.
50-10082	Ford	F150 Pick-up	1997-2003	4.6, 5.4 L
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50-10091	Chevrolet	Avalanche 1500	2002	5.3 L
50-10091	Chevrolet	Avalanche 2500	2002	8.1 L
50-10091	Chevrolet	Silverado 1500	1999-2002	4.8, 5.3 L
50-10091	Chevrolet	Silverado 1500 HD	2001-2002	6.0 L
50-10091	Chevrolet	Silverado 2500	1999-2002	5.3, 6, 8.1 L
50-10091	Chevrolet	Silverado 2500 HD	2001-2002	6.0, 8.1 L
50-10091	Chevrolet	Silverado 3500	2002	6.0, 8.1 L
50-10091	Chevrolet	Suburban 1500	2000	5.3 L
50-10091	Chevrolet	Suburban 2500	2000	5.3 L
50-10091	Chevrolet	Suburban 2500	2000-2002	6.0 L
50-10091	Chevrolet	Suburban 2500	2001-2002	8.1 L
50-10091	Chevrolet	Tahoe	2000-2002	4.8, 5.3 L
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50-10091	GMC	Sierra 2500	2001-2002	8.1 L
50-10091	GMC	Sierra 2500 HD	2001-2002	6.0, 8.1 L
50-10091	GMC	Sierra 3500 HD	2002	6.0, 8.1 L
50-10091	GMC	Yukon 1500	2001-2002	4.8, 5.3 L
50-10091	GMC	Yukon 2500	2000	5.3 L
50-10091	GMC	Yukon 2500	2000-2002	6.0 L
50-10091	GMC	Yukon 2500	2001-2002	8.1 L
50-10091	GMC	Pick-Up HD Chassis Cab C3500	2002	8.1 L