

**A1. Report Forms  
TEST METHOD D5967**

**VERSION 20020107**

METHOD: METHOD

CONDUCTED FOR:

TSTSPON1

TSTSPON2

T-8A: LABVT8A	V = VALID; THE REFERENCE OIL/NON-REFERENCE OIL WAS EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
T-8: LABVALT8	I = INVALID; THE REFERENCE OIL/NON-REFERENCE WAS NOT EVALUATED IN ACCORDANCE WITH THE TEST PROCEDURE.
T-8E: LABVT8E	N = NOT INTERPRETABLE; THE NON-REFERENCE OIL RESULTS CANNOT BE INTERPRETED AND SHALL NOT BE USED IN DETERMINING AN AVERAGE TEST RESULT USING MULTIPLE TEST CRITERIA.

STAND: STAND	STAND RUN NO.: RSTRUN/STRUN	ENGINE NO.: ENGINE	ENGINE HOURS: RENHOURS/ENHOURS
END OF TEST DATE: RDTCOMP/DTCOMP		END OF TEST TIME: EOTTIME/REOTTIME	
OIL CODE/CMIR: <sup>A</sup> CMIR/OILCODE			
T-8 FORMULATION/STAND CODE: FORMT8			
T-8E FORMULATION/STAND CODE: FORMT8E			
ALTCODE1: ALTCODE1	ALTCODE2: ALTCODE2	ALTCODE3: ALTCODE3	

<sup>A</sup> CMIR or Non-Reference Oil Code

SUBMITTED BY: \_\_\_\_\_

SUBLAB  
Testing Laboratory  
SUBSIGIM  
\_\_\_\_\_  
Signature  
SUBNAME  
\_\_\_\_\_  
Typed Name  
SUBTITLE  
\_\_\_\_\_  
Title

**TEST METHOD D5967  
FORM 1  
TEST RESULT SUMMARY**

T-8 FORMULATION/STAND CODE: FORMT8		FORMT8		TEST LENGTH: <sup>A</sup> TESTLEN	
T-8E FORMULATION/STAND CODE: FORMT8E		FORMT8E			
<b>REFERENCE OIL TEST</b>			<b>NON-REFERENCE OIL TEST</b>		
CMIR CODE NO.: CMIR		OIL CODE NO.: OILCODE			
TMC OIL NO.	TEST LAB	TEST STAND NO.	TEST STAND NO.	TEST STAND	ENGINE BLOCK HOURS
IND	LAB	RSTRUN	RSTRUN	STRUN	ENHOURS
DATE TEST STARTED:	RDTSTRT	DATE TEST COMPLETED:	RDTCOMP	DATE TEST COMPLETED:	EOT TIME:
Laboratory Oil Code:		RLABCODE		LABOCODE	
SAE Viscosity:		RSAEVIS		SAE VISC	

<b>VISCOSITY SLOPE 100 - 150 h, cSt/h</b>	RVSLPFNL	<b>VISCOSITY SLOPE 100 - 150 h, cSt/h</b>	VSLPFNL
<b>VISCOSITY INCREASE AT 3.8% TGA, cSt</b>	RVISI38	<b>VISCOSITY INCREASE AT 3.8% TGA, cSt</b>	VISI38
<b>RELATIVE VISCOSITY AT 4.8%, TGA (50% LOSS)<sup>B</sup></b>	RRV48FNL	<b>SEVERITY ADJUSTMENT FOR VISCOSITY INC. AT 3.8% TGA, cSt</b>	VIS38_SA
<b>RELATIVE VISCOSITY AT 4.8%, TGA (100% LOSS)<sup>B</sup></b>	RRV2FNL	<b>ADJUSTED VISCOSITY INCREASE AT 3.8% TGA, cSt</b>	VIS38FNL
		<b>RELATIVE VISCOSITY AT 4.8%, TGA (50% LOSS) <sup>B</sup></b>	RV48
		<b>SEVERITY ADJUSTMENT FOR RELATIVE VISCOSITY</b>	RV48_SA
		<b>ADJUSTED RELATIVE VISCOSITY (50% LOSS) <sup>B</sup></b>	RV48FNL
		<b>RELATIVE VISCOSITY AT 4.8%, TGA (100% LOSS)<sup>B</sup></b>	RV2
		<b>SEVERITY ADJUSTMENT FOR RELATIVE VISCOSITY</b>	RV2_SA
		<b>ADJUSTED RELATIVE VISCOSITY (100% LOSS) <sup>B</sup></b>	RV2FNL
<b>TGA SOOT % AT 250 h</b>	RTGAAVG	<b>TGA SOOT % AT 250 h</b>	TGAAVG
<b>TGA SOOT % AT 300 h</b>	RTGAH300	<b>TGA SOOT % AT 300 h</b>	TGA_H300
<b>AVERAGE OIL CONSUMPTION AT 250 h (g/kW-h)</b>	ROILCON	<b>AVERAGE OIL CONSUMPTION AT 250 h (g/kW-h)</b>	OILCON
<b>OIL FILTER DELTA AT 250 h, kPa</b>	RXOILD	<b>OIL FILTER DELTA AT 250 h, kPa</b>	XOILD

<sup>A</sup> Test length is discussed in sections 1.2, 4.1, A8.3.1 and A9.3.1.

