D 5966
Roller Follower Wear Test

Final Report Cover Sheet
RFWT VERSION 20040331 BETA
Report Packet Version No.
TSTSPON1
TSTSPON2
Conducted For:

LABVALID	V = Valid
	I = Invalid

Test Number			
Test Stand STAND	Stand Run RSTRUN STRUN	Engine ENGINE	Engine Run RENRUN ENRUN
Date Completed RDTCOMP DTCOMP		Time Completed REOTTIME EOTTIME	
Oil Code [A] OILCODE CMIR			
Formulation/Stand Code FORM			
Alternate Codes	ALTCODE1	ALTCODE2	ALTCODE3

In my opinion this test OPVALID been conducted in a valid manner in accordance with the Test Method D 6335 and the appropriate amendments through the Information Letter System. The remarks included in the report describe the anomalies associated with this test.

[A] CMIR or Non-Reference Oil Code

Submitted By: SUBLAB
Testing Laboratory

SUBSIGIM
Signature

SUBNAME
Typed Name

SUBTITLE
Title

D 5966
Roller Follower Wear Test
Form 1
Test Lab Affidavit

Reference Oil Test					**Non-Reference Oil Test**				
Lab	Stand	Stand Run	Engine	Engine Run	Lab	Stand	Stand Run	Engine	Engine Run
LAB	STAND	RSTRUN	ENGINE	ENRUN	LAB	STAND	STRUN	ENGINE	RENRUN
Start Date	Date Completed	End of Test Time	Test Length		Start Date	Date Completed	End of Test Time	Test Length	
RDTSTRT	RDTCOMP	REOTTIME	RTESTLEN		DTSTRT	DTCOMP	EOTTIME	TESTLEN	
CMIR	TMC Oil Code	Viscosity Grade			Oil Code			Viscosity Grade	
CMIR	IND	RSAEVISC			OILCODE			SAEVISC	
Laboratory Oil Code	RLABOCOD				Laboratory Oil Code	LABOCODE			
Engine Displacement	ENDISPL				Formulation Stand Code				
					FORM				
Average Wear (mils)					Average Wear (mils)	Severity Adjustment	Adjusted Average Wear		
RWEAR					WEAR	WEARSA	AWEARFNL		

D 5966
Roller Follower Wear Test
Form 2
Summary of Roller Follower Wear

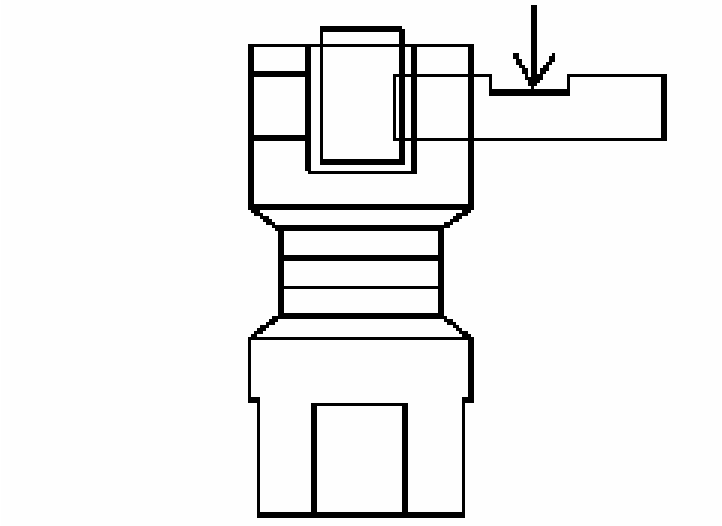
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Lifter Part Number
LIFTPN1

Profilometer Wear Measurements in Mils

Lifter Number	Wear (Mils)	Lifter Number	Wear (Mils)
1L	WEAR1L	1R	WEAR1R
2L	WEAR2L	2R	WEAR2R
3L	WEAR3L	3R	WEAR3R
4L	WEAR4L	4R	WEAR4R
5L	WEAR5L	5R	WEAR5R
6L	WEAR6L	6R	WEAR6R
7L	WEAR7L	7R	WEAR7R
8L	WEAR8L	8R	WEAR8R
Wear Statistics			
Minimum	Maximum	Average	Std. Deviation
IWEAR	XWEAR	RWEAR WEAR	SWEAR

Wear is measured at location shown by arrow



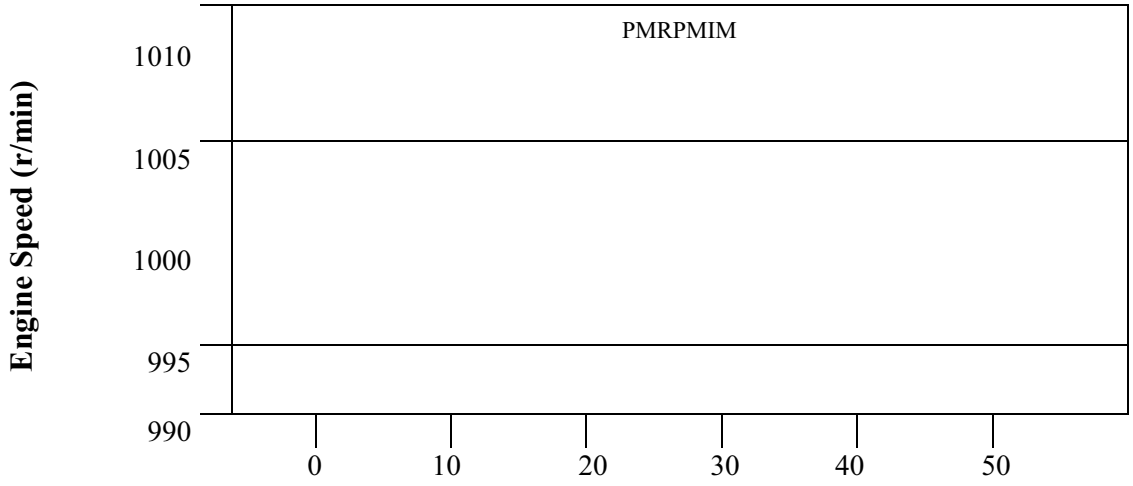
D 5966
Roller Follower Wear Test
Form 3
Operational Data Summary - Engine Speed

Laboratory	LAB	Date Completed	RDTCOMP DTCOMP
Test Number	TESTNUM		
Oil Code	OILCODE		CMIR
Formulation/Stand Code	FORM		

Engine Speed (r/min)

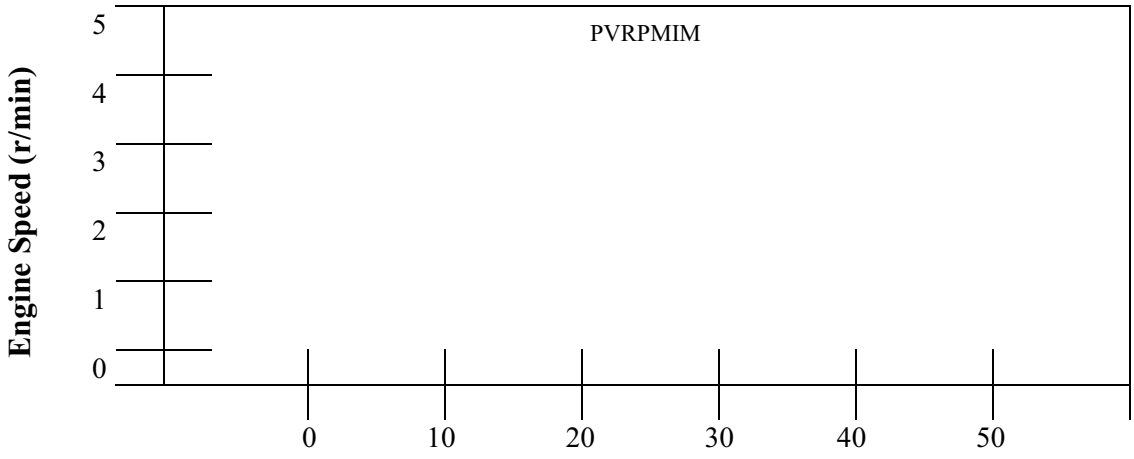
Process Mean

Xav = PMRPM



Process Variability (s)

