

**1K/1N
Final Report Cover**

Method 1K1N VERSION 20020107
Version METHOD

Conducted For:
TSTSPON1
TSTSPON2

LABVALID	V = Valid
	I = Invalid
	N = Results Cannot Be Interpreted As Representative Of Oil Performance (Non-Reference) And Shall Not Be Used In Determining An Average Test Result Using Multiple Test Criteria.

Test Number		
Test Stand: STAND	Engine Run #: ENRUN	
EOT Time: EOTTIME	EOT Date: DTCOMP	
Oil Code ^A : OILCODE	CMIR	
Formulation/Stand Code: FORM		
Alternate Codes: ALTCODE1	ALTCODE2	ALTCODE3

<p>In my opinion this test OPVALID been conducted in a valid manner in accordance with the 1K/1N Test Procedure (Research Report RR:D02-1273/RR:D02-1321) and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.</p>

^A CMIR or Non-Reference Oil Code

Submitted By: _____

SUBLAB
Testing Laboratory

SUBSIGIM
Signature

SUBNAME
Typed Name

SUBTITLE
Title

**1K/1N
Form 1
Test Report Summary**

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR OILCODE	CMIR		
Start Date DTSTRT	Total Test Length TESTLEN	TMC Oil Type IND	
Laboratory Internal Oil Code LABOCODE			

	Correction Effective Date	WDK/WDN	TGF %	TLHC%	Transformed TLHC%	BSOC g/KW-h	EOTOC g/kW-h
Unadjusted Lab Rating		WD	TGF	TLHC	TTLHC	BSOC	EOTOC
Industry Correction(If Any)	DATECF	WDCF	TGFCF	TLHCC	TTLHCC	BSOCC	EOTOCC
Subtotal		WDCOR	TGFCOR	TLHCC	TTLHCC	BSOCC	EOTOCC
Lab Severity Adjustment(If Any) ^A	DATESA	WDSA	TGFSA	TLHCS	TTLHCS	BSOCS	EOTOCS
Total		WDFNL	TGFFNL	TLHCF	TTLHCF	BSOCFN	EOTOCFN

	Effective Date	WDK/WDN	TGF %	TLHC %	Transformed TLHC%	BSOC g/KW-h	EOTOC g/kW-h
Test Target Mean B	EFFDATE	WDM	TGFM		TTLHCM	BSOCM	EOTOCM
Test Target STD B	EFFDATE	WDS	TGFS		TTLHCS	BSOCS	EOTOCS
LDESC A, C	DTCEFF	WDPL	TGFPL	TLHCPI		BSOCP	EOTOCPL

	Referee Lab	WDK/WDN	TGF %	
Referee Ratings	RRLAB	RRWD	RRTGF	

	Top	Int. 1	Oil	Piston	Liner
Ring Loss Of Side Clearance(mm)	LSCTOP	LSCINT1	LSCOIL		
Ring End Gap Increase (mm)	RINGGTI	RINGGI1	RINGGOI		
Is The Ring Stuck?	STUCKTOI	STUCKIN	STUCKOIL		
Scuffed Area %	SCUFFTOP	SCUFFIN	SCUFFOIL	SCUFFPIS	SCUFFLIN
Average Wear Step (µm)					AWEARST
% Bore Polish					BOREPOL

Notes: ^A Reference oil tests or as requested by test sponsor ^C See Appendix X4
^B Non-reference oil tests only

**1K/1N
Form 2
Operational Summary**

Lab LAB	EOT DateDTCOMP	End Time EOTTIME	Method METHOD		
Stand STAND	Run Number ENRUN				
Formulation/Stand Code FORM					
Oilcode/CMIR OILCODE			CMIR		
Operating Condition		Minimum	Maximum	Average	Specification
Engine Speed	r/min	IRPM	XRPM	ARPM	2100 ± 10
Engine Power	kW	IPWR	XPWR	APWR	Report
Fuel Flow	g/min	IFFLO	XFFLO	AFFLO	185 ± 1
Humidity	g/kg	IHUMID	XHUMID	AHUMID	17.8 ± 1.7
Temperature °C					
Coolant Out	°C	ICOLOUT	XCOLOUT	ACOLOUT	93 ± 2.5
Coolant In	°C	ICOLIN	XCOLIN	ACOLIN	Report
Coolant delta T	°C	ICOLDT	XCOLDT	ACOLDT	5 ± 1.0
Oil To Bearing	°C	IOBRGTMP	XOBRGTMP	AOBRGTMP	107 ± 2.5
Oil Cooler In	°C	IOCOOLIN	XOCOOLIN	AOCOOLIN	Report
Inlet Air	°C	IINAIRT	XINAIRT	AINAIRT	127 ± 2.5
Exhaust	°C	IEXHTMP	XEXHTMP	AEXHTMP	550 ± 30
Fuel @ Injector Housing	°C	IFUELTMP	XFUELTMP	AFUELTMP	57 + 3
Pressures					
Oil To Bearing	kPa	IOBRGPR	XOBRGPR	AOBRGPR	482 Max
Oil To Jet	kPa	IOJETPR	XOJETPR	AOJETPR	360 ± 13
Inlet Air	kPa	IINAIRP	XINAIRP	AINAIRP	240 ± 1
Exhaust (ABS)	kPa	IEBP	XEBP	AEBP	216 ± 1
Fuel @ Filter HSG	kPa	IFUELPR	XFUELPR	AFUELPR	210 ± 20
Crankcase Vacuum	kPa	ICCV	XCCV	ACCV	0.7 ± 0.1
Coolant Jug Pressure	kPa	IJUGPR	XJUGPR	AJUGPR	Report
Flows					
Blowby	L/min	IBLOBY	XBLOBY	ABLOBY	Report
Coolant Flow	L/min	ICOLFLO	XCOLFLO	ACOLFLO	65 ± 2
Air/Fuel Ratio: 24 hr.	AFR24		Air/Fuel Ratio: 252 hr.	AFR252	
Assembly Measurements And Parts Record					
Piston/Head Clearance mm	PISTONCL		Intake Valve Open °ATC		INVALOPN
					FUELTIM
Part No. (1)		Serial No. (2)		Date Code	Inspection Code
Liner	LINERPN	LINERSN		F LINERDC	G LINERIC
Ring Set (1)	RINGPN			RINGDC I	H RINGIC
Piston	PISTPN	PISTSN		D PISTDC	E PISTIC