<sup>B</sup> Relative viscosities are calculated using shear loss determined by D6278.

**TEST METHOD D5967  
FORM 2  
OPERATIONAL SUMMARY<sup>A</sup>**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number <sup>B</sup>	STAND -RSTRUN/STRUN-ENGINE -RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8			
T-8E Formulation/Stand Code: FORMT8E			

TEST PARAMETER	SPECIFICATION	AVERAGE	STD. DEV.	MINIMUM	MAXIMUM
Engine Speed, r/min	1800 ± 5	ARPM	SRPM	IRPM	XRPM
Torque, N-m	1369 - 1398	ALOAD	SLOAD	ILOAD	XLOAD
Fuel Flow, kg/h	63.28 ± 0.63	AFFLO	SFFLO	IFFLO	XFFLO
Humidity, g/kg	Report	AHUMID		IHUMID	XHUMID
Blowby, L/min	Report	ABLOBY		IBLOBY	XBLOBY
TEMPERATURES	SPECIFICATION	AVERAGE	STD.DEV	MINIMUM	MAXIMUM
Coolant Out, °C	85 ± 3	ACOLOUT	SCOLOUT	ICOLOUT	XCOLOUT
Coolant In, °C	Report Only	ACOLIN	SCOLIN	ICOLIN	XCOLIN
Oil, °C	100 - 107	AOILTEM	SOILTEM	IOILTEM	XOILTEM
Fuel In, °C	40 ± 1	AFUELTEMP	SFUELTEMP	IFUELTEMP	XFUELTEMP
Intake Air, °C	25 ± 3	AINAIRT	SINAIRT	IINAIRT	XINAIRT
Intake Manifold, °C	43 ± 3	AINMANT	SINMANT	IINMANT	XINMANT
Pre-Turb. (F), °C	602 - 632	APTURFT	SPTURFT	IPTURFT	XPTURFT
Pre-Turb. (R), °C	602 - 632	APTURRT	SPTURRT	IPTURRT	XPTURRT
TailPipe, °C	455 - 474	ATAILPT	STAILPT	ITAILPT	XTAILPT
PRESSURES	SPECIFICATION	AVERAGE	STD.DEV	MINIMUM	MAXIMUM
Oil Gallery, kPa	372 - 441	AOILPRS		IOILPRS	XOILPRS
Crankcase, kPa	0.50 ± 0.25	ACCASEP	SCCASEP	ICCASEP	XCCASEP
Exhaust, kPa	3.1 ± 0.4	AEXHSTP	SEXHSTP	IEXHSTP	XEXHSTP
Oil Filter Delta, kPa	138 Max.				RXOILDP/XOILDP
Inlet Air Res., kPa	2.5 ± 0.25	AINAIRR	SINAIRR	IINAIRR	XINAIRR
Intake Manifold, kPa	186 - 199	AINMANP	SINMANP	IINMANP	XINMANP
Compressor Discharge, kPa	Report	ACOMDIS	SCOMDIS	ICOMDIS	XCOMDIS
Intercooler Delta, kPa	13.6 Maximum	AINCLDP	SINCLDP	IINCLDP	XINCLDP

<sup>A</sup> ALL DATA VALUES SHOWN ARE BASED ON TEST LENGTH REPORTED ON FORM1

<sup>B</sup> TEST NUMBER IS: STAND - STAND RUN NO. - ENGINE SERIAL NO. - ENGINE HOURS



**TEST METHOD D5967  
FORM 4  
OIL ANALYSIS SUMMARY**

Laboratory: LAB	Start Date: RDTSTRT/DTSTRT
Test Number: STAND - RSTRUN/STRUN - ENGINE - RENHOURS/ENHOURS	Oil Code: CMIR/OILCODE
T-8 Formulation/Stand Code: FORMT8	
T-8E Formulation/Stand Code: FORMT8E	

