

**D 6483 MACK T-9
RING/LINER WEAR TEST**

REPORT PACKET VERSION NO. T9 VERSION 20040727 BETA
CONDUCTED FOR:

CC
CC

C	V = VALID; THE REFERENCE OIL/NON-REFERENCE OIL WAS EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
	I = INVALID; THE REFERENCE OIL/NON-REFERENCE OIL WAS NOT EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
	N = RESULTS CANNOT BE INTERPRETED AS REPRESENTATIVE OF OIL PERFORMANCE (NON-REFERENCE OIL) AND SHALL NOT BE USED IN DETERMINING AN AVERAGE TEST RESULT USING MULTIPLE TEST CRITERIA.

STAND: CCCCC	STAND RUN NO.: CCCC CCCC	ENGINE NO.: CCCCC	ENGINE HOURS: CCCCC CCCCC
END OF TEST DATE: YYYYMMDD YYYYMMDD		END OF TEST TIME: HH:MM HH:MM	
OIL CODE/CMIR ^A : CCCCC CCC			
FORMULATION/STAND CODE: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			
ALTCODE1: CCCCCCCCCCCCCC	ALTCODE2: CCCCCCCCCCCCCC	ALTCODE3: CCCCCCCCCCCCCC	

In my opinion this test CCCCCC been conducted in a valid manner in accordance with Test Method D 6483 and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.

^A CMIR or Non-Reference Oil Code

SUBMITTED BY: CCC
Testing Laboratory
Signature Image
Signature
 CCC
Typed Name
 CCC
Title

**D 6483 MACK T-9
RING/LINER WEAR TEST
FORM 1 - NON-REFERENCE OIL TEST SUMMARY**

FORMULATION/STAND CODE		CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC	TEST LENGTH	S1234
OIL CODE NO. CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC				
TEST LAB	TEST STAND NO.	TEST STAND RUN NO.	ENGINE BLOCK SERIAL NO.	ENGINE HOURS
CC	CCCC	CCCC	CCCCC	CCCC
DATE TEST STARTED:			YYYYMMDD	
START TIME:			HH:MM	
DATE TEST COMPLETED:			YYYYMMDD	
EOT TIME:			HH:MM	
STAND CALIBRATION EXPIRATION DATE:			YYYYMMDD	
LABORATORY OIL CODE			CCCCCCCCCCCCCCCCC	
SAE VISCOSITY			CCCCCC	

AVERAGE TGA SOOT % AT 75 h	S123.1
AVERAGE TGA SOOT % 75 – 500 h	S12.12
AVERAGE OIL CONSUMPTION (0.304 g/Kw-h max.)	S12.123
CENTRIFUGAL OIL FILTER MASS GAIN, g	S123.1
OIL FILTER DELTA P, kPa (138 max.)	S123
EOT TBN	S123.1

	DELTA Pb @ EOT (ppm)	ADJUSTED AVG. LINER WEAR (µm)	AVG. TOP RING WEIGHT LOSS (mg)
ORIGINAL RESULT	S123	S12.12	S123
TRANSFORMED RESULT A	S12.1234		
CORRECTION FACTOR A	S12.1234	S12.12	S12.1234
CORRECTED TRANSFORMED RESULT A	S12.1234	S12.12	S12.1234
SEVERITY ADJUSTMENT A	S12.1234	S12.12	S12.1234
FINAL TRANSFORMED RESULT A	S12.1234	S12.12	S12.1234
FINAL ORIGINAL UNIT RESULT	S123	S12.1	S123

^A Delta Pb Value in Transformed Units

**D 6483 MACK T-9
RING/LINER WEAR TEST
FORM 1A - REFERENCE OIL TEST SUMMARY**

CMIR CODE NO. CCCCCC		TEST LENGTH S1234	
TMC OIL NO. CCCCCC			
TEST LAB	TEST STAND NO.	TEST STAND RUN NO.	ENGINE BLOCK SERIAL NO.
CC	CCCCC	CCCC	CCCCCC
DATE TEST STARTED:		YYYYMMDD	
START TIME:		HH:MM	
DATE TEST COMPLETED:		YYYYMMDD	
EOT TIME:		HH:MM	
STAND CALIBRATION EXPIRATION DATE:		YYYYMMDD	
LABORATORY OIL CODE		CCCCCCCCCCCC	
SAE VISCOSITY		CCCCCC	