D Number blow "E" located on top of piston

(1) And (2) Number On Parts Box Yellow Label

E Number on top of "E" located on top of piston

F Four alphanumeric characters (NNAN) on liner O.D.

G Four digit number on liner O.D.

1K/1N
Form 3
Operational Summary - Offset And Deviation

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Controlled Parameter	Allowable % Out	This Test % Out	Allowable % Off	This Test % Off
Speed	5	RPMOUT	20	RPMOFF
Fuel Flow	10	FFLOOUT	25	FFLOOFF
Humidity	10	HUMOUT	25	HUMOFF
Coolant Flow	5	COLFOUT	25	COLFOFF
Temperatures				
Coolant Out	5	COTOFF	20	COTOUT
Oil To Bearing	5	OBRGOUT	20	OBRGOFF
Intake Air	5	AIRTOU	20	AIRTOFF
Fuel At Injector Housing	5	FIHTOUT	20	FIHTOFF
Pressures				
Oil Jet	5	OJETOUT	25	OJETOFF
Intake Air	10	AIRPOU	25	AIRPOFF
Exhaust	10	EXPOU	25	EXPOFF
Fuel At Filter Housing	5	FFILOU	20	FFILOFF
Crankcase Vacuum	10	CCVOUT	20	CCVOFF

**1K/1N
Form 4
Piston Rating Summary**

Test	Lab LAB	EOT Date DTCOMP	END Time EOTTIMI	Stand STAND	Run No. ENRUN	Method METHOD
Formulation/Stand Code	FORM				Oilcode OILCODE	CMIR
Test Fuel TESTFUEL	Fuel Batch FUELBTTID	Date Rated DTRATE	Rating Number RNO		Rater RINIT	
Last Stand Reference Information	Date Completed	LRDTCOMP	Stand No. STAND	Run No. LRENRUN	TMC Oil Code LIND	
	WDK/WDN	TGF	TLHC	Transformed TLHC	BSOC	EOTOC
Last Ref. This Stand	LRWD	LRTGF	LRTLHC	LRTLHC	LRBSOC	LREOTOC
Industry Average	LRAWD	LRTATGF		LRAATLHC	LRBSOC	LRAEOTOC
Industry STD	LRSWD	LRSTGF		LRSTTLHC	LRBSOC	LRSEOTOC