Sav = PVRPM

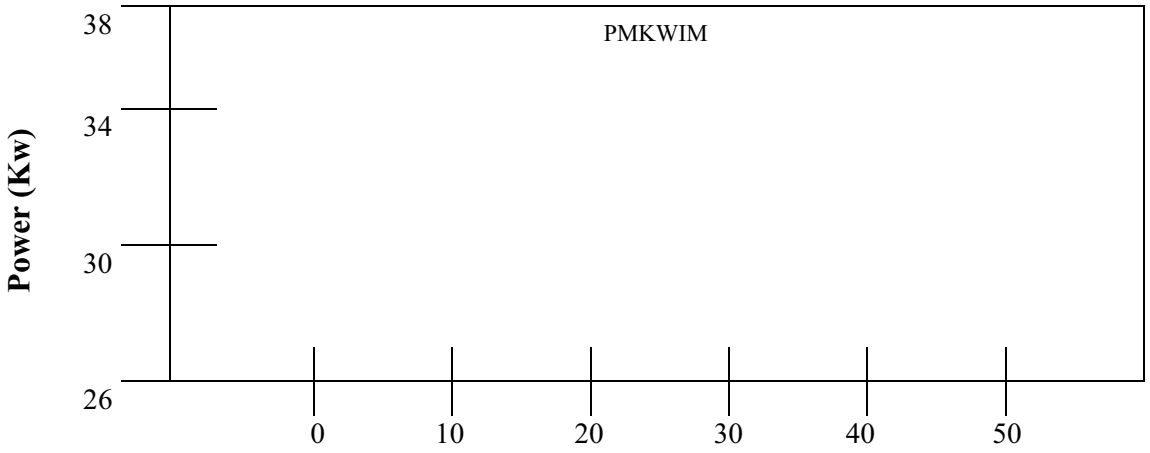


D 5966
Roller Follower Wear Test
Form 4
Operational Data Summary – Power

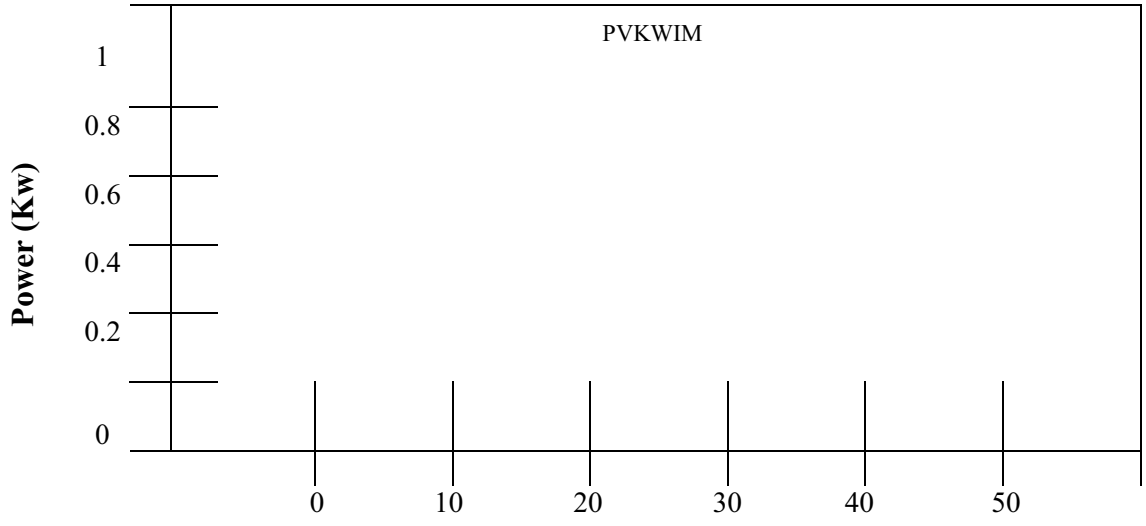
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Power (kW)

Process Mean
Xav = PMKW



Process Variability (s)
Sav = PVKW

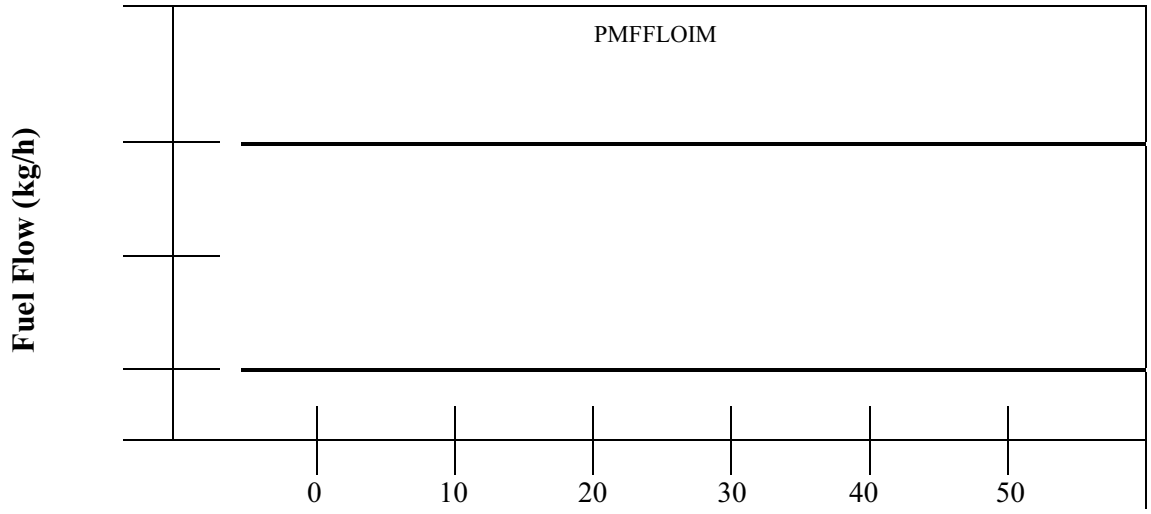


D 5966
Roller Follower Wear Test
Form 5
Operational Data Summary – Fuel Flow

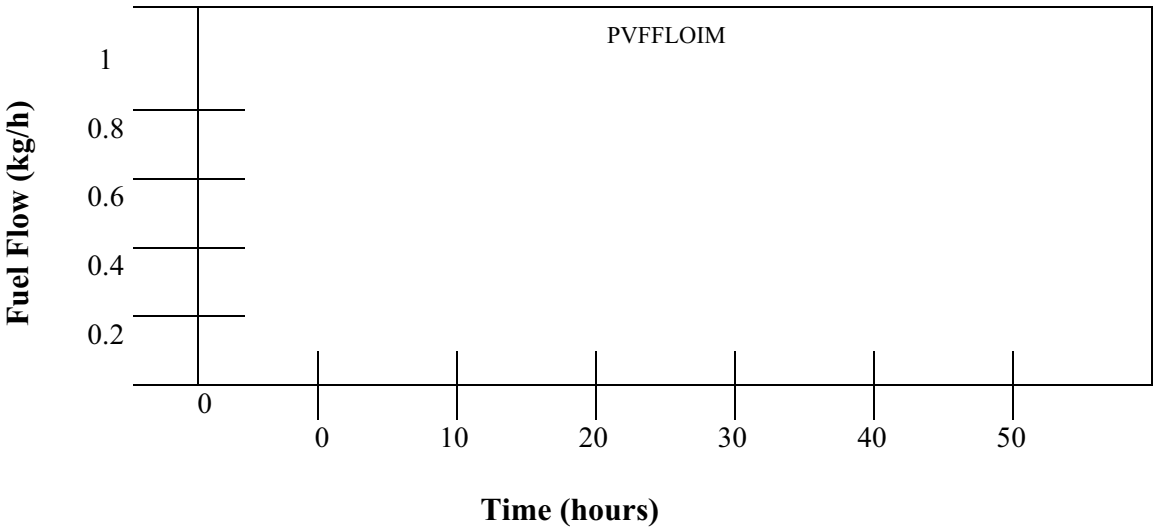
Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Fuel Flow (kg/h)