AVERAGE TGA SOOT % AT 75 h	S123.1
AVERAGE TGA SOOT % 75 – 500 h	S12.12
AVERAGE OIL CONSUMPTION (0.304 g/Kw-h max.)	S12.123
CENTRIFUGAL OIL FILTER MASS GAIN, g	S123.1
OIL FILTER DELTA P, kPa (138 max.)	S123
EOT TBN	S123.1

	DELTA Pb @ EOT (ppm)	ADJUSTED AVG. LINER WEAR (µm)	AVG. TOP RING WEIGHT LOSS (mg)
ORIGINAL RESULT	S123	S12.12	S123
TRANSFORMED RESULT ^A	S12.1234		
CORRECTION FACTOR ^A	S12.1234	S12.12	S12.1234
FINAL TRANSFORMED RESULT ^A	S12.1234	S123.12	S12.1234
FINAL ORIGINAL UNIT RESULT	S123	S12.1	S123

^A Delta Pb Value in Transformed Units

**D 6483 MACK T-9
RING/LINER WEAR TEST
Operational Summary
FORM 2**

Laboratory: CC	EOT Date: YYYYMMDD	YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC				
Oil Code: CCCCCC	CC			
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC				

Parameter	Units	QI Threshold	EOT QI ^A	Target	Average	Samples ^B	BQD C	Over/Under Range D
Speed	r/min	0.000	S12.123	1800	S12345	S1234	S1234	S1234
Fuel Flow	kg/h	0.000	S12.123	63.28	S12.12	S1234	S1234	S1234
Coolant Out	°C	0.000	S12.123	85	S1234	S1234	S1234	S1234
Fuel In	°C	0.000	S12.123	40	S1234	S1234	S1234	S1234
Oil Gallery	°C	0.000	S12.123	25	S1234	S1234	S1234	S1234
Intake Manifold	°C	0.000	S12.123	43	S1234	S1234	S1234	S1234
Exhaust	kPa	0.000	S12.123	3.1	S12.1	S1234	S1234	S1234
Inlet Air Res.	KPa	0.000	S12.123	2.5	S12.12	S1234	S1234	S1234
Parameter	Units	QI Threshold	EOT QI^A	Target	Average	Samples^B	BQD C	Over/Under Range D
Torque	N-m	1361 - 1457	2118 - 2208	S1234	S1234	S1234	S1234	S1234
Power	kW	258 - 267	280 - 288	S12.1	S12.1	S12.1	S12.1	S12.1
Humidity	g/kg	4.2 - 78.6		S12.1				
Blowby	L/min	41.2 - 184.3	23.6 - 148.7	S12.1	S12.1	S12.1	S12.1	S12.1
Coolant In	°C	76 - 82		S1234				
Oil Gallery	°C	101 - 109		S1234				
Pre-Turb. (F)	°C	605 - 658		S1234				
Pre-Turb. (R)	°C	613 - 674		S1234				
Tailpipe	°C	428 - 474	514 - 559	S1234	S1234	S1234	S1234	S1234
Oil Gallery	kPa	365 - 436	227-284	S1234	S1234	S1234	S1234	S1234
Crankcase	kPa	0.27 - 0.60		S12.12				
Intake Manifold	kPa	185 - 201	149 - 164	S123	S123	S123	S123	S123
Compressor Discharge	kPa	193 - 205	152 - 159	S123	S123	S123	S123	S123
Intercooler Delta	kPa	13.6 Maximum		S12.1				

^A QI values above the threshold are acceptable by the Mack Surveillance Panel. QI values below the threshold may not be considered acceptable based on an engineering review. Refer to Annex A5
^B Total number of data points taken. Minimum acceptable value is 3000
^C Number of Bad Quality Data points not used in the calculation of the statistical measures.
^D Number of points clipped by over/under range limits.
^E Typical values determined from reference oil test database