Hours	Soot TGA %	Viscosity (cSt)	Viscosity Increase From Minimum(cSt)
TST_H000	RTGAH000/TGA_H000	RVISH000/VIS_H000	
TST_H025	RTGAH025/TGA_H025	RVISH025/VIS_H025	DVISH025/IVISH025
TST_H050	RTGAH050/TGA_H050	RVISH050/VIS_H050	DVISH050/IVISH050
TST_H075	RTGAH075/TGA_H075	RVISH075/VIS_H075	DVISH075/IVISH075
TST_H100	RTGAH100/TGA_H100	RVISH100/VIS_H100	DVISH100/IVISH100
TST_H125	RTGAH125/TGA_H125	RVISH125/VIS_H125	DVISH125/IVISH125
TST_H150	RTGAH150/TGA_H150	RVISH150/VIS_H150	DVISH150/IVISH150
TST_H175	RTGAH175/TGA_H175	RVISH175/VIS_H175	DVISH175/IVISH175
TST_H200	RTGAH200/TGA_H200	RVISH200/VIS_H200	DVISH200/IVISH200
TST_H225	RTGAH225/TGA_H225	RVISH225/VIS_H225	DVISH225/IVISH225
TST_H250	RTGAH250/TGA_H250	RVISH250/VIS_H250	
250 (2nd)	TGA2502	VIS2502	
250 (Average)	RTGAAVG/TGAAVG	RVISAVG/VISAVG	RVISIavg/IVISIAVG
TST_H275	RTGAH275/TGA_H275	RVISH275/VIS_H275	DVISH275/IVISH275
TST_H300	RTGAH300/TGA_H300	RVISH300/VIS_H300	DVISH300/IVISH300

<b>Viscosity Increase @ 3.8% TGA Soot Level</b>	RVISI38/VISI38
<b>D6278 Unsheared Viscosity (cSt), Vu</b>	VISVU
<b>D6278 Sheared Viscosity (cSt), Vs</b>	VISVS
<b>Relative Viscosity @ 4.8% TGA Soot Level (50% Loss) <sup>A</sup></b>	RRV48FNL/RV48
<b>Relative Viscosity @ 4.8% TGA Soot Level (100% Loss) <sup>A</sup></b>	RRV2FNL/RV2

ELEMENT	Parts per million (ppm) at Test Hour			
	PPMTH000	PPMTH150	PPMTH250	PPMTH300
Fe	FE_H000	FE_H150	FE_H250	FE_H300
Pb	PB_H000	PB_H150	PB_H250	PB_H300
Cu	CU_H000	CU_H150	CU_H250	CU_H300
Cr	CR_H000	CR_H150	CR_H250	CR_H300
Al	AL_H000	AL_H150	AL_H250	AL_H300
Si	SI_H000	SI_H150	SI_H250	SI_H300
Na	NA_H000	NA_H150	NA_H250	NA_H300

Centrifugal Oil Filter mass: grams	Pre-Test	Post-Test	Mass Gain
	PREMASS	POSMASS	MASSG

<sup>A</sup>Relative viscosities are calculated using shear loss determined by D5278.

**TEST METHOD D5967  
FORM 5**

**TEST FUEL ANALYSIS (LAST BATCH)**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND -RSTRUN/STRUN-ENGINE -RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:		FORMT8	
T-8E Formulation/Stand Code:		FORMT8E	
Supplier	FUELSUP	Batch Identifiers	FUELBTID

Measurement	Specs.	Analysis		Test Method
		NEW	EOT	
Total Sulfur, % wt	0.03 - 0.05	FUELSNEW	FUELSEOT	D 2622
Gravity, °API	32 - 36	APIGRNEW	APIGREOT	D 287 or D 4052
<b>Hydrocarbon Composition</b>				
Aromatics % vol	28 - 35	FUELAROM		D 1319
Olefin	Report	FUELOLEF		D 1319
Saturates	Report	FUELSATU		D 1319
Cetane Index	Report	CETANEIN		D 4737
Cetane No.	42 - 48	CETANENO		D 613
Copper Strip Corrosion	3 max	FUELCU		D 130
Flash Point, °C	54 min	FLASHPT		D 93
Cloud Point, °C	-12 max	FUELCLOU		D 2500
Pour Point, °C	-18 max	FUELPOUR		D 97
Carbon Residue on 10% Residium, %	0.35 max	FUELCRES		D 524 (10 % Bottoms)
Water & Sediment, % Vol	0.05 max	FUELH2O		D 2709
Ash, % wt	0.01 max	FUELASH		D 482
Viscosity, cSt @ 40°C	2.0 - 3.2	KINVIS		D 445
<b>Distillation, °C</b>				
IBP	177 - 199	FUELIBP		D 86
10%	210 - 232	FUEL10		D 86
50%	249 - 277	FUEL50		D 86
90%	299 - 327	FUEL90		D 86
EP	327 - 360	FUELEP		D 86

**TEST METHOD D5967  
FORM 6**

**DOWN TIME AND COMMENTS**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND _RSTRUN/STRUN _ENGINE _RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

