

**D 6750**  
**1K/1N Final Report Cover**

**Method**  
**Version**

**Conducted For:**

	<b>V</b> = Valid
	<b>I</b> = Invalid
	<b>N</b> = 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.

<b>Test Number</b>	
Test Stand:	Engine Run #:
EOT Time:	EOT Date:
Oil Code <sup>A</sup> :	
Formulation/Stand Code:	
Alternate Codes:	

<p>In my opinion this test _____ been conducted in a valid manner in accordance with ASTM Test Method D 6750 (1K/1N) and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.</p>
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<sup>A</sup> CMIR or Non-Reference Oil Code

Submitted By: \_\_\_\_\_ Testing Laboratory

\_\_\_\_\_ Signature

\_\_\_\_\_ Typed Name

\_\_\_\_\_ Title

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

Lab	EOT Date	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR			
Start Date	Total Test Length	TMC Oil Type	
Laboratory Internal Oil Code			

	Correction Effective Date	WDK/WDN	TGF %	TLHC%	Transformed TLHC%	BSOC g/KW-h	EOTOC g/kW-h
Unadjusted Lab Rating							
Industry Correction(If Any)							
Subtotal							
Lab Severity Adjustment(If Any) <sup>A</sup>							
Total							

	Effective Date	WDK/WDN	TGF %	TLHC %	Transformed TLHC%	BSOC g/KW-h	EOTOC g/kW-h
Test Target Mean B							
Test Target STD B							
A, C							

	Referee Lab	WDK/WDN	TGF %	
Referee Ratings				

	Top	Int. 1	Oil	Piston	Liner
Ring Loss Of Side Clearance(mm)					
Ring End Gap Increase (mm)					
Is The Ring Stuck?					
Scuffed Area %					
Average Wear Step (µm)					
% Bore Polish					

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

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

Lab	EOT Date	End Time	Method		
Stand	Run Number				
Formulation/Stand Code					
Oilcode/CMIR					
<b>Operating Condition</b>		<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b>Specification</b>
Engine Speed	r/min				2100 ± 10
Engine Power	kW				Report
Fuel Flow	g/min				185 ± 1
Humidity	g/kg				17.8 ± 1.7
<b>Temperature °C</b>					
Coolant Out	°C				93 ± 2.5
Coolant In	°C				Report
Coolant delta T	°C				5 ± 1.0
Oil To Bearing	°C				107 ± 2.5
Oil Cooler In	°C				Report
Inlet Air	°C				127 ± 2.5
Exhaust	°C				550 ± 30
Fuel @ Injector Housing	°C				57 + 3
<b>Pressures</b>					
Oil To Bearing	kPa				482 Max
Oil To Jet	kPa				360 ± 13
Inlet Air	kPa				240 ± 1
Exhaust (ABS)	kPa				216 ± 1
Fuel @ Filter HSG	kPa				210 ± 20
Crankcase Vacuum	kPa				0.7 ± 0.1
Coolant Jug Pressure	kPa				Report
<b>Flows</b>					
Blowby	L/min				Report
Coolant Flow	L/min				65 ± 2
Air/Fuel Ratio: 24 hr.			Air/Fuel Ratio: 252 hr.		
<b>Assembly Measurements And Parts Record</b>					
Piston/Head Clearance mm			Intake Valve Open °ATC		
		Fuel Timing °BTC			
	Part No. (1)	Serial No. (2)	Date Code	Inspection Code	
Liner			F	G	
Ring Set (1)				I	H
Piston			D	E	

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	EOT Date	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

Controlled Parameter	Allowable % Out	This Test % Out	Allowable % Off	This Test % Off
Speed	5		20	
Fuel Flow	10		25	
Humidity	10		25	
Coolant Flow	5		25	
<b>Temperatures</b>				
Coolant Out	5		20	
Oil To Bearing	5		20	
Intake Air	5		20	
Fuel At Injector Housing	5		20	
<b>Pressures</b>				
Oil Jet	5		25	
Intake Air	10		25	
Exhaust	10		25	
Fuel At Filter Housing	5		20	
Crankcase Vacuum	10		20	

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

<b>Test</b>	Lab	EOT Date	END Time	Stand	Run No.	Method
Formulation/Stand Code						
Test Fuel	Fuel Batch	Date Rated	Rating Number		Oilcode	Rater
<b>Last Stand Reference Information</b>	<b>Date Completed</b>	<b>Stand No.</b>	<b>Run No.</b>	<b>TMC Oil Code</b>	<b>BSOC</b>	<b>EOTOC</b>
	<b>WDK/WDN</b>	<b>TLHC</b>	<b>Transformed TLHC</b>			
Last Ref. This Stand						
Industry Average						
Industry STD						