**D 6483 MACK T-9
RING/LINER WEAR TEST
Rod Bearing Weight Loss
Form 3**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code: CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC			

Cylinder #	Location	SOT Weight, g	EOT Weight, g	Weight Change, mg
1	Upper	S12.1234	S12.1234	S123.1
2	Upper	S12.1234	S12.1234	S123.1
3	Upper	S12.1234	S12.1234	S123.1
4	Upper	S12.1234	S12.1234	S123.1
5	Upper	S12.1234	S12.1234	S123.1
6	Upper	S12.1234	S12.1234	S123.1

SUMMARY	As Measured	Outlier Screened
Upper Bearing Average Weight Loss, mg	S123.1	S123.1
Upper Bearing Weight Loss Std. Dev., mg	S123.1	S123.1
Upper Bearing Minimum Weight Loss, mg	S123.1	S123.1
Upper Bearing Maximum Weight Loss, mg	S123.1	S123.1
Outlier Upper Rod Bearing ^A	CCCCC	

^A Cylinder number

Cylinder #	Location	SOT Weight, g	EOT Weight, g	Weight Change, mg
1	Lower	S12.1234	S12.1234	S123.1
2	Lower	S12.1234	S12.1234	S123.1
3	Lower	S12.1234	S12.1234	S123.1
4	Lower	S12.1234	S12.1234	S123.1
5	Lower	S12.1234	S12.1234	S123.1
6	Lower	S12.1234	S12.1234	S123.1
Upper Bearing Average Weight Loss, mg				S123.1
Upper Bearing Weight Loss Std. Dev., mg				S123.1
Upper Bearing Minimum Weight Loss, mg				S123.1
Upper Bearing Maximum Weight Loss, mg				S123.1

**D 6483 MACK T-9
RING/LINER WEAR TEST
Ring Weight Loss
Form 4**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code: CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			

Cylinder #	Top Ring SOT Weight, g	Top Ring EOT Weight, g	Weight Loss, mg
1	S12.1234	S12.1234	S123.1
2	S12.1234	S12.1234	S123.1
3	S12.1234	S12.1234	S123.1
4	S12.1234	S12.1234	S123.1
5	S12.1234	S12.1234	S123.1
6	S12.1234	S12.1234	S123.1

SUMMARY	As Measured	Outlier Screened
Upper Bearing Average Weight Loss, mg	S123	S123 S123
Upper Bearing Weight Loss Std. Dev., mg	S123.1	S123.1
Upper Bearing Minimum Weight Loss, mg	S123.1	S123.1
Upper Bearing Maximum Weight Loss, mg	S123.1	S123.1
Outlier Ring ^B	CCCCC	
Top Rings with Plasma Flaking ^C	CCCCCCCCCCCCCCCCCCCC	

^A Results calculated without rings with plasma flanking.
^B Ring number wear results are not currently outlier screened.
^C Ring numbers: 1,2, etc. separated by commas. Example: 2,3,5

Cylinder #	2nd Ring SOT Weight, g	2 nd Ring EOT Weight, g	Weight Loss, mg
1	S12.1234	S12.1234	S123.1
2	S12.1234	S12.1234	S123.1
3	S12.1234	S12.1234	S123.1
4	S12.1234	S12.1234	S123.1
5	S12.1234	S12.1234	S123.1
6	S12.1234	S12.1234	S123.1
	2 nd Ring Average Weight Loss, mg		S123.1
	2 nd Ring Weight Loss Std. Dev., mg		S123.1
	2 nd Ring Min. Weight Loss, mg		S123.1
	2 nd Ring Max. Weight Loss, mg		S123.1