Total Piston Ratings Summary															PRVID															
Dep. Factor	Grooves						Lands						Upper Skirt		Under Crown		Pin Bores													
	NO. 1		NO. 2		NO. 3		NO. 1		NO. 2		NO. 3		A, %		Dem.		A, %		Dem.		A, %		Dem.							
	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.	A, %	Dem.						
C																														
A	G1HCA	G1HCD	G2HCA	G2HCD	G3HCA	G3HCD	G3HCA	G3HCD	G3HCA	G3HCD	G3HCD	L1HCA	L1HCD	L2HCA	L2HCD	L3HCA	L3HCD	USHCA	USHCL	UCHCA	UCHCD	PFHCA	PFHCD	PRHCA	PRHCD					
B	G1MCA	G1MCL			G3MCA	G3MCL																								
O	G1LCA	G1LCD	G2LCA	G2LCD	G3LCA	G3LCD	G3LCA	G3LCD	G3LCA	G3LCD	G3LCD	L1LCA	L1LCD	L2LCA	L2LCD	L3LCA	L3LCD	USLCA	USLCD	UCLCA	UCLCD	PFLCA	PFLCD	PRLCA	PRLCD					
N	G1ACT	G1DCT	G2ACT	G2DCT	G3ACT	G3DCT	G3ACT	G3DCT	G3ACT	G3DCT	G3DCT	L1ACT	L1DCT	L2ACT	L2DCT	L3ACT	L3DCT	USACT	USDCT	UCACT	UCDCT	PFACT	PFDCT	PRACT	PRDCT					
8 - 9	G1L9A	G1L9D	G2L9A	G2L9D	G3L9A	G3L9D	G3L9A	G3L9D	G3L9A	G3L9D	G3L9D	L1L9A	L1L9D	L2L9A	L2L9D	L3L9A	L3L9D	USV9A	USV9D	UCV9A	UCV9D	PFV9A	PFV9D	PRV9A	PRV9D					
7 - 7.9	G1L8A	G1L8D	G2L8A	G2L8D	G3L8A	G3L8D	G3L8A	G3L8D	G3L8A	G3L8D	G3L8D	L1L8A	L1L8D	L2L8A	L2L8D	L3L8A	L3L8D	USV8A	USV8D	UCV8A	UCV8D	PFV8A	PFV8D	PRV8A	PRV8D					
6 - 6.9	G1L7A	G1L7D	G2L7A	G2L7D	G3L7A	G3L7D	G3L7A	G3L7D	G3L7A	G3L7D	G3L7D	L1L7A	L1L7D	L2L7A	L2L7D	L3L7A	L3L7D	USV7A	USV7D	UCV7A	UCV7D	PFV7A	PFV7D	PRV7A	PRV7D					
5 - 5.9	G1L6A	G1L6D	G2L6A	G2L6D	G3L6A	G3L6D	G3L6A	G3L6D	G3L6A	G3L6D	G3L6D	L1L6A	L1L6D	L2L6A	L2L6D	L3L6A	L3L6D	USV6A	USV6D	UCV6A	UCV6D	PFV6A	PFV6D	PRV6A	PRV6D					
4 - 4.9	G1L5A	G1L5D	G2L5A	G2L5D	G3L5A	G3L5D	G3L5A	G3L5D	G3L5A	G3L5D	G3L5D	L1L5A	L1L5D	L2L5A	L2L5D	L3L5A	L3L5D	USV5A	USV5D	UCV5A	UCV5D	PFV5A	PFV5D	PRV5A	PRV5D					
3 - 3.9	G1L4A	G1L4D	G2L4A	G2L4D	G3L4A	G3L4D	G3L4A	G3L4D	G3L4A	G3L4D	G3L4D	L1L4A	L1L4D	L2L4A	L2L4D	L3L4A	L3L4D	USV4A	USV4D	UCV4A	UCV4D	PFV4A	PFV4D	PRV4A	PRV4D					
2 - 2.9	G1L3A	G1L3D	G2L3A	G2L3D	G3L3A	G3L3D	G3L3A	G3L3D	G3L3A	G3L3D	G3L3D	L1L3A	L1L3D	L2L3A	L2L3D	L3L3A	L3L3D	USV3A	USV3D	UCV3A	UCV3D	PFV3A	PFV3D	PRV3A	PRV3D					
1 - 1.9	G1L2A	G1L2D	G2L2A	G2L2D	G3L2A	G3L2D	G3L2A	G3L2D	G3L2A	G3L2D	G3L2D	L1L2A	L1L2D	L2L2A	L2L2D	L3L2A	L3L2D	USV2A	USV2D	UCV2A	UCV2D	PFV2A	PFV2D	PRV2A	PRV2D					
>0 - 0.9	G1L1A	G1L1D	G2L1A	G2L1D	G3L1A	G3L1D	G3L1A	G3L1D	G3L1A	G3L1D	G3L1D	L1L1A	L1L1D	L2L1A	L2L1D	L3L1A	L3L1D	USV1A	USV1D	UCV1A	UCV1D	PFV1A	PFV1D	PRV1A	PRV1D					
Clean	G1LCL	0	G2LCL	0	G3LCL	0	G3LCL	0	G3LCL	0	G3LCL	L1LCL	0	L2LCL	0	L3LCL	0	USVCL	0	UCVCL	0	PFVCL	0	PRVCL	0					
Total	G1ALT	G1DLT	G2ALT	G2DLT	G3ALT	G3DLT	G3ALT	G3DLT	G3ALT	G3DLT	G3DLT	L1ALT	L1DLT	L2ALT	L2DLT	L3ALT	L3DLT	USALT	USDLT	UCALT	UCDLT	PFALT	PFDLT	PRALT	PRDLT					
Rating	G2UWD		G2UWD		G3UWD		G3UWD		G3UWD		G3UWD	L1UWD		L2UWD		L3UWD		USUWD		UCUWD		PFUWD		PRUWD						
Location Factor	1.5		1.5		25		25		25		25	1		1		25		50		20		0		0						
Weighted Rating	G1WD		G2WD		G3WD		G3WD		G3WD		G3WD	L1WD		L2WD		L3WD		USWD		UCWD		PFWD		PRWD						
TGF %	Intermediate Groove Fill %						WDK/WDN						Unweighted Deposit						T.L. Heavy Carbon %						T.L. Flaked Carbon %					
TGF	IGF						WD						UWD						TLHC						TLFC					

1K/1N
Form 4A
Piston Rating Worksheet

Lab LAB	EOT Date EOTTIME	END Time DTCOMP	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR:OILCODE			CMIR

RATEWSIM

Refer to Appendix C for an example of Piston Rating Worksheet.