Total Piston Ratings Summary															
Dep. Factor	Grooves			Lands			Upper Skirt			Under Crown			Pin Bores		
	NO. 1 A,%	NO. 2 Dem.	NO. 3 A,%	NO. 1 A,%	NO. 2 Dem.	NO. 3 A,%	NO. 3 Dem.	NO. 2 A,%	NO. 1 Dem.	NO. 3 A,%	NO. 2 Dem.	NO. 1 A,%	NO. 3 Dem.	NO. 2 A,%	NO. 1 Dem.
C															
A															
R															
B															
O															
N															
Total															
8-9															
7-7.9															
6-6.9															
5-5.9															
4-4.9															
3-3.9															
2-2.9															
1-1.9															
>0-0.9															
Clean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total															
Rating															
Location Factor	1.5	1.5	25	1	1	25	25	1	1	50	20	0	0	0	0
Weighted Rating															
<b>TGF %</b>	<b>Intermediate Groove Fill %</b>			<b>WDK/WDN</b>			<b>Unweighted Deposit</b>			<b>T.L. Heavy Carbon %</b>			<b>T.L. Flaked Carbon %</b>		

**1K/1N**  
**Form 4A**  
**Piston Rating Worksheet**

Lab	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

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

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

Lab	EOT Date	End Time	Method											
Stand:	Run Number													
Formulation/Stand Code														
Oilcode:														
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												
		B												
	2													
		T												
		B												
Top Bottom And Back Of Rings	3													
		T												
		B												
	1													
		T												
		B												
		BK												
	2													
		T												
		B												
		BK												
	3													
	T													
	B													
	BK													
<b>Additional Deposit &amp; Condition Ratings</b>														
Piston Crown														
Rings														
Liner														

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

Test Identification				EOT Date		End Time		Method						
Lab		Run No.		Rating Number		Date Rated		Rater						
Formulation/Stand Code				Rating Number		Date Rated		Rater						
Oilcode				Rating Number		Date Rated		Rater						
Referee Rating Information														
Company				Rating Number		Date Rated		Rater						
Total Piston Ratings Summary														
Dep.. Factor	Grooves			Lands			Upper Skirt		Under Crown		Pin Bores			
	No. 1 A.%	No. 2 DEM.	No. 3 DEM.	No. 1 A.%	No. 2 DEM.	No. 3 DEM.	A.%	Dem.	A.%	Dem.	Front A.%	Rear Dem.		
C														
A														
R														
B														
O														
N														
8 - 9														
7 - 7.9														
6 - 6.9														
5 - 5.9														
4 - 4.9														
3 - 3.9														
2 - 2.9														
1 - 1.9														
>0 - 0.9														
Clean	0	0	0	0	0	0	0	0	0	0	0	0		
Total														
Rating														
Location Factor														
Weighted Rating														
1.5      1.5      25      1      1      25      50      20      0      0														
<b>TGF %</b>				<b>Intermediate Groove Fill %</b>			<b>WDK/WDN</b>		<b>Unweighted Deposit</b>		<b>Test Lab TLHC %</b>		<b>Test Lab TLHC %</b>	



**1K/1N  
Form 6  
Oil Analysis And Results Summary**

<b>Test Identification</b>									
Lab	EOT Date	End Time	Method						
Stand	Run Number								
Formulation/Stand Code									
Oilcode									
Test Fuel					Fuel Batch				
<b>Oil Analysis/Engine Hours</b>		NEW / 0		24		204		252	
Viscosity @ 100°C									
TBN D4739									
Wear Metals: Fe/Al									
Si/Cu									
Cr/Pb									
Fuel Dilution									
Blowby (L/min)									
<b>24 Hr.. Avg. BSOC (g/kW-h) For Hours End</b>				<b>0-252 Hr. Avg. BSOC (g/kW-h):</b>		<b>EOT Oil Consumption(g/kW-h):</b>			
24	48	72	108	132	156	180	204	228	252
<b>Inspection And Measurement Summary</b>									
Top Ring		Ring Gap Incr. (mm)		Side Cl. Loss (mm)		Ring Stuck (1)		Scuffed Area % (2)	
Int. Ring								% Bore Polish (With Grid)	
Oil Ring									
Piston									
Cylinder Liner									
<b>Piston Deposit Summary</b>		TGF %		Int. Gr. F. %		WDK/WDN		Un Wt Dep	
								T.L. Heavy Carb. %	
								T.L. Flaked Carb. %	
<b>UNWEIGHTED PISTON DEPOSITS</b>									
<b>Grooves</b>									
1		2		3		Lands		Upper Skirt	
								Under Crown	
								Pin Bores	
								Front	
								Rear	