Number of Downtime Occurrences			DWNOCR
Test Hours	Date	Downtime	Reasons
DOWNR001	DDATR001	DTIMR001	DREAR001
TOTLDOWN		Total Downtime	

Other Comments	
Number of Comment Lines	TOTCOM
OCOMR001	





**TEST METHOD D5967  
FORM 8**

**BUILD-UP AND HARDWARE INFORMATION**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND _RSTRUN/STRUN-ENGINE _RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

**TIMING**

Lite/HPC Offset (deg)	OFFSET
Piston Travel to TDC (deg)	TRAVEL
Timing (deg)	TIMING

**PARTS**

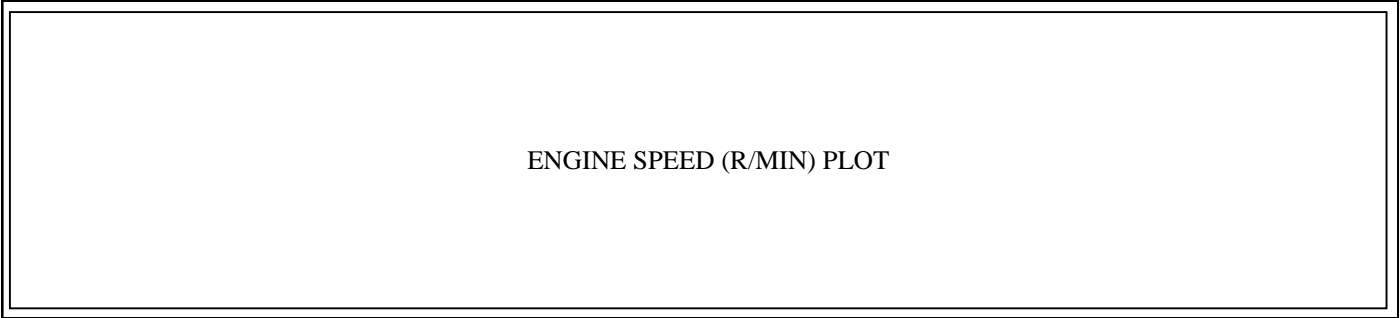
<b>Part</b>	<b>Part Number</b>	<b>Serial Number</b>
Injection Pump	INJPMPPN	INJPMPSN
Turbo Charger	TRBCHGPN	
Cylinder Head (front)	CYLHFRPN	CYLHFRSN
Cylinder Head (rear)	CYLHRRPN	CYLHRRSN
Pistons	PISTONPN	
Injection Nozzles	INJNOZPN	

**TEST METHOD D5967  
FORM 9**

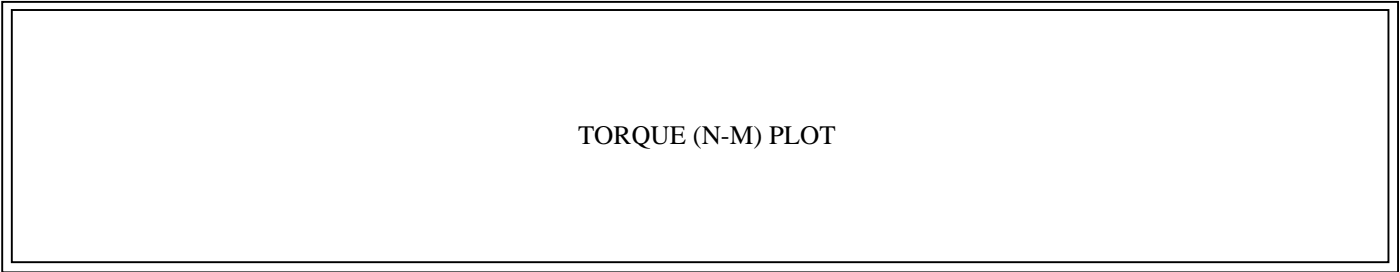
**OPERATIONAL DATA**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND -RSTRUN/STRUN-ENGINE -RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