Process Mean
Xav = PMFFLO



Process Variability (s)
Sav = PVFFLO

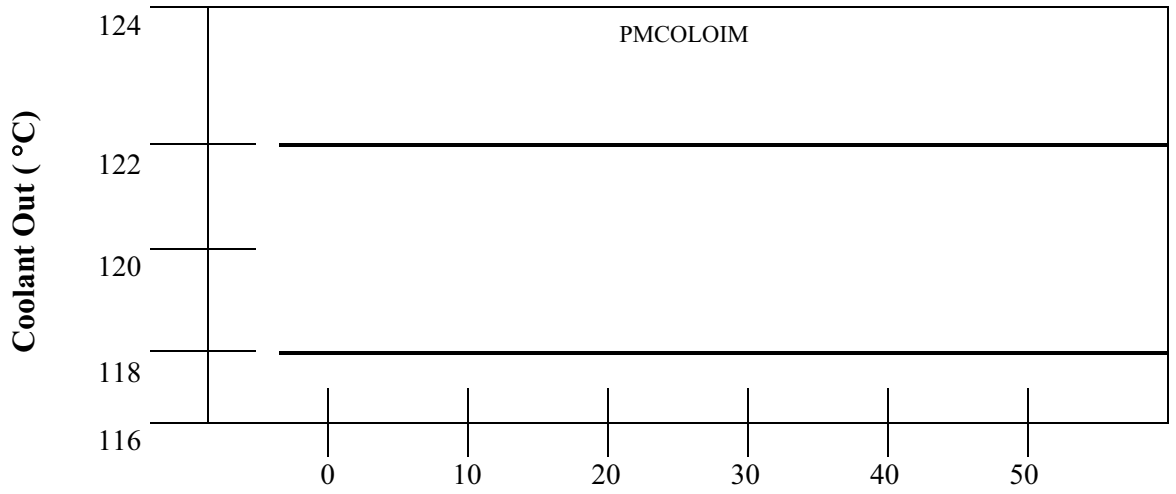


D 5966
Roller Follower Wear Test
Form 6
Operational Data Summary – Coolant Output Temperature

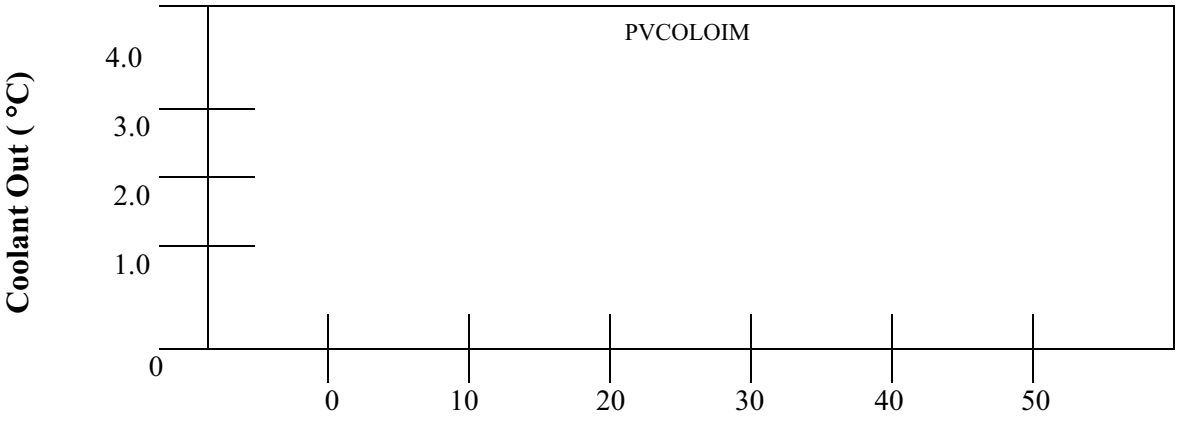
Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Coolant Out Temperature

Process Mean
Xav = PMCOLOUT



Process Variability (s)
Sav = PVCOLOUT

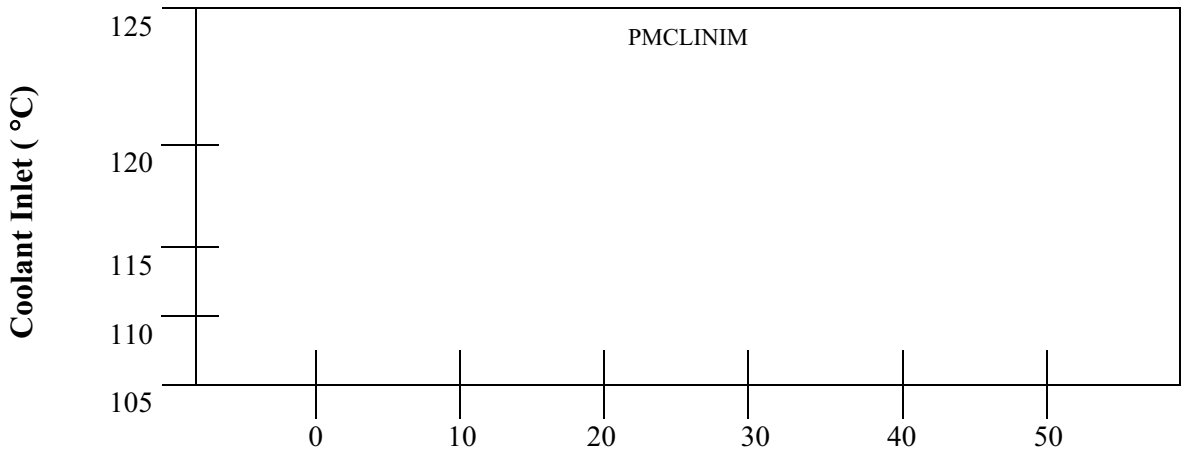


D 5966
Roller Follower Wear Test
Form 7
Operational Data Summary – Coolant Inlet Temperature

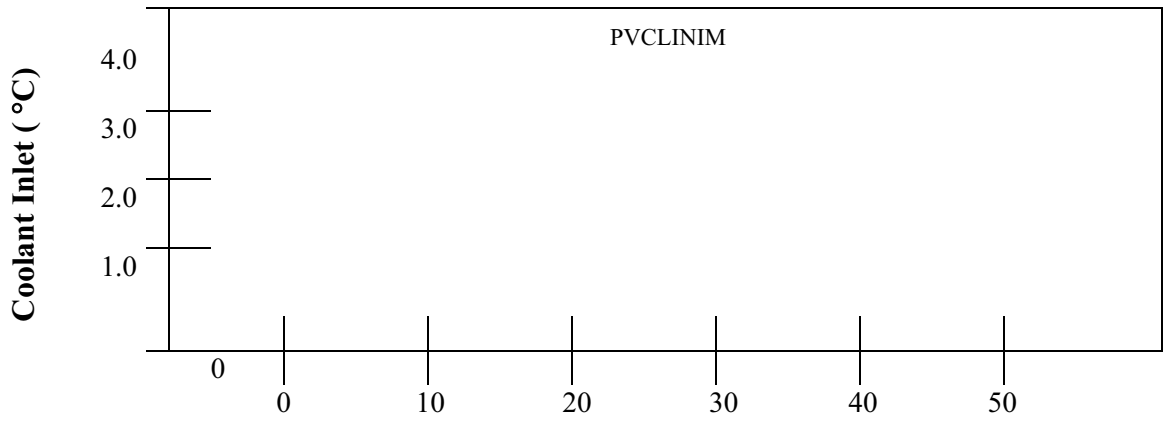
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Coolant Inlet Temperature