Cylinder #	2nd Ring SOT Weight, g	2 nd Ring EOT Weight, g	Weight Loss, mg
1	S12.1234	S12.1234	S123.1
2	S12.1234	S12.1234	S123.1
3	S12.1234	S12.1234	S123.1
4	S12.1234	S12.1234	S123.1
5	S12.1234	S12.1234	S123.1
6	S12.1234	S12.1234	S123.1
	Oil Ring Average Weight Loss, mg		S123.1
	Oil Ring Weight Loss Std. Dev., mg		S123.1
	Oil Ring Minimum Weight Loss, mg		S123.1
	Oil Ring Maximum Weight Loss, mg		S123.1

**D 6483 MACK T-9
RING/LINER WEAR TEST
Oil Analysis Summary
Form 5**

Laboratory: CC	EOT Date: YYYYMMDD	Y Y Y Y M M D D	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code:	CCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code:	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			

HOURS	SOOT Wt.% TGA	Viscosity At 100 C cSt	Viscosity Increase cSt	TBN Annex A7	TBN D2896	TAN Annex A8	Metals in Parts per Millions										
							Elements							Na			
							Fe	Pb	Cu	Cr	Al	Si	Sn				
NEW	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
75 AVG	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
CCCCC	S123.1	S123.12	S12.12	S123.1	S123.1	S123.1	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA

Summary	
Delta Pb @ EOT, ppm	As Measured S123
	Outlier Bearing Adjusted S123

D 6483 MACK T-9
RING/LINER WEAR TEST
Liner Surface Roughness & Bore Diameter
Form 6

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code: CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC			

LINER NO.	LOCATION	Ra (µm)	BORE DIAMETER (mm)		Ra (µm)	DIA. (mm)
1	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	
2	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	
3	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	
4	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	
5	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	
6	Top Ring Travel @ 0°C	S12.12	S123.123	AVG	S12.12	S123.123
	Top Ring Travel @ 90°C	S12.12	S123.123	STD DEV	S12.12	
	Top Ring Travel @ 180°C	S12.12		MIN	S12.12	
	Top Ring Travel @ 270°C	S12.12		MAX	S12.12	

	Ra (µm)	BORE DIAMETER (mm)
Average Surface Roughness & Bore Diameter	S12.12	S123.123
Standard Deviation Surface Roughness & Bore Diameter	S12.12	S123.123
Minimum Surface Roughness & Bore Diameter	S12.12	S123.123
Maximum Surface Roughness & Bore Diameter	S12.12	S123.123

**D 6483 MACK T-9
RING/LINER WEAR TEST
Liner Wear Summary
Form 7**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code: CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCCC-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C			

POSITION	WEAR STEP (µm)					
	Cylinder Number					
	1	2	3	4	5	6
1:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
2:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
3:00 (Thrust)	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
4:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
5:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
6:00 (Rear)	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
7:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
8:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
9:00 (Anti-Thrust)	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
10:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
11:00	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
12:00 (Front)	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1
Average	S123.1	S123.1	S123.1	S123.1	S123.1	S123.1

Summary	As Measured	Outlier Screened	Adjusted to 1.75% Soot	
Average, µm	S123.1	S123.1	S12.12	S12.12
Std. Dev., µm	S123.1	S123.1		
Minimum, µm	S123.1	S123.1		
Maximum, µm	S123.1	S123.1		
Ring Flaked Outliers ^B	CCCCCCCCCCCCCCCCCCCC			
Outlier Liners ^C	CCCCC			

^A Do not use data from liners with top ring plasma flaking for determining "As Measured" result.

^B Cylinder Number: 1,2, etc. separated by commas. Example: 2,3

^C Cylinder Number.

