

BOOK

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-485-1  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

INTERNATIONAL FUEL TECHNOLOGY, INC.  
PEERDIESEL FUEL PROCESSOR

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-45-9;

IT IS ORDERED AND RESOLVED: That the installation of the PEERdiesel Fuel Processor, manufactured and marketed by International Fuel Technology, Inc., 6170 W. Desert Inn Road, Las Vegas, Nevada 89146-6640, has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1994 model-year and older heavy-duty diesel vehicles.

The PEERdiesel Fuel Processor includes the following main components: PEERdiesel Fuel Processor, pre- & post-filters, and hoses.

This Executive Order is valid provided that the installation instructions for the PEERdiesel Fuel Processor will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

This Executive Order shall not apply to any PEERdiesel Fuel Processor advertised, offered for sale, or sold with or installed on, a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

Changes made to the design or operating conditions of the PEERdiesel Fuel Processor 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.

Marketing of the PEERdiesel Fuel Processor using any identification other than that shown in this Executive Order or marketing of the PEERdiesel Fuel Processor for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of the PEERdiesel Fuel Processor shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of the PEERdiesel Fuel Processor may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on emission testing of 4 engines equipped with the PEERdiesel Fuel Processor measured using the 13-mode steady-state engine dynamometer test as specified in SAE J1003. However, the ARB reserves the right to conduct additional emission tests, in the future, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the International Fuel Technology, Inc., PEERdiesel Fuel Processor adversely affects emissions during transient and off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the PEERdiesel Fuel Processor will affect the durability of the emission control system, International Fuel Technology, Inc., shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

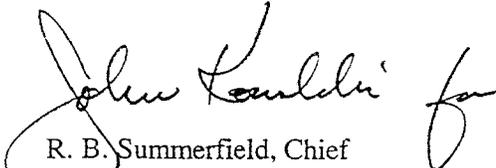
In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

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 THE INTERNATIONAL FUEL TECHNOLOGY, INC., PEERDIESEL FUEL PROCESSOR.

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 after hearing that grounds for revocation exist.

Executed at El Monte, California, this 17<sup>th</sup> day of June 1999.

  
R. B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF THE INTERNATIONAL FUEL TECHNOLOGY, INC.  
PEERDIESEL FUEL PROCESSOR  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

June 1999

by

Mobile Source Operations Division  
9528 Telstar Avenue  
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

## SUMMARY

On behalf of International Fuel Technology, Inc., of 6170 W. Desert Inn Road, Las Vegas, Nevada 89146-6640, California Environmental Engineering has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the PEERdiesel Fuel Processor designed for 1994 model-year and older heavy-duty diesel vehicles.

Based on the emission results of steady-state engine dynamometer testing, the staff concludes that the International Fuel Technology, Inc., PEERdiesel Fuel Processor system will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that International Fuel Technology, Inc., be granted an exemption as requested and that Executive Order D-485-1 be issued.

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EVALUATION OF THE INTERNATIONAL FUEL TECHNOLOGY, INC.  
PEERDIESEL FUEL PROCESSOR  
FOR AN EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

On behalf of International Fuel Technology, Inc., of 6170 W. Desert Inn Road, Las Vegas, Nevada 89146-6640, California Environmental Engineering has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the PEERdiesel Fuel Processor system designed for 1994 model-year and older heavy-duty diesel vehicles.

II. CONCLUSIONS

Based on evaluation of emission testing performed in the stock and modified configurations, the staff concludes that the International Fuel Technology, Inc., PEERdiesel Fuel Processor will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that International Fuel Technology, Inc., be granted an exemption for their PEERdiesel Fuel Processor system for installation 1994 model-year and older heavy-duty diesel vehicles. The staff also recommends that Executive Order D-485-1 be issued.

IV. PEERDIESEL FUEL PROCESSOR DESCRIPTION

The International Fuel Technology, Inc., PEERdiesel Fuel Processor has been specifically designed for installation on 1994 model-year and older heavy-duty diesel vehicles. The system operates in conjunction with the original equipment manufacturer's (OEM) fuel injection system and emission control system already certified with the stock engine.