Process Mean
Xav = PMCOLIN



Process Variability (s)
Sav = PVCOLIN

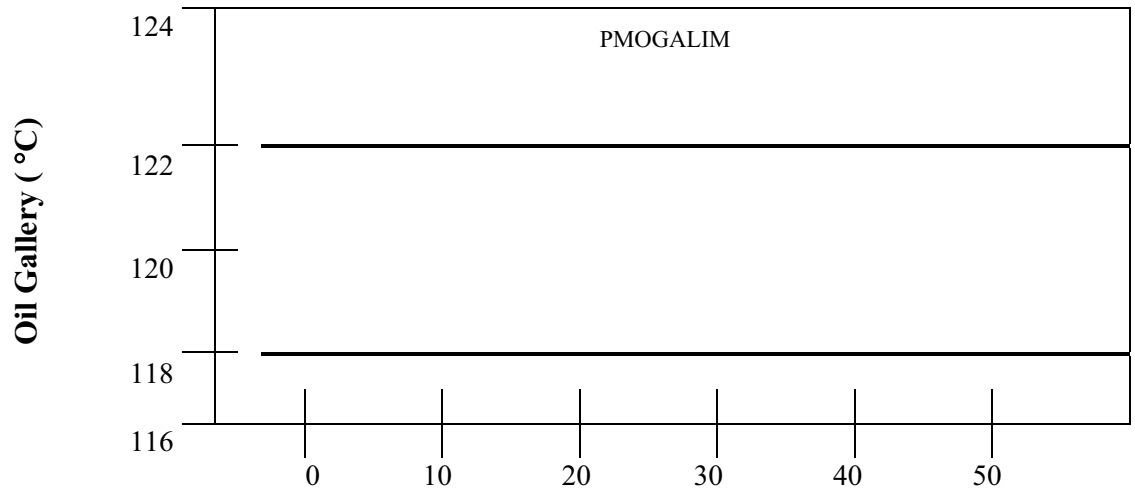


D 5966
Roller Follower Wear Test
Form 8
Operational Data Summary – Oil Gallery Temperature

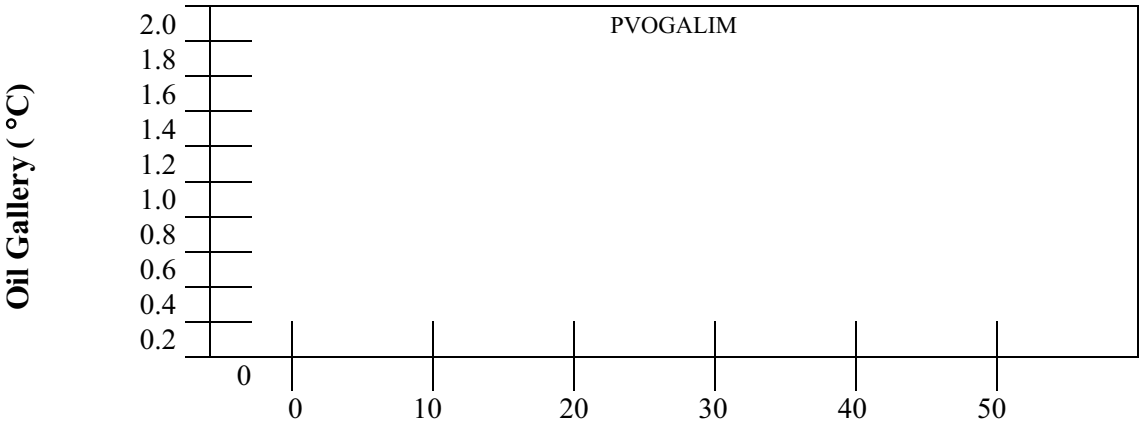
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Oil Gallery Temperature

Process Mean
Xav = PMOILGAL



Process Variability (s)
Sav = PVOILGAL

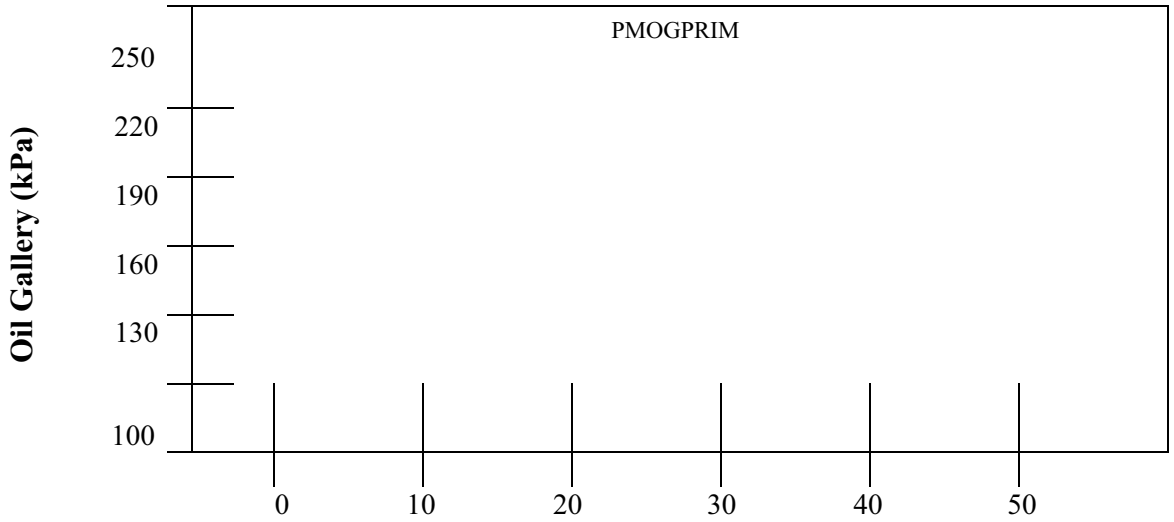


D 5966
Roller Follower Wear Test
Form 9
Operational Data Summary – Oil Gallery Pressure

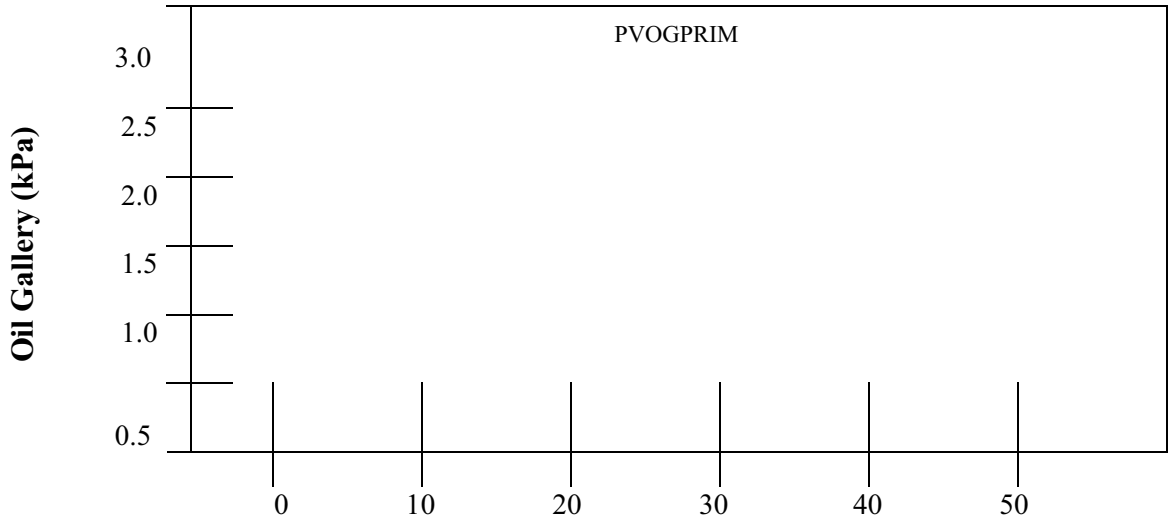
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Oil Gallery Pressure