**1K/1N
Form 5
Supplemental Piston Deposits(Groove Sides And Rings)**

Lab LAB	EOT Date	DTCOMP	End Time	EOTTIME	Method	METHOD									
Stand: STAND		Run Number ENRUN													
Formulation/Stand Code FORM															
Oilcode: OILCODE															
CMIR															
Deposit Type	Carbon			Varnish											
	HC	MC	LC	8 - 9	7 - 7.9	6 - 6.9	5 - 5.9	4 - 4.9	3 - 3.9	2 - 2.9	1 - 1.9	>0 -	Clean		
Groove Top And Bottom	1	T	G1THC	G1TMC	G1TLC	G1T9A	G1T8A	G1T7A	G1T6A	G1T5A	G1T4A	G1T3A	G1T2A	G1T1A	G1TCLN/
		B	G1BHC	G1BMC	G1BLC	G1B9A	G1B8A	G1B7A	G1B6A	G1B5A	G1B4A	G1B3A	G1B2A	G1B1A	G1BCLN/
	2	T	G2THC	G2TMC	G2TLC	G2T9A	G2T8A	G2T7A	G2T6A	G2T5A	G2T4A	G2T3A	G2T2A	G2T1A	G2TCLN/
		B	G2BHC	G2BMC	G2BLC	G2B9A	G2B8A	G2B7A	G2B6A	G2B5A	G2B4A	G2B3A	G2B2A	G2B1A	G2BCLN/
	3	T	G3THC	G3TMC	G3TLC	G3T9A	G3T8A	G3T7A	G3T6A	G3T5A	G3T4A	G3T3A	G3T2A	G3T1A	G3TCLN/
		B	G3BHC	G3BMC	G3BLC	G3B9A	G3B8A	G3B7A	G3B6A	G3B5A	G3B4A	G3B3A	G3B2A	G3B1A	G3BCLN/
Top Bottom And Back Of Rings	1	T	R1THC	R1TMC	R1TLC	R1T9A	R1T8A	R1T7A	R1T6A	R1T5A	R1T4A	R1T3A	R1T2A	R1T1A	R1TCLN/
		B	R1BHC	R1BMC	R1BLC	R1B9A	R1B8A	R1B7A	R1B6A	R1B5A	R1B4A	R1B3A	R1B2A	R1B1A	R1BCLN/
		BK	R1BKF	R1BKM	R1BKL	R1BK9	R1BK8	R1BK7	R1BK6	R1BK5	R1BK4	R1BK3	R1BK2	R1BK1	R1BKCLN
	2	T	R2THC	R2TMC	R2TLC	R2T9A	R2T8A	R2T7A	R2T6A	R2T5A	R2T4A	R2T3A	R2T2A	R2T1A	R2TCLN/
		B	R2BHC	R2BMC	R2BLC	R2B9A	R2B8A	R2B7A	R2B6A	R2B5A	R2B4A	R2B3A	R2B2A	R2B1A	R2BCLN/
		BK	R2BKF	R2BKM	R2BKL	R2BK9	R2BK8	R2BK7	R2BK6	R2BK5	R2BK4	R2BK3	R2BK2	R2BK1	R2BKCLN
3	T	R3THC	R3TMC	R3TLC	R3T9A	R3T8A	R3T7A	R3T6A	R3T5A	R3T4A	R3T3A	R3T2A	R3T1A	R3TCLN/	
	B	R3BHC	R3BMC	R3BLC	R3B9A	R3B8A	R3B7A	R3B6A	R3B5A	R3B4A	R3B3A	R3B2A	R3B1A	R3BCLN/	
	BK	R3BKF	R3BKM	R3BKL	R3BK9	R3BK8	R3BK7	R3BK6	R3BK5	R3BK4	R3BK3	R3BK2	R3BK1	R3BKCLN	
Additional Deposit & Condition Ratings															
Piston Crown	CROWNAD														
Rings	LINERAD														
Liner	RINGSAD														

**1K/1N
Form 5A
Referee Rating**

Test Identification		EOT Date DTCOMP	End Time EOTIME	Method	METHOD
Lab LAB		Run No. ENRUN			
Stand STAND		Formulation/Stand Code FORM			
Oilcode OILCODE					
Referee Rating Information					
Company RRLAB	Rating Number RRNO	Date Rated RRDATE	Rater RRINIT		

Dep.. Factor	Grooves						Lands						Upper Skirt		Under Crown		Pin Bores		
	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	No. 1	No. 2	No. 3	A. %	Dem.	A. %	Dem.	A. %	Dem.	A. %	Dem.	A. %	Dem.
	DEM.	DEM.	DEM.	DEM.	DEM.	DEM.	DEM.	DEM.	DEM.										
C																			
A	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
R	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
B	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
O	RG1A	RG2A	RG3A	RG4A	RG5A	RG6A	RL1A	RL2A	RL3A	RL4A	RL5A	RL6A	RL1A	RL2A	RL3A	RL4A	RL5A	RL6A	RL7A
N																			
8 - 9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
7 - 7.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
6 - 6.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
5 - 5.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
4 - 4.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
3 - 3.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
2 - 2.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
1 - 1.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
>0 - 0.9	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG1	RRG2	RRG3	RRG4	RRG5	RRG6	RRG7
Clean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Rating	RG1DLT	RG2DLT	RG3DLT	RG4DLT	RG5DLT	RG6DLT	RL1DLT	RL2DLT	RL3DLT	RL4DLT	RL5DLT	RL6DLT	RL1DLT	RL2DLT	RL3DLT	RL4DLT	RL5DLT	RL6DLT	RL7DLT
Location Factor	1.5	1.5	25	1	1	25	1	1	25	1	25	50	20	0	0	0	0	0	0
Weighted Rating	RRG1WD	RRG2WD	RRG3WD	RRG4WD	RRG5WD	RRG6WD	RRG1WD	RRG2WD	RRG3WD	RRG4WD	RRG5WD	RRG6WD	RRG1WD	RRG2WD	RRG3WD	RRG4WD	RRG5WD	RRG6WD	RRG7WD
TGF %	Intermediate Groove Fill %						WDK/WDN						Unweighted Deposit		Test Lab TLHC %		Test Lab TLHC %		
RRTGF	RRIGF						RRWD						RRUWD		TLHC		TLFC		