The intent of installing the PEERdiesel Fuel Processor is to enhance the fuel by heating the fuel. The idea behind heating of the recirculating fuel relates to the binding of pre-heated filtered #2 diesel fuel and post heated filtered #2 diesel fuel to oxygen reversibly bound between alkane benzene

rings. This binding occurs at the interface between the fuel and the air within the tank and is enhanced by the filtering and heating process.

The installation of the kit does not require any major modifications to the stock motor, except for the modification of the factory fuel system to accommodate the PEERdiesel Fuel Processor, filters, and plumbing.

V. DISCUSSION OF THE PEERDIESEL FUEL PROCESSOR

Engine dynamometer testing was conducted on four engines for the evaluation of the PEERdiesel Fuel Processor.

Model-Year	Mfr.	Model	Turbo	Stroke
1976	DDC	671	no	2
1979	DDC	12V71	no	2
1988	DDC	8.2	yes	4
1994	Cummins	L-10	yes	2

The test engines had been rebuilt and had accumulated an average of 600 to 800 hours of operation since their last overhaul. Testing was performed at baseline, and then with the PEERdiesel Fuel Processor installed at 0, 10, 30, and 50 hour intervals. All preconditioning and run-in was performed using the following speed/load/time cycles:

- 1700-2100 RPM @ 50% load / 15 minutes
- 1700-2100 RPM @ 25% load / 15 minutes
- 1300-1500 RPM @ 50% load / 15 minutes
- 1300-1500 RPM @ 25% load / 15 minutes
- IDLE
- Repeat all the above

Run-in was performed for each engine with the fuel system open to atmosphere. For each engine, a single 55 gallon drum was used to contain the fuel for the engines during run-in. The PEERdiesel Fuel Processor operates at a maximum flowrate of 2.72 gallons per minute. Per International Fuel Technology, the temperature increase in a tank of fuel after 5 passes through the PEERdiesel Fuel

Processor does not exceed 2 degrees Fahrenheit above ambient temperature. The actual temperature rise during testing was not measured, and since the 55 gallon drums used in testing contain significantly smaller volumes than the fuel tanks found on heavy-duty diesel vehicles, the temperature increases must be considered higher. Also, since the fuel drums were left open to the atmosphere during run-in, and benefits from the oxygen present within an OEM fuel tank, at the interface between the fuel and the air within the tank, would have be considered to be artificially increased.

The 13-mode steady-state test results for the four test engines are shown below:

		HC gm/bhp*hr	CO gm/bhp*hr	NOx -gm/bhp*hr	PM gm/bhp*hr	FUEL gm/bhp*hr
DDC 671	Baseline	1.02	13.15	19.46	0.53	216.2
	0 hr	0.89	13.61	18.44	0.47	217.2
	10 hr	0.87	13.04	17.73	0.43	218.1
	30 hr	0.85	14.57	17.68	0.49	217.9
	50 hr	0.81	12.49	16.96	0.48	218.6
DDC 12V71	Baseline	1.30	11.37	26.08	0.66	230.3
	0 hr	1.25	10.53	25.45	0.40	228.9
	10 hr	1.25	10.31	25.65	0.39	226.4
	30 hr	1.31	10.05	24.93	0.33	246.8
	50 hr	1.32	10.58	25.04	0.40	227.7
DDC 8.2	Baseline	0.40	1.74	9.08	0.40	209.9
	0 hr	0.35	1.71	8.90	0.30	208.5
	10 hr	0.35	1.71	8.72	0.34	205.4
	30 hr	0.34	1.66	8.87	0.41	204.0
	50 hr	0.33	1.56	8.92	0.27	208.6
L-10	Baseline	0.80	1.80	7.86	0.25	172.9
	0 hr	0.74	1.85	6.23	0.21	175.3
	10 hr	0.79	1.85	6.97	0.30	176.1
	30 hr	0.82	1.79	7.01	0.23	175.7
	50 hr	0.80	1.80	6.56	0.19	175.5

With the PEERdiesel Fuel Processor installed, the test data show no significant increases in emissions from the stock configuration for the four test engines. Therefore, based on the evaluation of the test results, the staff concludes that the International Fuel Technology, Inc., PEERdiesel Fuel Processor meets the requirements for VC 27156 exemption of general criteria parts.

International Fuel Technology, Inc., has submitted all the required information and fulfilled the requirements for an exemption