Process Mean
Xav = PMOILGPR



Process Variability (s)
Sav = PVOILGPR

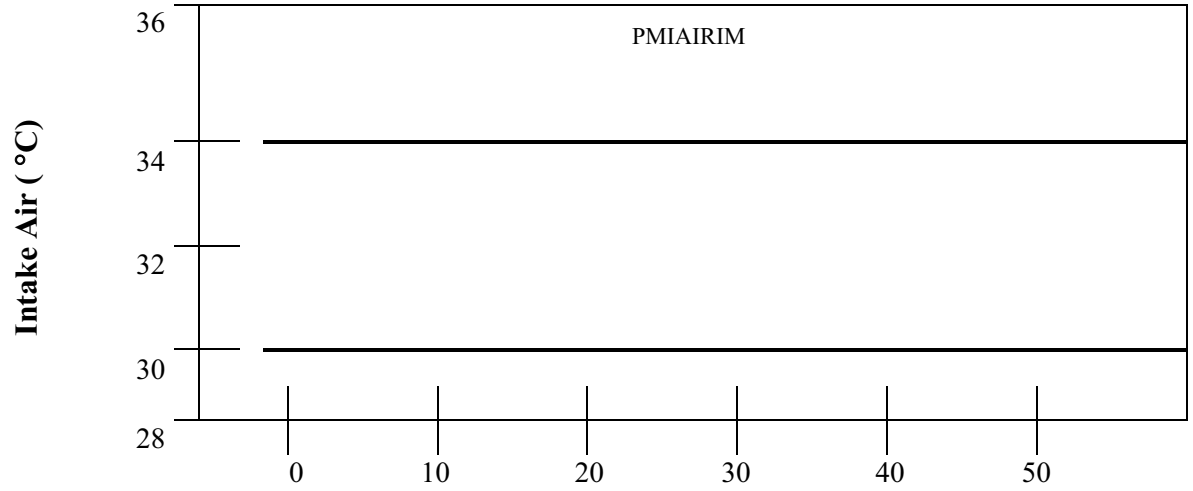


D 5966
Roller Follower Wear Test
Form 10
Operational Data Summary – Intake Air Temperature

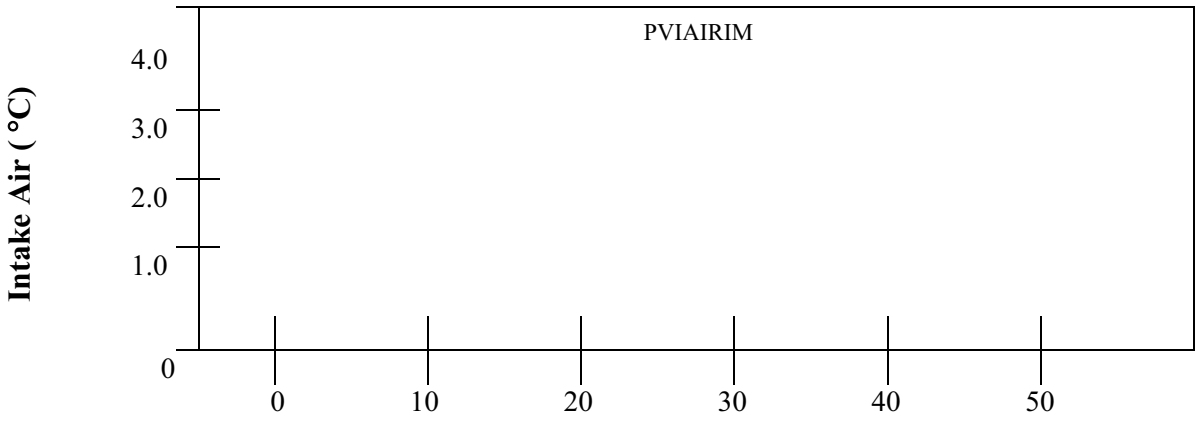
Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Intake Air Temperature

Process Mean
Xav = PMINAIR



Process Variability (s)
Sav = PVINAIR

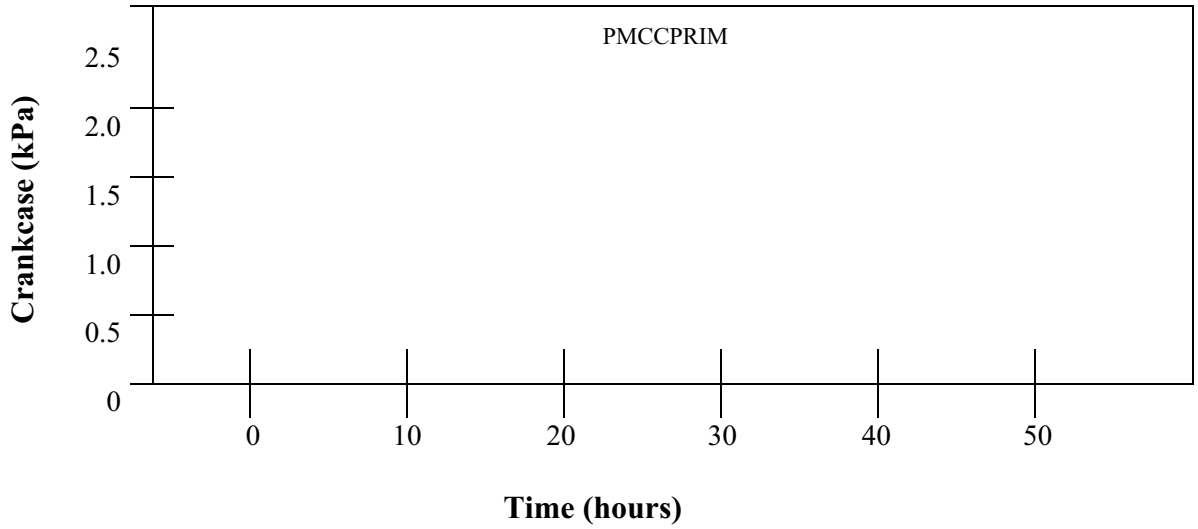


D 5966
Roller Follower Wear Test
Form 11
Operational Data Summary – Crankcase Pressure

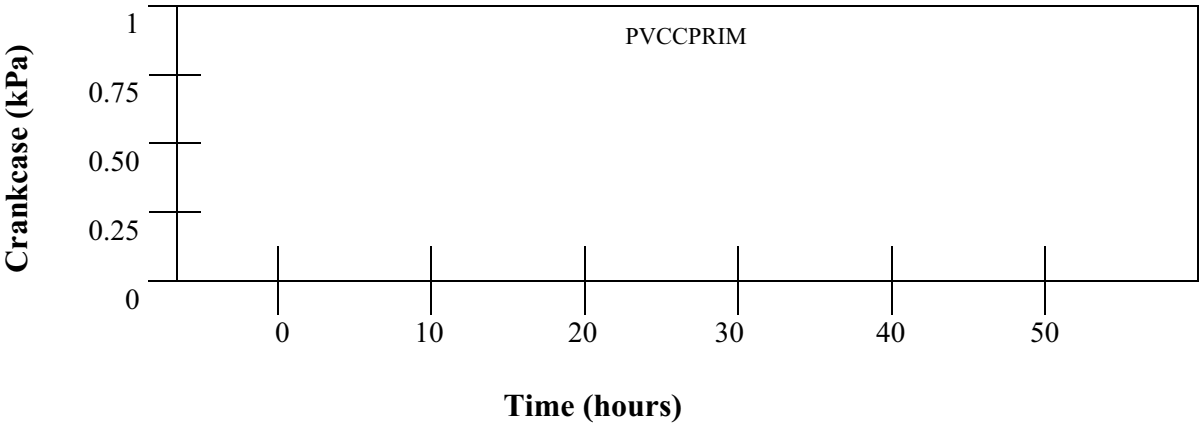
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Crankcase Pressure