**D 6483 MACK T-9
RING/LINER WEAR TEST
Test Fuel Analysis (Last Batch)
Form 9**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code: CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			
Supplier: CCCCCCCCCCCCCCCCCCCCCC		Batch Identifiers: CCCCCCCCCCCCCCCCCC	

Measurement	Specs.	Analysis		Test Method
		NEW	EOT	
Total Sulfur, % Weight	0.03 – 0.05	S12.12	S12.12	D 2622
Gravity, °API	32 – 36	S12.1	S12.1	D 287 or D 4052
Hydrocarbon Composition				
Aromatics % Vol.	28 – 35	S12.1		D 1319
Olefin	Report	S12.1		D 1319
Saturates	Report	S12.1		D 1319
Cetane Index	Report	S12.1		D 976 & D 4737
Cetane No.	42 – 48	S12.1		D 613
Copper Strip Corrosion	1 Maximum	AAAAA		D 130
Flash Point, °C	54 Minimum	S123		D 93
Cloud Point, °C	-12 Maximum	S123		D 2500
Pour Point, °C	-18 Maximum	S123		D 97
Carbon Residue on 10% Residuum, %	0.35 Maximum	S12.12		D 524 (10% Bottoms)
Water & Sediment, % Vol.	0.05 Maximum	AAAAAA		D 2709
Ash, % Wgt.	0.01 Maximum	S12.123		D 482
Viscosity, cSt @ 40°C	2.0 – 3.2	S12.1		D 445
Distillation, °C				
IBP	177-199	S1234		D 86
10%	210-232	S1234		D 86
50%	249-277	S1234		D 86
90%	299-327	S1234		D 86
EP	327-360	S1234		D 86

D 6483 MACK T-9
RING/LINER WEAR TEST
Characteristics of the Data Acquisition System
Form 10

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number: CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Oil Code: CCCCCC CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC			
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			

PARAMETER (1)	SENSING DEVICE (2)	CALIBRATION FREQUENCY (3)	RECORD DEVICE (4)	OBSERVATION FREQUENCY (5)	RECORD FREQUENCY (6)	LOG FREQUENCY (7)	SYSTEM RESPONSE (8)
Temperatures							
Oil @ Filt.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Fuel In.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Intake Air	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Intake Man.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Pre-Turb.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Cool. Out	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Other							
Fuel Flow	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Engine RPM	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Load	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Inlet Restr.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Exh. Press.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC
Oil Gal. Press.	CCCCCCCCCC	CCCCCCCCCC	CCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCCCC	CCCCCCCC

LEGEND:

- (1) Operating Parameter
- (2) The type of device used to measure temperature, pressure or flow
- (3) Frequency at which the measurement system is calibrated
- (4) The type of device where data is recorded
 LG - Handlog Sheet
 DL - Automatic Data Logger
 SC - Strip Chart Recorder
 C/M - Computer, Using Manual Data Entry
 C/D - Computer, Using Direct I/O Entry
- (5) Data are observed but only if recorded off spec.
- (6) Data are recorded but are not retained at EOT
- (7) Data are logged as permanent record, note specify if:
 SS - Snapshot Taken at Specified Frequency
 AG/X - Average of X Data Points at Specified Frequency
- (8) Time for the output to reach 63.2% of final value for step change at input

**D 6483 MACK T-9
RING/LINER WEAR TEST
Build-up and Hardware Information
Form 11**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code: CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCCG-CC-CC-CCCCC			

STATIC INJECTION TIMING

Timing Hours	Timing (Deg)
CC	CCCCCC
CC	CCCCCC
cc	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
S1	Total Timing Changes

HARDWARE

Part	Part Number	Serial Number
Injection Pump	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Secondary Charger	CCCCCCCCCCCCCCCCCCCC	
Cylinder Head (front)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Cylinder Head (rear)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Pistons	CCCCCCCCCCCCCCCCCCCC	
Injection Nozzles	CCCCCCCCCCCCCCCCCCCC	
Rod Bearings	CCCCCCCCCCCCCCCCCCCC	
Liners	CCCCCCCCCCCCCCCCCCCC	
Ring Set	CCCCCCCCCCCCCCCCCCCC	

Cylinder Kit Location	CPD ID Number
Cylinder 1	CCCCCCCCCCCCCCCCCCCC
Cylinder 2	CCCCCCCCCCCCCCCCCCCC
Cylinder 3	CCCCCCCCCCCCCCCCCCCC
Cylinder 4	CCCCCCCCCCCCCCCCCCCC
Cylinder 5	CCCCCCCCCCCCCCCCCCCC
Cylinder 6	CCCCCCCCCCCCCCCCCCCC

