California Environmental Protection Agency AIR RESOURCES BOARD	MACK TRUCKS, INC.	EXECUTIVE ORDER A-027-0101 New On-Road Heavy-Duty Engines

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code (HSC) Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by HSC Sections 39515 and 39516 and Executive Order G-02-003; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board and the manufacturer, and any modifications thereof to the Settlement Agreement;

IT IS ORDERED AND RESOLVED: That the engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's gross vehicle weight rating (GVWR) over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZE (liter)	FUEL TYPE (CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas)	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS (L/M/H HDD=light/medium/heavy heavy-duty [HD] diesel; UB=urban bus; HDO=HD Otto)
2003	3MKXH11.9H64	11.9	Diesel	Diesel	HHDD

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	ENGINE MODELS / CODES (rated power in horsepower, hp)
DDI, TC, CAC, SPL, ECM, EGR	See Attachment

TWC/OC=three-way/oxidizing catalyst WU (prefix) =warm-up cat. O2S=oxygen sensor HO2S=heated O2S TBI=throttle body fuel injection MFI=multi port fuel injection SFI=sequentialMFI DDI/IDI=direct /indirect diesel injection TC/SC=turbo/super charger CAC=charge air cooler EGR=exhaust gas recirculation AIR=secondary air injection PAIR=pulsed AIR SPL=smoke puff limiter ECM/PCM=engine /powertrain control module EM=engine modification 2 (prefix)=parallel (2) (suffix)=in series

The following are the exhaust emission standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) in grams per brake horsepower-hour (g/bhp-hr) for this engine family for hydrocarbon (HC) or non-methane HC (NMHC), oxides of nitrogen (NOx), or NMHC+NOx, carbon monoxide (CO) [except that "diesel" CO certification compliance may have been demonstrated pursuant to Code of Federal Regulations, Title 40, Part 86, Subpart A, Section 86.091-23(c)(2)(i) in lieu of testing], particulate matter (PM), and formaldehyde (HCHO) under the "Federal Test Procedure" (FTP) (Title 13, California Code of Regulations, (13 CCR) Section 1956.1 (urban bus) or 1956.8 (other than urban bus)), and under the "Euro III Test Procedure" (EURO) in the Settlement Agreement, including a EURO's "Not-to-Exceed" NOx standard: (For flexible- and dual-fueled engines, the CERT values in brackets [ ] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR Section 1956.1 or 1956.8 are in parentheses.)

									EURO'S NOT-TO-EXCEED NMHC+NOx STD					3.125
* = not applicable	HC		NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
(DIRECT) STD	*	*	0.5	0.5	*	*	2.5	2.5	15.5	15.5	0.10	0.10	*	*
AVERAGE STD	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FEL	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CERT	*	*	0.1	0.03	*	*	2.2	2.1	*	*	0.10	0.09	*	*

BE IT FURTHER RESOLVED: That certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

BE IT FURTHER RESOLVED: That the listed engine models have been certified in compliance with the "pull-ahead" requirements in Section 20 and other related sections of the Settlement Agreement.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR Sections 1965 (emission control labels), and 2035 et seq. (emission control warranty).

BE IT FURTHER RESOLVED: That the listed engine models are conditionally certified subject to the following conditions: (1) The Settlement Agreement is in effect; and, (2) The manufacturer is in compliance with all applicable certification requirements of the Settlement Agreement and any modifications thereof.

Engines certified under this Executive Order shall conform to all applicable California emission regulations and all requirements under the Settlement Agreement and any modifications thereof.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 30th day of August 2002.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **Mack Trucks, Inc.**
Engine category: **13302 Pennsylvania Avenue On-highway HDDE**
EPA Engine Family: **3MKXH11.9H64**
Mfr Family Name: **FAMILY 64**
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
N/A	AC-460P	473 @ 1800	277.9	174.0	1660 @ 1300	318.5	144.0	EM,EC,MTC,CAC, DDI,SPL,CEGR
"	E7-460P	"	"	"	"	"	"	
"	AC-460E	460 @ 1800	268.0	167.8	1660 @ 1300	318.5	144.0	"
"	E7-460E	"	"	"	"	"	"	"
"	AC-427	432 @ 1800	246.3	154.2	1560 @ 1300	286.8	129.7	"
"	E7-427	"	"	"	"	"	"	"
"	AC-400	400 @ 1800	224.7	140.7	1460 @ 1200	268.6	112.1	"
"	E7-400	"	"	"	"	"	"	"
"	AC-380/410	380 @ 1800	212.9	133.3	1660 @ 1100	302.1	115.6	"
"	E7-380/410	"	"	"	"	"	"	"
"	AC-355/380	355 @ 1800	199.8	125.1	1560 @ 1100	289.1	110.6	"
"	E7-355/380	"	"	"	"	"	"	"
"	AC-350	350 @ 1800	197.4	123.6	1360 @ 1200	260.4	108.7	"
"	E7-350	"	"	"	"	"	"	"
"	AC-330/350	330 @ 1800	188.8	118.2	1460 @ 1100	280.7	107.4	"
"	E7-330/350	"	"	"	"	"	"	"
"	AC-310/330	310 @ 1800	181.4	113.6	1360 @ 1100	278.1	106.4	"
"	E7-310/330	"	"	"	"	"	"	"
"	AMC-300	300 @ 1900	164.7	109.0	1308 @ 1100	250.4	95.8	"
"	EM7-300	"	"	"	"	"	"	"

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