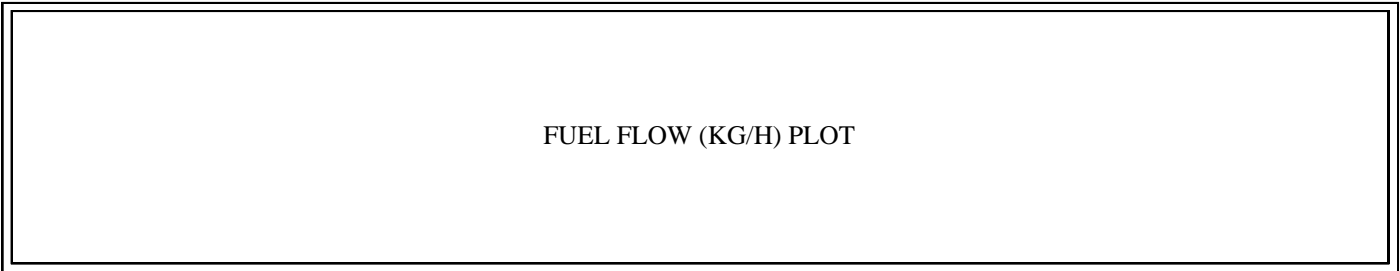
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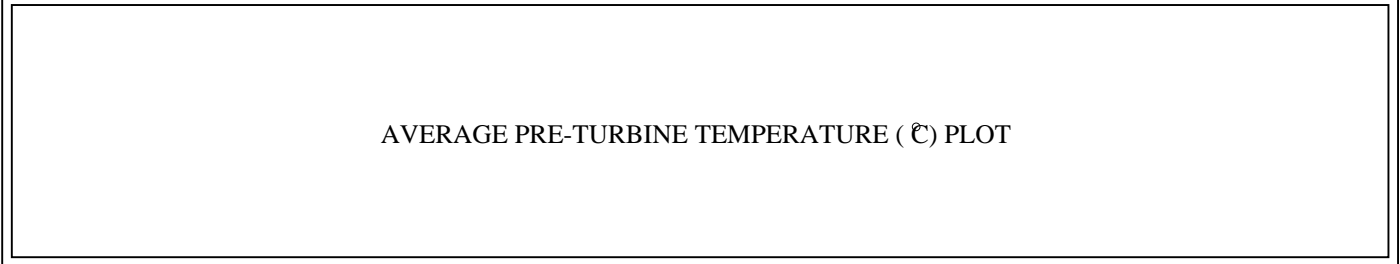
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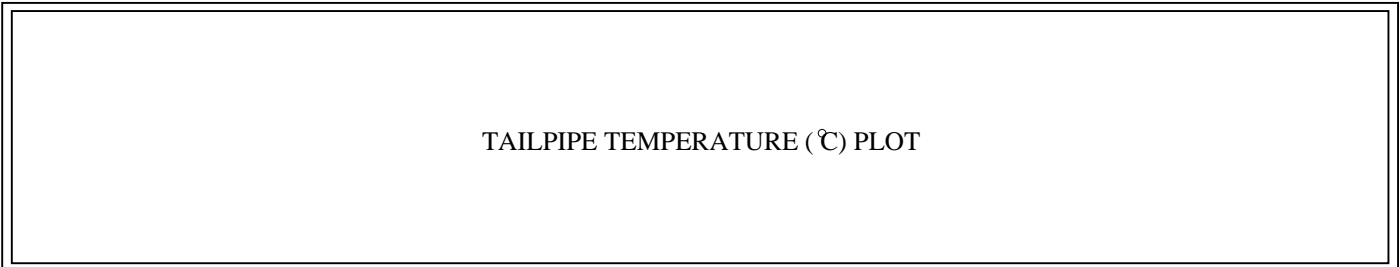
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AVGPTTIM



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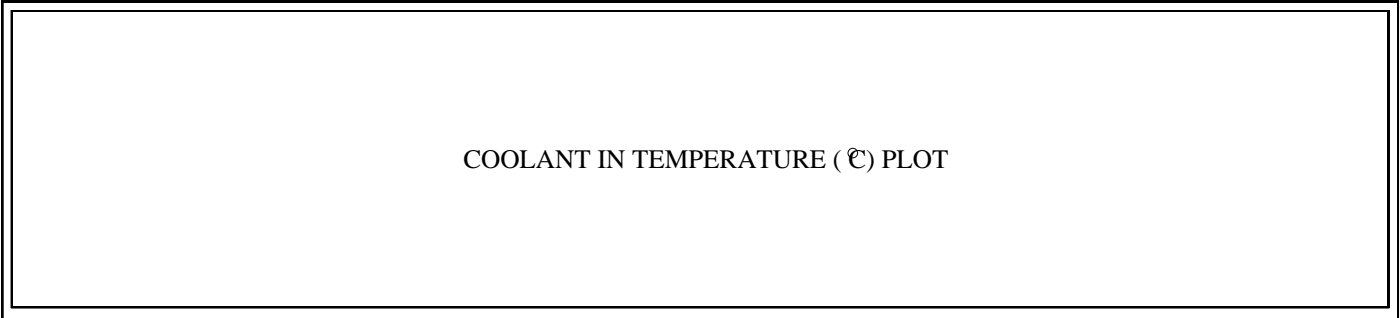