**1K/IN
Form 7
Unscheduled Downtime & Maintenance
Maintenance Summary**

Lab LAB	EOT Date DTCOMP	END Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Number of Downtime Occurrences			DWNOCR
Test Hours	Date	Downtime	Reasons
DOWNR00	DDATR001	DTIMR001	DREAR001
DOWNR00	DDATR002	DTIMR002	DREAR002
DOWNR00	DDATR003	DTIMR003	DREAR003
DOWNR00	DDATR004	DTIMR004	DREAR004
DOWNR00	DDATR005	DTIMR005	DREAR005
DOWNR00	DDATR006	DTIMR006	DREAR006
DOWNR00	DDATR007	DTIMR007	DREAR007
DOWNR00	DDATR008	DTIMR008	DREAR008
DOWNR00	DDATR009	DTIMR009	DREAR009
DOWNR01	DDATR010	DTIMR010	DREAR010
DOWNR01	DDATR011	DTIMR011	DREAR011
DOWNR01	DDATR012	DTIMR012	DREAR012
DOWNR01	DDATR013	DTIMR013	DREAR013
DOWNR01	DDATR014	DTIMR014	DREAR014
DOWNR01	DDATR015	DTIMR015	DREAR015
		TOTLDOW	Total Downtime (125 Hr. Max)

Other Comments	
Number of Comment Lines	TOTCOM
OCOMR001	
OCOMR002	
OCOMR003	
OCOMR004	
OCOMR005	
OCOMR006	
OCOMR007	
OCOMR008	
OCOMR010	
OCOMR009	
OCOMR011	
OCOMR012	
OCOMR013	
OCOMR014	
OCOMR015	

1K/IN
Form 7A
Unscheduled Downtime & Maintenance Summary

Lab LAB	EOT Date DTCOMP	END Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Number of Downtime Occurrences		DWNOCR	
Test Hours	Date	Downtime	Reasons
DOWNR01	DDATR016	DTIMR016	DREAR016
DOWNR01	DDATR017	DTIMR017	DREAR017
DOWNR01	DDATR018	DTIMR018	DREAR018
DOWNR01	DDATR019	DTIMR019	DREAR019
DOWNR02	DDATR020	DTIMR020	DREAR020
DOWNR02	DDATR021	DTIMR021	DREAR021
DOWNR02	DDATR022	DTIMR022	DREAR022
DOWNR02	DDATR023	DTIMR023	DREAR023
DOWNR02	DDATR024	DTIMR024	DREAR024
DOWNR02	DDATR025	DTIMR025	DREAR025
DOWNR02	DDATR026	DTIMR026	DREAR026
DOWNR02	DDATR027	DTIMR027	DREAR027
DOWNR02	DDATR028	DTIMR028	DREAR028
DOWNR02	DDATR029	DTIMR029	DREAR029
DOWNR03	DDATR030	DTIMR030	DREAR030
		TOTLDOW	Total Downtime (125 Hr. Max)

Other Comments		
Number of Comment Lines	TOTCOM	
OCOMR016		
OCOMR017		
OCOMR018		
OCOMR019		
OCOMR020		
OCOMR021		
OCOMR022		
OCOMR023		
OCOMR024		
OCOMR025		
OCOMR026		
OCOMR027		
OCOMR028		
OCOMR029		
OCOMR030		

1K/IN
Form 7B
Unscheduled Downtime & Maintenance Summary

Lab LAB	EOT Date DTCOMP	END Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Number of Downtime Occurrences			DWNOCR
Test Hours	Date	Downtime	Reasons
DOWNR03	DDATR031	DTIMR031	DREAR031
DOWNR03	DDATR032	DTIMR032	DREAR032
DOWNR03	DDATR033	DTIMR033	DREAR033
DOWNR03	DDATR034	DTIMR034	DREAR034
DOWNR03	DDATR035	DTIMR035	DREAR035
DOWNR03	DDATR036	DTIMR036	DREAR036
DOWNR03	DDATR037	DTIMR037	DREAR037
DOWNR03	DDATR038	DTIMR038	DREAR038
DOWNR03	DDATR039	DTIMR039	DREAR039
DOWNR04	DDATR040	DTIMR040	DREAR040
DOWNR04	DDATR041	DTIMR041	DREAR041
DOWNR04	DDATR042	DTIMR042	DREAR042
DOWNR04	DDATR043	DTIMR043	DREAR043
DOWNR04	DDATR044	DTIMR044	DREAR044
DOWNR04	DDATR045	DTIMR045	DREAR045
		TOTLDOV	Total Downtime (125 Hr. Max)