**D 6483 MACK T-9
RING/LINER WEAR TEST
Build-up and Hardware Information
Form 11A**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code: CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code: CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC			

STATIC INJECTION TIMING

Timing Hours	Timing (Deg)
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
S1	Total Timing Changes

HARDWARE

Part	Part Number	Serial Number
Injection Pump	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Secondary Charger	CCCCCCCCCCCCCCCCCCCC	
Cylinder Head (front)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Cylinder Head (rear)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Pistons	CCCCCCCCCCCCCCCCCCCC	
Injection Nozzles	CCCCCCCCCCCCCCCCCCCC	
Rod Bearings	CCCCCCCCCCCCCCCCCCCC	
Liners	CCCCCCCCCCCCCCCCCCCC	
Ring Set	CCCCCCCCCCCCCCCCCCCC	

Cylinder Kit Location	CPD ID Number
Cylinder 1	CCCCCCCCCCCCCCCCCCCC
Cylinder 2	CCCCCCCCCCCCCCCCCCCC
Cylinder 3	CCCCCCCCCCCCCCCCCCCC
Cylinder 4	CCCCCCCCCCCCCCCCCCCC
Cylinder 5	CCCCCCCCCCCCCCCCCCCC
Cylinder 6	CCCCCCCCCCCCCCCCCCCC

**D 6483 MACK T-9
RING/LINER WEAR TEST
Build-up and Hardware Information
Form 11B**

Laboratory: CC	EOT Date: YYYYMMDD YYYYMMDD	EOT Time: HH:MM	HH:MM
Test Number:	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Oil Code: CCCCCC	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		
Formulation/Stand Code:	CC-CCCCCCCCC-C-C-CCCCC-CC-CC-CCCC		

STATIC INJECTION TIMING

Timing Hours	Timing (Deg)
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
CC	CCCCCC
S1	Total Timing Changes

HARDWARE

Part	Part Number	Serial Number
Injection Pump	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Secondary Charger	CCCCCCCCCCCCCCCCCCCC	
Cylinder Head (front)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Cylinder Head (rear)	CCCCCCCCCCCCCCCCCCCC	CCCCCCCCCCCCCCCCCCCC
Pistons	CCCCCCCCCCCCCCCCCCCC	
Injection Nozzles	CCCCCCCCCCCCCCCCCCCC	
Rod Bearings	CCCCCCCCCCCCCCCCCCCC	
Liners	CCCCCCCCCCCCCCCCCCCC	
Ring Set	CCCCCCCCCCCCCCCCCCCC	

Cylinder Kit Location	CPD ID Number
Cylinder 1	CCCCCCCCCCCCCCCCCCCC
Cylinder 2	CCCCCCCCCCCCCCCCCCCC
Cylinder 3	CCCCCCCCCCCCCCCCCCCC
Cylinder 4	CCCCCCCCCCCCCCCCCCCC
Cylinder 5	CCCCCCCCCCCCCCCCCCCC
Cylinder 6	CCCCCCCCCCCCCCCCCCCC

**D 6483 MACK T-9
RING/LINER WEAR TEST**

Form 12

**American Chemistry Council Code of Practice
Test Laboratory Conformance Statement**

Test Laboratory	CC				
Test Sponsor	CC				
Formulation / Stand Code	CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC				
Test Number	CC				
Start Date	YYYYMMDD	Start Time	HH:MM	Time Zone	CCC

Declarations

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes C No C *

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other) including all updates issued by the organization responsible for the test, were met. Yes C No C *

If the response to this Declaration is "No", does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory? Yes C * No C

No. 3 A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes C * No C (*This currently applies only to specific deviations identified in the ASTM Information Letter System*)

Check The Appropriate Conclusion

C	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
C	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: *Supporting comments are required for all responses identified with an asterisk.*

Comments	
	CC
	CC
	CC
	CC

Signature Image _____
Signature

Typed Name

YYYYMMDD _____
Date

Title