**TEST METHOD D5967  
FORM 10**

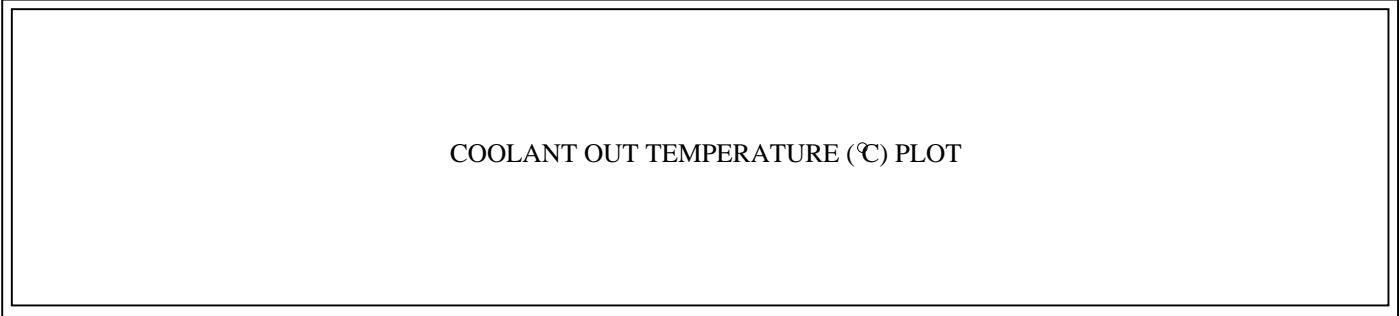
**OPERATIONAL DATA**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

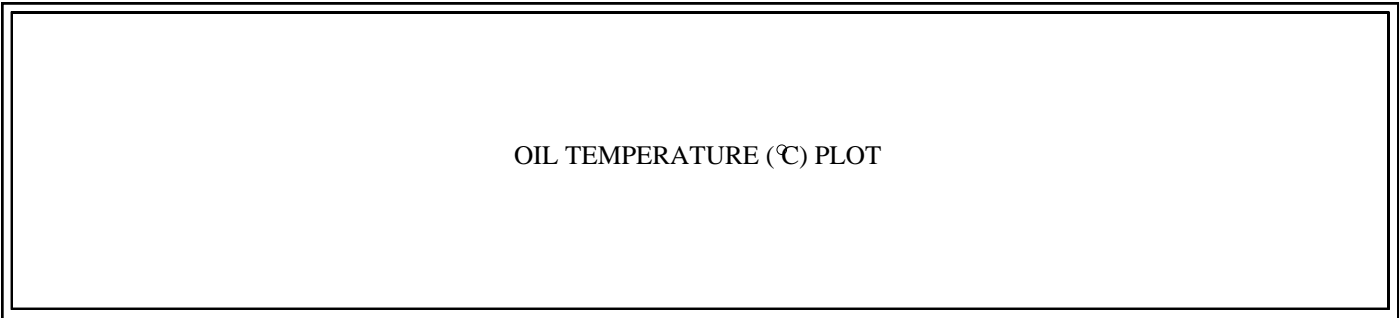
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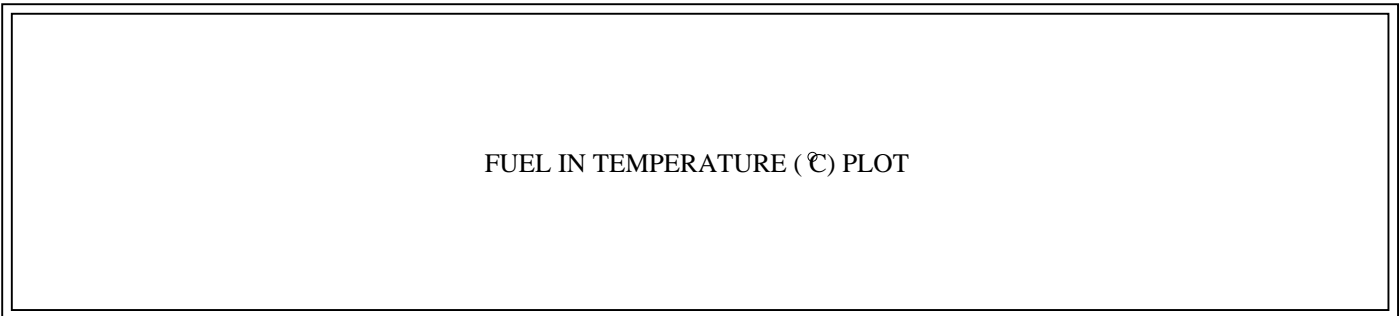
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OTEMIM