Other Comments	
Number of Comment Lines	TOTCOM
OCOMR031	
OCOMR032	
OCOMR033	
OCOMR034	
OCOMR035	
OCOMR036	
OCOMR037	
OCOMR038	
OCOMR039	
OCOMR040	
OCOMR041	
OCOMR042	
OCOMR043	
OCOMR044	
OCOMR045	

**1K/1N
Form 8
Ring Measurements**

Lab LAB	EOT Date DTCOMP	END Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Ring Gaps (mm)	Top	Intermediate	Oil
Specifications	0.724 ± 0.076 mm	0.673 ± 0.076 mm	0.572 ± 0.190 mm
Pre-Test	RINGGTE	RINGGI1E	RINGGOE
Post-Test	RINGGTO	RINGGI1O	RINGGOO
Increase	RINGGTI	RINGGI1I	RINGGOI

Ring Side Clearance*	A	B	C	D	Avg.	Min.	Specification	
Top	Pre-Test	SIDETPE1	SIDETPE2	SIDETPE3	SIDETPE4	ASIDETPE	ISIDETPE	0.193+0.032 mm
	Post-Test	SIDETPO1	SIDETPO2	SIDETPO3	SIDETPO4	ASIDETPO	ISIDETPO	
	LSC	LSCT1	LSCT2	LSCT3	LSCT4	LSCTOP	ILSCT	
Int..	Pre-Test	SIDE1PE1	SIDE1PE2	SIDE1PE3	SIDE1PE4	ASIDE1PE	ISIDE1PE	0.090+0.020 mm
	Post-Test	SIDE1PO1	SIDE1PO2	SIDE1PO3	SIDE1PO4	ASIDE1PO	ISIDE1PO	
	LSC	LSCI1	LSCI2	LSCI3	LSCI4	LSCINT1	ILSCINT	
Oil	Pre-Test	SIDEOPE1	SIDEOPE2	SIDEOPE3	SIDEOPE4	ASIDEOPE	ISIDEOPE	0.073 +0.016 mm
	Post-Test	SIDEOP1	SIDEOP2	SIDEOP3	SIDEOP4	ASIDEOP	ISIDEOP	
	LSC	LSCO1	LSCO2	LSCO3	LSCO4	LSCOIL	ILSCO	

***Notes:**

1. Write "Stuck" In Place Of Dimension When Applicable.
2. Write "<0.038 mm" For Clearance When Applicable.
3. Write ">" Before Calculated Decrease Or Average Decrease Values That Incorporate A "<0.038 mm" In Calculation.
- 4 LSC: Loss Of Side Clearance.
5. Min: Intermediate And Oil Ring Minimum Side Clearance Is Measured 360° Around Piston.

**1K/1N
Form 9
Liner Measurements**

Lab LAB	EOT Date DTCOMP	END Time EOTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Liner Surface Finish (Micrometer)			
Distance From Top	Transverse	Longitudinal	Average
130 mm	BBLFINT1	BBLFINL1	BBLFINA1
50 mm	BBLFINT2	BBLFINL2	BBLFINA2
25 mm	BBLFINT3	BBLFINL3	BBLFINA3
Total Average			BBLFIN

% Liner Bore Polish - Grid (Add T/AT Values From Grid)	
Thrust	BOREPT
Anti-Thrust	BOREPAT
Total	BOREPOL

Liner Bore Measurement (mm)				
Before Test – Diameter (Dial Bore Gage)				
Bore Height	Longitudinal		Transverse	
230 mm	BBLONG1		BBTRAN1	
130 mm	BBLONG2		BBTRAN2	
50 mm	BBLONG3		BBTRAN3	
25 mm	BBLONG4		BBTRAN4	
15 mm	BBLONG5		BBTRAN5	
After Test - (Surface Profile)				
	Longitudinal		Transverse	
	Front	Rear	T	AT
Wear Step @ 15mm	AWEARLF	AWEARLR	AWEART	AWEARTAT

Characteristics Of The Data Acquisition System

Lab	EOT Date	DTCOMP	END Time	EOTTIME	Method	METHOD
Stand STAND	Run Number	ENRUN				
Formulation/Stand Code FORM						
Oilcode/CMIR: OILCODE						
CMIR						