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

Lab	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

	Number of Downtime Occurrences		
Test Hours	Date	Downtime	Reasons
			Total Downtime (125 Hr. Max)

Other Comments			
Number of Comment Lines			

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

Lab	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

Number of Downtime Occurrences			
Test Hours	Date	Downtime	Reasons
			Total Downtime (125 Hr. Max)

Other Comments			
Number of Comment Lines			



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

Lab	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

Ring Gaps (mm)	Top	Intermediate	Oil
<b>Specifications</b>	$0.724 \pm 0.076$ mm	$0.673 \pm 0.076$ mm	$0.572 \pm 0.190$ mm
Pre-Test			
Post-Test			
Increase			

Ring Side Clearance*	A	B	C	D	Avg.	Min.	Specification
<b>Top</b>	Pre-Test						0.193+0.032 mm
	Post-Test						
	LSC						
<b>Int..</b>	Pre-Test						0.090+0.020 mm
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						0.073 +0.016 mm
	Post-Test						
	LSC						

**\*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	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

<b>Liner Surface Finish (Micrometer)</b>			
Distance From Top	Transverse	Longitudinal	Average
130 mm			
50 mm			
25 mm			
Total Average			

<b>% Liner Bore Polish - Grid (Add T/AT Values From Grid)</b>	
Thrust	
Anti-Thrust	
Total	

<b>Liner Bore Measurement (mm)</b>				
<b>Before Test – Diameter (Dial Bore Gage)</b>				
Bore Height	Longitudinal	Transverse		
230 mm				
130 mm				
50 mm				
25 mm				
15 mm				
<b>After Test - (Surface Profile)</b>				
	Longitudinal		Transverse	
	Front	Rear	T	AT
Wear Step @ 15mm				

Characteristics Of The Data Acquisition System

Lab	EOT Date	END Time	Method
Stand	Run Number		
Formulation/Stand Code			
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)
<b>Operation Conditions</b>							
Engine Speed (R/min)							
Engine Power (kW)							
Fuel Flow (g/min)							
Humidity (g/kg)							
<b>Coolant</b>							
Coolant Out							
Coolant In							
Oil To Bearing							
Oil Cooler In							
Inlet Air							
Exhaust							
Fuel							
<b>Pressures (kPa)</b>							
Oil To Bearing							
Oil To Jet							
Inlet Air							
Exhaust							
Fuel @ Filter HSG							
Crankcase VAC							
<b>Flows (L/min)</b>							
Blowby							
Coolant Flow							

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/1N  
Form 12

Lab	EOT Date	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

Oil to Bearing kPa	482																																							
Oil to Jet kPa	441																																							
	400																																							
	375																																							
	360																																							
	345																																							
	241																																							
	240																																							
	239																																							
	217																																							
	216																																							
	215																																							
	67																																							
	65																																							
	63																																							
	0.8																																							
	0.7																																							
	0.6																																							
	57																																							
	52																																							
	47																																							
	30																																							
	20																																							
	10																																							
	0																																							

Hours



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

Lab	EOT DATE:	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

Refer to Appendix C for example of Photo Layout.







**1K/1N**  
**Form 16**  
**TMC Control Chart Analysis**

Lab	EOT Date	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			

**1K/1N**  
**Form 17**  
**Fuel Batch Analysis**

Lab	EOT Date	End Time	Method
Stand	Run Number		
Formulation/Stand Code			
Oilcode/CMIR:			



**1K/1N**  
**Form 18**  
**American Chemistry Council Code of Practice**  
**Test Laboratory Conformance Statement**

Test Laboratory				
Test Sponsor				
Formulation / Stand Code				
Test Number				
Start Date		Start Time		Time Zone

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 \_\_\_\_\_ No \_\_\_\_\_ \*

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 \_\_\_\_\_ No \_\_\_\_\_ \*

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 \_\_\_\_\_ \* No \_\_\_\_\_

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

	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
	*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.*

<b>Comments</b>

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title