FUELITIM

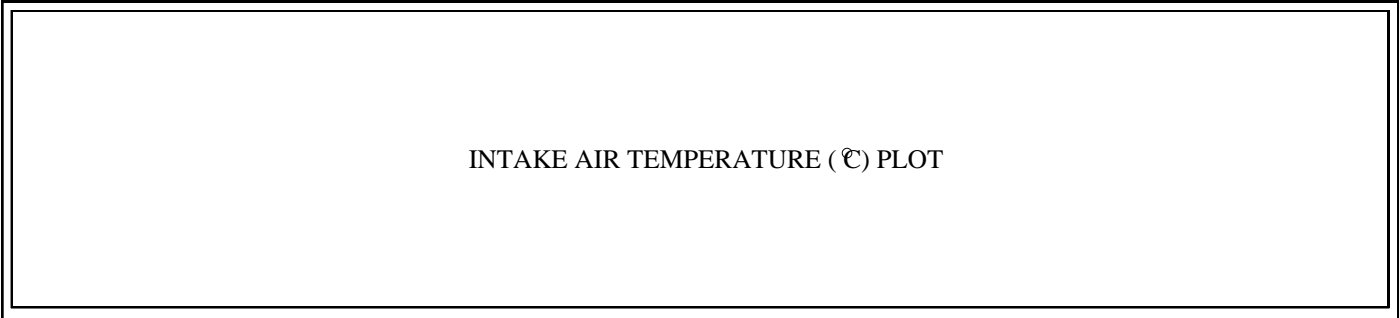


**TEST METHOD D5967  
FORM 11**

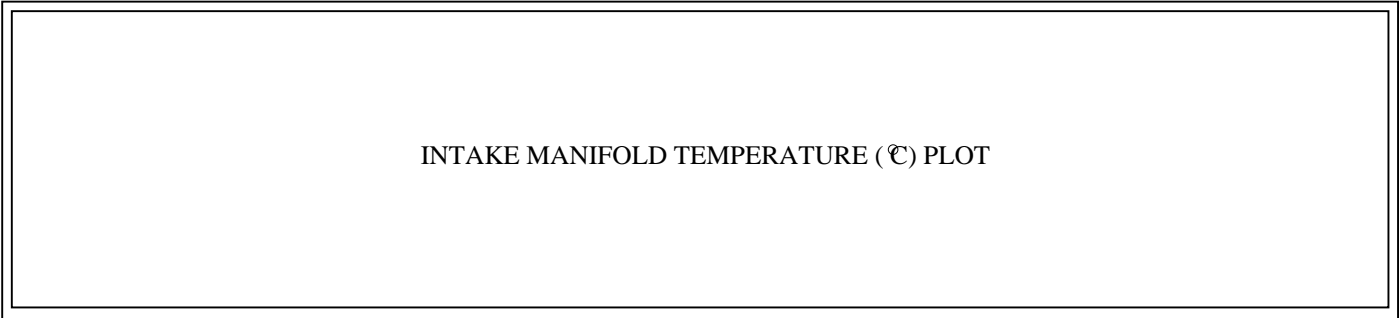
**OPERATIONAL DATA**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

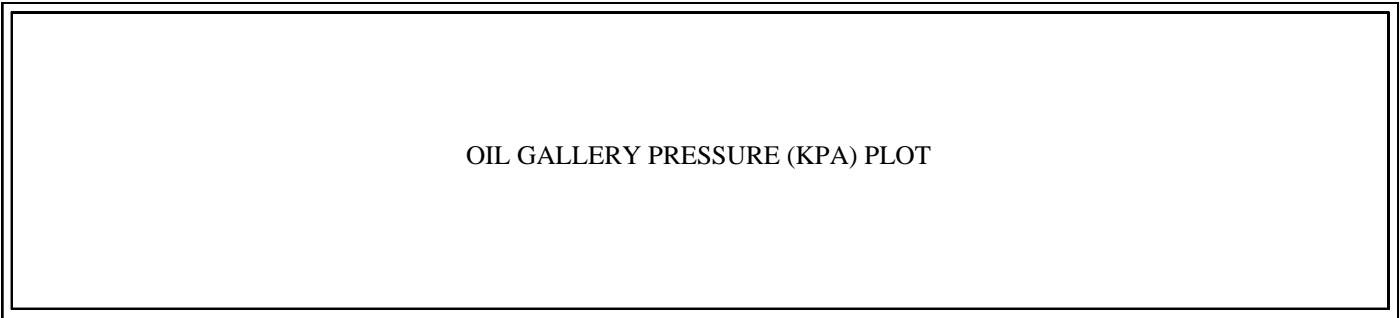
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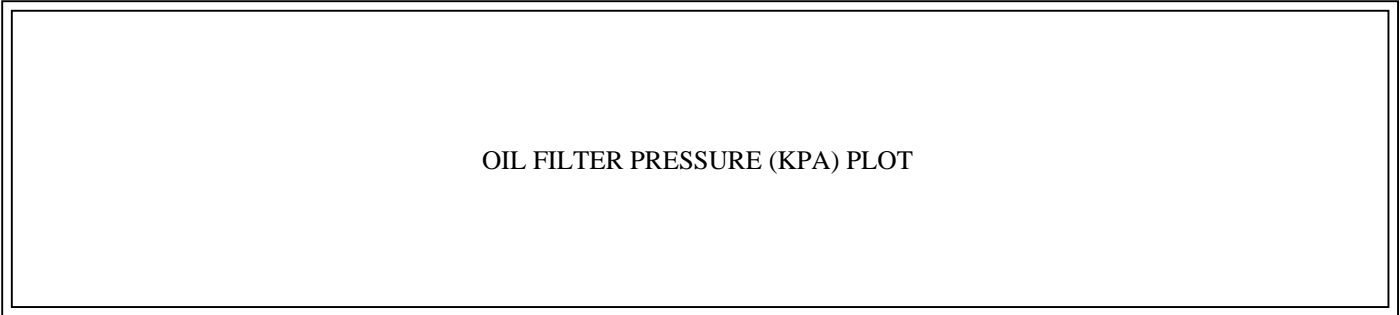
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OILGIM