Parameter (1)	Sensing Device (2)	Calibration Frequency (3)	Record Device (4)	Observation Frequency (5)	Record Frequency (6)	Log Frequency (7)	System Response (8)
Operation Conditions							
Engine Speed (R/min)	RPMSENS	RPMCALF	RPMRECD	RPMBSF	RPMRECF	RPMLOGF	RPMSYSR
Engine Power (kW)	PWRSENS	PWRCALF	PWRRECD	PWRBSF	PWRRECF	PWRLOGF	PWRSYSR
Fuel Flow (g/min)	FFLOSENS	FFLOCALF	FFLORECD	FFLOBSF	FFLORECF	FFLOLOGF	FFLOYSR
Humidity (g/kg)	HUMSENS	HUMCALF	HUMRECD	HUMBSF	HUMRECF	HUMLOGF	HUMSYSR
Coolant Out							
Coolant In	COTSENS	COTCALF	COTRECD	COTBSF	COTRECF	COTLOGF	COTSYSR
Oil To Bearing	CONSENS	CONCALF	CONRECD	CONBSF	CONRECF	CONLOGF	CONSYSR
Oil Cooler In	OBRSENS	OBRGALF	OBRRECD	OBRBSF	OBRRECF	OBRLOGF	OBRSYSR
Inlet Air	OCOLSENS	OCOLCALF	OCOLRECD	OCOLBSF	OCOLRECF	OCOLLOGF	OCOLSYSR
Exhaust	AIRTSSENS	AIRTSCALF	AIRTRECD	AIRTBSF	AIRTRECF	AIRTLOGF	AIRTSYSR
Fuel	EXTSENS	EXTCALF	EXTRECD	EXTBSF	EXTRECF	EXTLOGF	EXTSYSR
Pressures (kPa)							
Oil To Bearing	FUELSENS	FUELCALF	FUELRECD	FUELSF	FUELRECF	FUELLOGF	FUELSYSR
Oil To Jet	OBRPSENS	OBRPCALF	OBRPRECD	OBRPBSF	OBRPRECF	OBRPLOGF	OBRPSYSR
Inlet Air	OJETSENS	OJETCALF	OJETRECD	OJETBSF	OJETRECF	OJETLOGF	OJETSYSR
Exhaust	AIRPSENS	AIRPCALF	AIRPRECD	AIRPBSF	AIRPRECF	AIRPLOGF	AIRPSYSR
Fuel @ Filter HSG	EXPSENS	EXPCALF	EXPRECD	EXPBSF	EXPRECF	EXPLOGF	EXPSYSR
Crankcase VAC	FFILSENS	FFILCALF	FFILRECD	FFILOBSF	FFILRECF	FFILLOGF	FFILSYSR
Flows (L/min)							
Blowby	CCVSENS	CCVCALF	CCVRECD	CCVOBSF	CCVRECF	CCVLOGF	CCVSYSR
Coolant Flow	BLBYSENS	BLBYCALF	BLBYRECD	BLBYBSF	BLBYRECF	BLBYLOGF	BLBYSYSR
	CFLWSENS	CFLWCALF	CFLWRECD	CFLWBSF	CFLWRECF	CFLWLOGF	CFLWSYSR

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 - Hanglog Sheet
 - DL - Automatic Data Logger
 - C/M - Computer, Using Manual Data Entry
 - SC - Strip Chart Recorder
 - C/D - Computer, Using Direct I/O Entry
- (5) Data Area 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

1K/IN
Form 14
Piston, Ring And Liner Photographs

Lab LAB	EOT DATE: DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

PRLIM

Refer to Appendix C for example of Photo Layout.

1K/1N
Form 15
Severity Adjustment History

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Usage Dates		WDK/WDN		TGF %		Transformed TLHC %	
Start	Time	Zi	S.A.	Zi	S.A.	Zi	S.A.
DTSTR001	DTTMR001	WDZIR001	WDSAR001	TGZIR001	TGSAR001	TLZIR001	TLSAR001
DTSTR002	DTTMR002	WDZIR002	WDSAR002	TGZIR002	TGSAR002	TLZIR002	TLSAR002
DTSTR003	DTTMR003	WDZIR003	WDSAR003	TGZIR003	TGSAR003	TLZIR003	TLSAR003
DTSTR004	DTTMR004	WDZIR004	WDSAR004	TGZIR004	TGSAR004	TLZIR004	TLSAR004
DTSTR005	DTTMR005	WDZIR005	WDSAR005	TGZIR005	TGSAR005	TLZIR005	TLSAR005
DTSTR006	DTTMR006	WDZIR006	WDSAR006	TGZIR006	TGSAR006	TLZIR006	TLSAR006
DTSTR007	DTTMR007	WDZIR007	WDSAR007	TGZIR007	TGSAR007	TLZIR007	TLSAR007
DTSTR008	DTTMR008	WDZIR008	WDSAR008	TGZIR008	TGSAR008	TLZIR008	TLSAR008
DTSTR009	DTTMR009	WDZIR009	WDSAR009	TGZIR009	TGSAR009	TLZIR009	TLSAR009
DTSTR010	DTTMR010	WDZIR010	WDSAR010	TGZIR010	TGSAR010	TLZIR010	TLSAR010
DTSTR011	DTTMR011	WDZIR011	WDSAR011	TGZIR011	TGSAR011	TLZIR011	TLSAR011
DTSTR012	DTTMR012	WDZIR012	WDSAR012	TGZIR012	TGSAR012	TLZIR012	TLSAR012
DTSTR013	DTTMR013	WDZIR013	WDSAR013	TGZIR013	TGSAR013	TLZIR013	TLSAR013
DTSTR014	DTTMR014	WDZIR014	WDSAR014	TGZIR014	TGSAR014	TLZIR014	TLSAR014
DTSTR015	DTTMR015	WDZIR015	WDSAR015	TGZIR015	TGSAR015	TLZIR015	TLSAR015

