State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-328-10

Relating to Certification of New Heavy-Duty Motor Vehicle Engines

IMPCO TECHNOLOGIES, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102 and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following 1999 model-year Impco Technologies, Inc. Otto-cycle engines are certified for use in heavy-duty vehicles with a manufacturer's gross vehicle weight rating (GVWR) greater than 14,000 pounds:

Fuel Type: Liquefied Petroleum Gas (LPG)

Engine Family	Engine Displacement Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
XTJXH07.4505	7.4	(454)	Three-Way Catalytic Converter Carburetor Exhaust Gas Recirculation Heated Oxygen Sensors (two) Powertrain Control Module

Engine models and codes are listed on attachments.

The certification exhaust emission standards for this engine family in grams per brake horsepower-hour are:

Total Hydrocarbons	Carbon Monoxide	Nitrogen Oxides
1.9	37.1	1.5

The certification exhaust emission values for this engine family in grams per brake horsepower-hour are:

Total Hydrocarbons	Carbon Monoxide	Nitrogen Oxides
0.7	20.6	0.8

BE IT FURTHER RESOLVED: That the listed engine models are certified to the optional lower-emission NOx standards pursuant to Title 13, California Code of Regulations, Section 1956.8(a)(1).

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2035 et seq.).

BE IT FURTHER RESOLVED: That the listed engine models comply with the "California Motor Vehicle Emission Control and Smog Index Label Specifications" for the aforementioned model year (Title 13, California Code of Regulations, Section 1965).

Vehicles certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order and attachments.

Executed at El Monte, California this 29th day of July 1999.

John Kowalski for
R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **IMPCO TECHNOLOGIES, INC.**

Engine category: **On-highway HDGE**

EPA Engine Family: **XTJXH07.4505**

Mfr Family Name: **N/A**

Process Code: **New Submission**

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
20	L21 LPG	229@3700	N/A	N/A	347@2800	N/A	N/A	TWC/ CARB/ EGR/ HO2S(2) PCM

(E0#: A-328-10)