Process Mean
Xav = PMCCPR



Process Variability (s)
Sav = PVCCPR

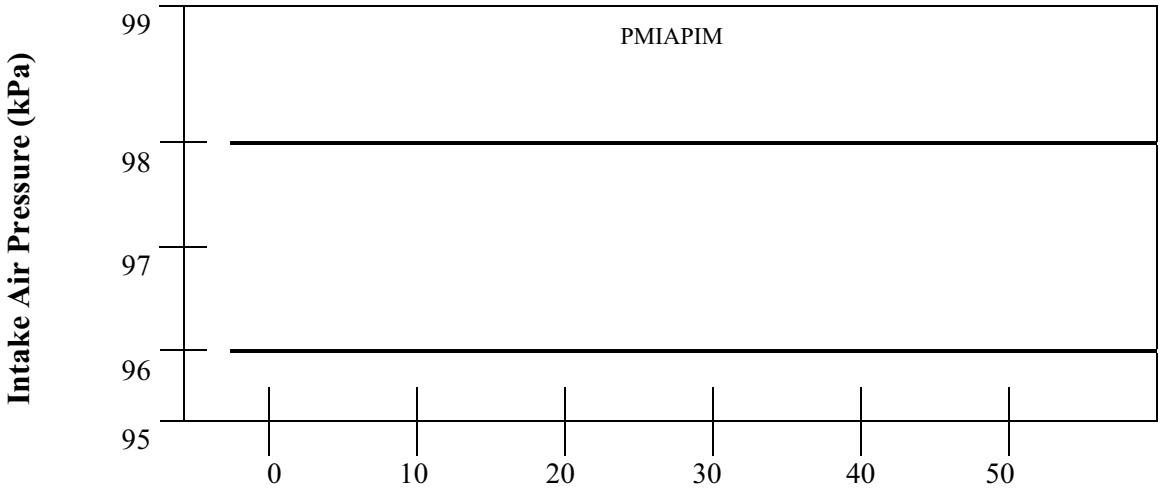


D 5966
Roller Follower Wear Test
Form 12
Operational Data Summary – Intake Air Pressure

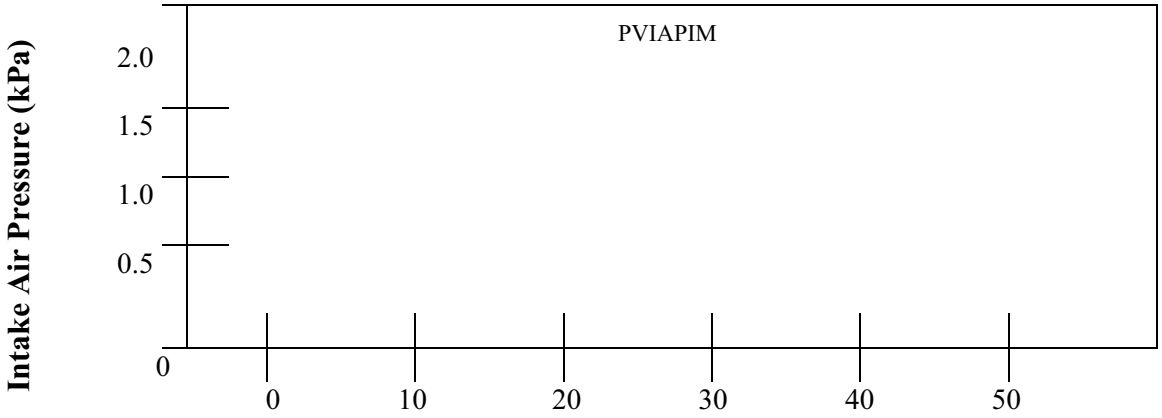
Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Intake Air Pressure

Process Mean
Xav = PMINAIRP



Process Variability (s)
Sav = PVINAIRP

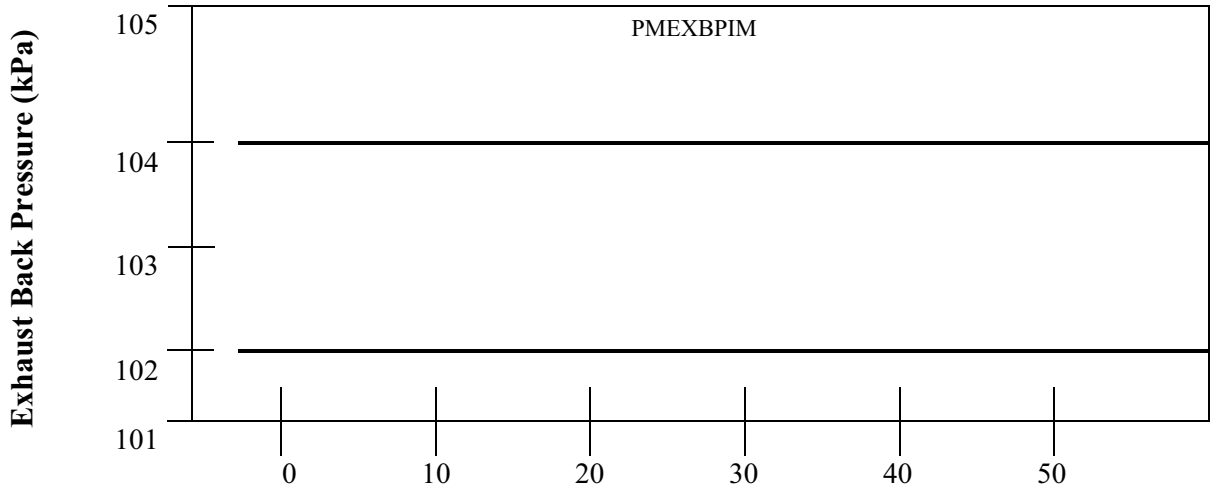


D 5966
Roller Follower Wear Test
Form 13
Operational Data Summary – Exhaust Back Pressure

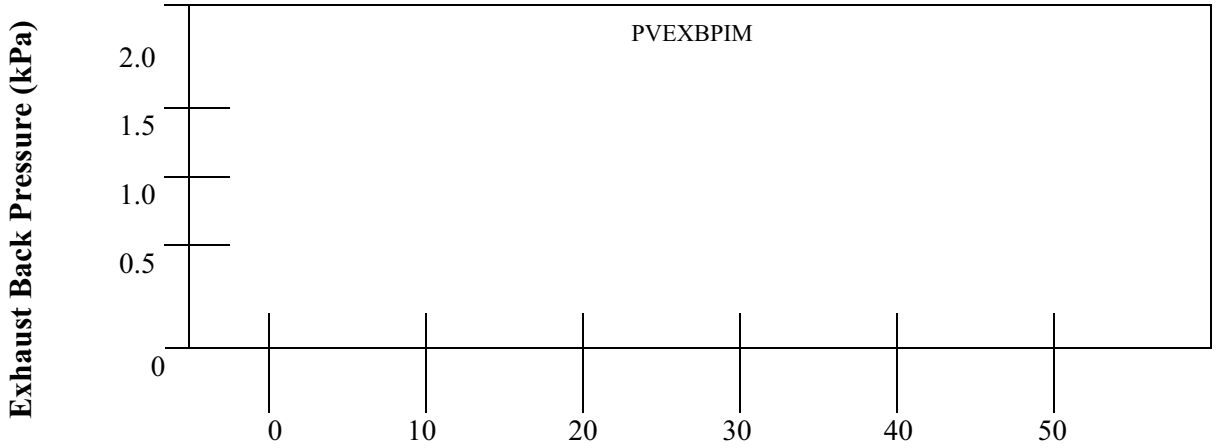
Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Exhaust Back Pressure