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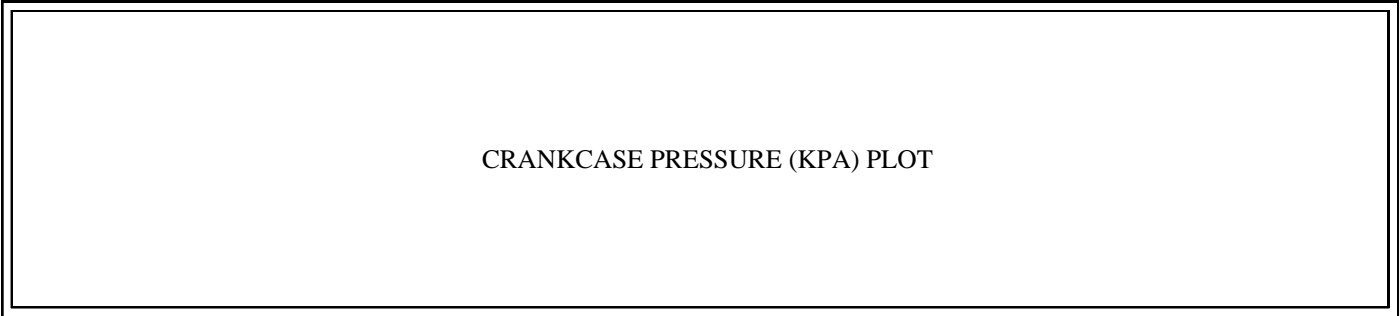


**TEST METHOD D5967  
FORM 12**

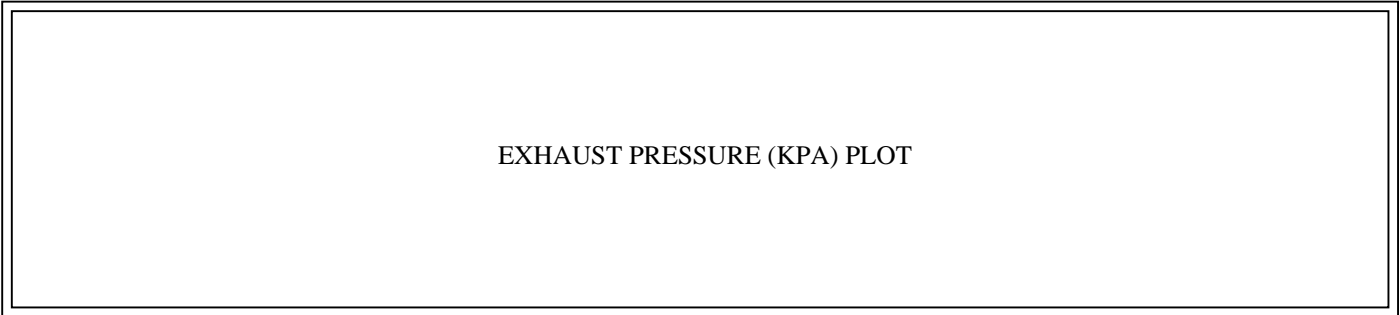
**OPERATIONAL DATA**

Laboratory	LAB	Start Date	RDTSTRT/DTSTRT
Test Number	STAND - RSTRUN/STRUN-ENGINE - RENHOURS/ENHOURS	Oil Code	CMIR/OILCODE
T-8 Formulation/Stand Code:	FORMT8		
T-8E Formulation/Stand Code:	FORMT8E		

CCPRESIM



EXPRIM



INREIM



IMANPIM