1K/1N
Form 15A
Severity Adjustment History

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Usage Dates		WDK/WDN		TGF %		Transformed TLHC %	
Start	Time	Zi	S.A.	Zi	S.A.	Zi	S.A.
DTSTR016	DTTMR016	WDZIR016	WDSAR016	TGZIR016	TGSAR016	TLZIR016	TLSAR016
DTSTR017	DTTMR017	WDZIR017	WDSAR017	TGZIR017	TGSAR017	TLZIR017	TLSAR017
DTSTR018	DTTMR018	WDZIR018	WDSAR018	TGZIR018	TGSAR018	TLZIR018	TLSAR018
DTSTR019	DTTMR019	WDZIR019	WDSAR019	TGZIR019	TGSAR019	TLZIR019	TLSAR019
DTSTR020	DTTMR020	WDZIR020	WDSAR020	TGZIR020	TGSAR020	TLZIR020	TLSAR020
DTSTR021	DTTMR021	WDZIR021	WDSAR021	TGZIR021	TGSAR021	TLZIR021	TLSAR021
DTSTR022	DTTMR022	WDZIR022	WDSAR022	TGZIR022	TGSAR022	TLZIR022	TLSAR022
DTSTR023	DTTMR023	WDZIR023	WDSAR023	TGZIR023	TGSAR023	TLZIR023	TLSAR023
DTSTR024	DTTMR024	WDZIR024	WDSAR024	TGZIR024	TGSAR024	TLZIR024	TLSAR024
DTSTR025	DTTMR025	WDZIR025	WDSAR025	TGZIR025	TGSAR025	TLZIR025	TLSAR025
DTSTR026	DTTMR026	WDZIR026	WDSAR026	TGZIR026	TGSAR026	TLZIR026	TLSAR026
DTSTR027	DTTMR027	WDZIR027	WDSAR027	TGZIR027	TGSAR027	TLZIR027	TLSAR027
DTSTR028	DTTMR028	WDZIR028	WDSAR028	TGZIR028	TGSAR028	TLZIR028	TLSAR028
DTSTR029	DTTMR029	WDZIR029	WDSAR029	TGZIR029	TGSAR029	TLZIR029	TLSAR029
DTSTR030	DTTMR030	WDZIR030	WDSAR030	TGZIR030	TGSAR030	TLZIR030	TLSAR030

1K/1N
Form 15B
Severity Adjustment History

Lab LAB	EOT Date DTCOMP	End Time EOTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

Usage Dates		WDK/WDN		TGF %		Transformed TLHC %	
Start	Time	Zi	S.A.	Zi	S.A.	Zi	S.A.
DTSTR031	DTTMR031	WDZIR031	WDSAR031	TGZIR031	TGSAR031	TLZIR031	TLSAR031
DTSTR032	DTTMR032	WDZIR032	WDSAR032	TGZIR032	TGSAR032	TLZIR032	TLSAR032
DTSTR033	DTTMR033	WDZIR033	WDSAR033	TGZIR033	TGSAR033	TLZIR033	TLSAR033
DTSTR034	DTTMR034	WDZIR034	WDSAR034	TGZIR034	TGSAR034	TLZIR034	TLSAR034
DTSTR035	DTTMR035	WDZIR035	WDSAR035	TGZIR035	TGSAR035	TLZIR035	TLSAR035
DTSTR036	DTTMR036	WDZIR036	WDSAR036	TGZIR036	TGSAR036	TLZIR036	TLSAR036
DTSTR037	DTTMR037	WDZIR037	WDSAR037	TGZIR037	TGSAR037	TLZIR037	TLSAR037
DTSTR038	DTTMR038	WDZIR038	WDSAR038	TGZIR038	TGSAR038	TLZIR038	TLSAR038
DTSTR039	DTTMR039	WDZIR039	WDSAR039	TGZIR039	TGSAR039	TLZIR039	TLSAR039
DTSTR040	DTTMR040	WDZIR040	WDSAR040	TGZIR040	TGSAR040	TLZIR040	TLSAR040
DTSTR041	DTTMR041	WDZIR041	WDSAR041	TGZIR041	TGSAR041	TLZIR041	TLSAR041
DTSTR042	DTTMR042	WDZIR042	WDSAR042	TGZIR042	TGSAR042	TLZIR042	TLSAR042
DTSTR043	DTTMR043	WDZIR043	WDSAR043	TGZIR043	TGSAR043	TLZIR043	TLSAR043
DTSTR044	DTTMR044	WDZIR044	WDSAR044	TGZIR044	TGSAR044	TLZIR044	TLSAR044
DTSTR045	DTTMR045	WDZIR045	WDSAR045	TGZIR045	TGSAR045	TLZIR045	TLSAR045

1K/1N
Form 16
TMC Control Chart Analysis

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

CCHIM

1K/IN
Form 17
Fuel Batch Analysis

Lab LAB	EOT Date DTCOMP	End Time EOTTIME	Method METHOD
Stand STAND	Run Number ENRUN		
Formulation/Stand Code FORM			
Oilcode/CMIR: OILCODE			CMIR

FUELIM