Process Mean
Xav = PMEXHBP



Process Variability (s)
Sav = PVEXHBP

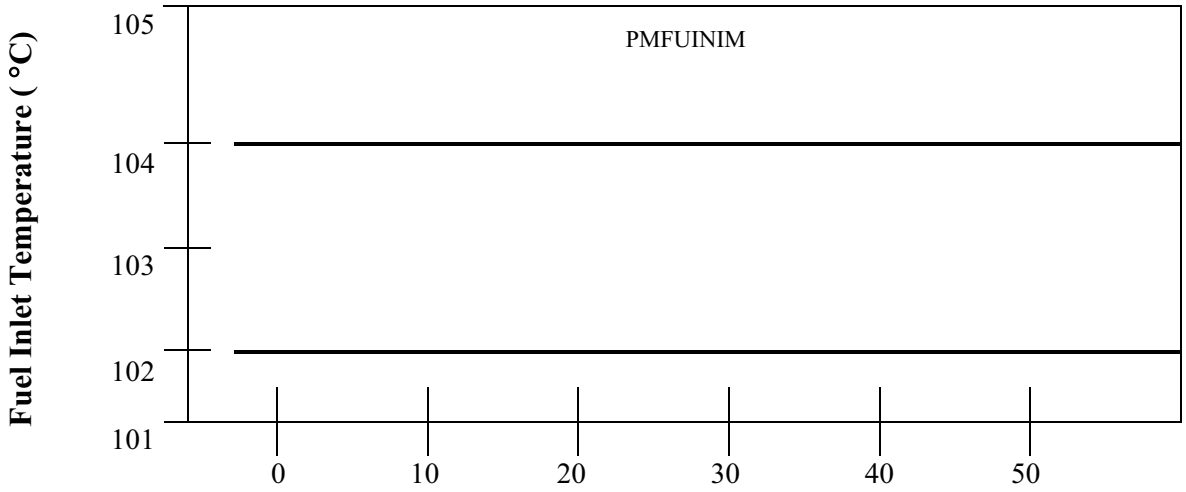


D 5966
Roller Follower Wear Test
Form 14
Operational Data Summary – Fuel Inlet Temperature

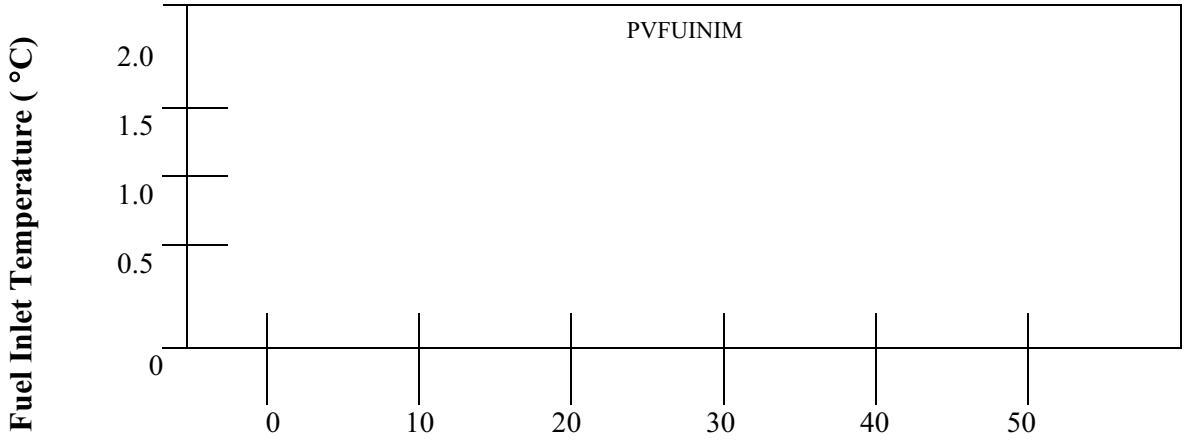
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Fuel Inlet Temperature

Process Mean
Xav = PMFUELIN



Process Variability (s)
Sav = PVFUELIN

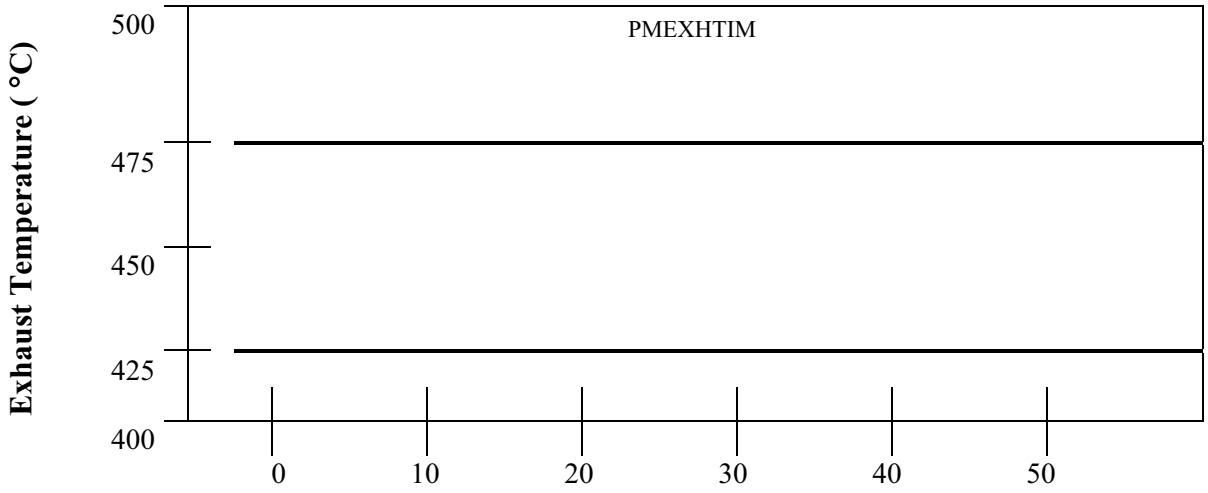


D 5966
Roller Follower Wear Test
Form 15
Operational Data Summary – Exhaust Temperature

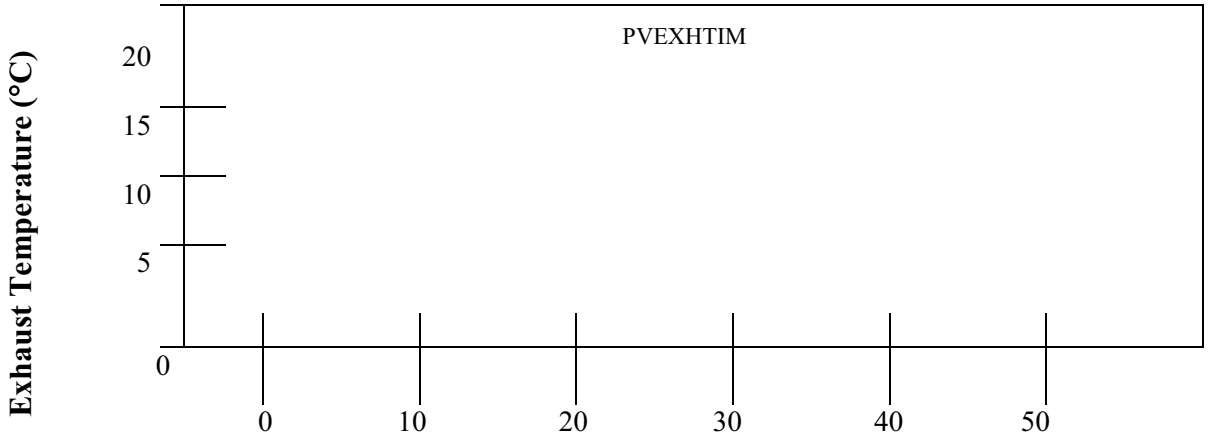
Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Exhaust Temperature

Process Mean
Xav = PMEXHT



Process Variability (s)
Sav = PVEXHT



D 5966
Roller Follower Wear Test
Form 16
Operational Summary

Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Specification						
Test Parameter	**6.2L Engine**	**6.5L Engine**	**Average**	**Std. Dev.**	**Minimum**	**Maximum**
Engine Speed, r/min	1000 ± 5	1000 ± 5	ARPM	SRPM	IRPM	XRPM
Torque, N-m	Record	Record	ALOAD	SLOAD	ILOAD	XLOAD
Fuel Flow, kg/h	9.0 ± 0.1	9.4 ± 0.1	AFFLO	SFFLO	IFFLO	XFFLO
Total Oil Consumption, kg	Record	Record	TOTOCON			

Temperatures	**Specification**	**Average**	**Std. Dev.**	**Minimum**	**Maximum**
Coolant Out, °C	120 ± 2	ACOLOUT	SCOLOUT	ICOLOUT	XCOLOUT
Coolant In, °C	Report Only	ACOLIN	SCOLIN	ICOLIN	XCOLIN
Main Oil Gallery, °C	120 ± 2	AOILTEM	SOILTEM	IOILTEM	XOILTEM
Fuel In, °C	35 ± 2	AFUELIN	SFUELIN	IFUELIN	XFUELIN
Intake Air, °C	32 ± 2	AINAIRT	SINAIRT	IINAIRT	XINAIRT
Oil Sump, °C	Report	ASUMPT	SSUMPT	ISUMPT	XSUMPT
Exhaust, °C	Report	AEXHT	SEXHT	IEXHT	XEXHT

Pressures	**Specification**	**Average**	**Std. Dev.**	**Minimum**	**Maximum**
Crankcase, kPa	Report	ACCASEP	SCCASEP	ICCASEP	XCCASEP
Back Pressure, kPa	103 ± 1	AEXP	SEXP	IEXP	XEXP
Intake Air, kPa	97 ± 1	AINPRES	SINPRES	IINPRES	XINPRES

D 5966
Roller Follower Wear Test
Form 17
Oil Analysis

Laboratory	LAB	Date Completed	RDTCOMP DTCOMP
Test Number	TESTNUM		
Oil Code	OILCODE		CMIR
Formulation/Stand Code	FORM		

Hours	Viscosity, cSt @ 100°C	% Soot
TST_HNEW	VIS1HNEW	TGA_HNEW
TST_H025	VIS1H025	TGA_H025
TST_H050	VIS1H050	TGA_H050

Hours	Elements						
	Al	Cr	Cu	Fe	Pb	Si	Sn
TST_HNEW	AL__HNEW	CR__HNEW	CU__HNEW	FE__HNEW	PB__HNEW	SI__HNEW	SN__HNEW
TST_H050	AL__H050	CR__H050	CU__H050	FE__H050	PB__H050	SI__H050	SN__H050

D 5966
Roller Follower Wear Test
Form 18
Unscheduled Downtime & Maintenance Summary

Laboratory	LAB	Date Completed	RDTCOMP	DTCOMP
Test Number	TESTNUM			
Oil Code		OILCODE		CMIR
Formulation/Stand Code	FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
		TOTLDOWN	**Total Downtime**

Other Comments	
Number of Comment Lines	TOTCOM

D 5966
Roller Follower Wear Test
Form 19
Unscheduled Downtime & Maintenance Summary

Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
		TOTLDOWN	**Total Downtime**

Other Comments		
Number of Comment Lines	TOTCOM	

D 5966
Roller Follower Wear Test
Form 20
Unscheduled Downtime & Maintenance Summary

Laboratory	LAB	Date Completed	RDTCOMP	DTCOMP
Test Number	TESTNUM			
Oil Code		OILCODE		CMIR
Formulation/Stand Code	FORM			

Number of Downtime Occurrences		DWNOCR	
Test Hours	**Date**	**Downtime**	**Reasons**
		TOTLDOWN	**Total Downtime**

Other Comments		
Number of Comment Lines	TOTCOM	

D 5966
Roller Follower Wear Test
Form 21
Test Fuel Analysis (Last batch)

Laboratory LAB	Date Completed	RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Supplier FUELSUP	Batch Identifiers FUELBTID

Measurement	Specs.	Analysis	Test Method
Total Sulfur, % Weight	0.03 - 0.05	FUELSULF	D 2622
Gravity, °API	32 – 36	APIGRAV	D 287 or D 4052
Hydrocarbon Composition			
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 Maximum	FUELCU	D 130
Flash Point, °C	54 Minimum	FLASHPT	D 93
Cloud Point, °C	-12 Maximum	FUELCLOU	D 2500
Pour Point, °C	-18 Maximum	FUELPOUR	D 97
Carbon Residue on 10% Residium, %	0.35 Maximum	FUELCRES	D 524 (10 % Bottoms)
Water & Sediment, % Vol	0.05 Maximum	FUELH2O	D 2709
Ash, % Wgt.	0.01 Maximum	FUELASH	D 482
Viscosity, cSt @ 40°C	2.0 - 3.2	KINVIS	D 445
Distillation, °C			
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

D 5966
Roller Follower Wear Test
Form 22
Characteristics of the Data Acquisition System

Laboratory LAB		Date Completed RDTCOMP	DTCOMP
Test Number TESTNUM			
Oil Code	OILCODE		CMIR
Formulation/Stand Code FORM			

Parameter (1)	Sensing Device (2)	Calibration Frequency (3)	Record Device (4)	Observation Frequency (5)	Record Frequency (6)	Log Frequency (7)	System Response (8)
Temperatures							
Main Oil G.	OGTSENS	OGTCALF	OGTRECD	OGTOBSF	OGTRECF	OGTLOGF	
Fuel In.	FTEMSENS	FTEMCALF	TEMRECI	FTEMOBSF	FTEMRECF	FTEMLOGF	
Intake Air	AITSENS	AITCALF	AITRECD	AITOBSF	AITRECF	AITLOGF	
Oil Sump	OSTSENS	OSTCALF	OSTRECD	OSTOBSF	OSTRECF	OSTLOGF	
Exhaust	EXMWSENS	EXMWCALF	XMWREC	EXMWOBSF	EXMWRECF	EXMWLOGF	
Cool. Out	COTSENS	COTCALF	COTRECD	COTOBSF	COTRECF	COTLOGF	
Other							
Fuel Flow	FFLOSENS	FFLOCALF	FLORECI	FFLOOBSF	FFLORECF	FFLOLOGF	FFLOSYSR
Engine Rpm	RPMSENS	RPMCALF	RPMRECD	RPMOBSF	RPMRECF	RPMLOGF	RPMSYSR
Load	LOADSENS	LOADCALF	OADRECI	LOADOBSF	LOADRECF	LOADLOGF	LOADSYSR
Intake Pres.	INTVSENS	INTVCALF	NTVRECI	INTVOBSF	INTVRECF	INTVLOGF	INTVSYSR
Exh. Press.	EXPRSENS	EXPRCALF	XPRRECI	EXPROBSF	EXPRRECF	EXPRLOGF	EXPRSYSR
Oil Gal Pres	OILGSENS	OILGCALF	ILGRECI	OILGOBSF	OILGRECF	OILGLOGF	OILGSYSR

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 recorded if 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

Roller Follower Wear Test
Form 23
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory		SUBLAB			
Test Sponsor		TSTSPON1			
Formulation / Stand Code		FORM			
Test Number		TESTNUM			
Start Date	DTSTRT	Start Time	STRTTIME	Time Zone	TZONE

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 ESRQME No ORQME*

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 YESFULL No NOFULL*

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 ESNODE* No ONODE

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 YESDEV* No NODEV *(This currently applies only to specific deviations identified in the ASTM Information Letter System)*

Check The Appropriate Conclusion

NCLUDE	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
ONOTIN	*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
ACCCOMM1
ACCCOMM2
ACCCOMM3
ACCCOMM4

SUBSIGIM _____ SUBDATE _____
Signature Date

SUBNAME _____ SUBTITLE _____
Typed Name Title