

**Caterpillar C-13  
Engine Oil Test**

**Version**

**Title / Validity Declaration Page  
Form 1**

**Conducted For**

V =	Valid; The Reference Oil / Non-Reference Oil was evaluated in accordance with the test procedure.
I =	Invalid; The Reference / 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 average test results using Multiple Test Criteria.

NR = Non-Reference Oil Test
RO = Reference Oil Test

Test Number		
<b>Stand:</b>	<b>Stand Run No.:</b>	
<b>End of Test Date:</b>	<b>End of Test Time:</b>	
<b>Oil Code / CMIR:</b> <sup>A</sup>		
<b>Formulation / Stand Code:</b> <sup>B</sup>		
<b>Altcode 1:</b>	<b>Altcode 2:</b>	<b>Altcode 3:</b>

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

<sup>A</sup> CMIR or Non-Reference Oil Code <sup>B</sup> ACC-Registered Tests Only

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

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Title

**Caterpillar C-13  
Engine Oil Test**

**Form 2  
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**Caterpillar C-13  
Engine Oil Test**

**Form 3  
Summary of Test Method**

The CAT C-13 Engine Oil Test is an engine-dynamometer test which evaluates the ability of an engine oil to protect against ring sticking and oil consumption.

The test engine is a CAT C-13 diesel engine with ACERT technology. It is an in-line six cylinder, four stroke, turbocharged engine with electronically controlled fuel injection.

<b>C-13 Test Conditions</b>	
<b>Parameter</b>	<b>Value</b>
Time, h	500
Speed, r/min	1800
Fuel Flow, g/min	1200
Inlet Manifold Temperature, °C	40
Coolant Out Temperature, °C	88
Fuel In Temperature, °C	40
Oil Gallery Temperature, °C	98
Intake Air Temperature, ° C	25
Tailpipe Exhaust Temperature, °C	Record
Intake Air Restriction, kPa Absolute	95
Intake Manifold Pressure, kPa	280
Exhaust Back Pressure, kPa	6
Humidity, g/kg	Record
Coolant System Pressure, kPa	99 - 107
Power, kW	Record
Torque, Nm	Record
Oil Gallery Pressure, kPa	Record

**Caterpillar C-13  
Engine Oil Test**

**Test Results Summary  
Form 4**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

<b>Start Date:</b>	<b>Start Time:</b>	<b>Test Length:</b>
<b>Laboratory Oil Code:</b>		<b>TMC Oil Code<sup>A</sup>:</b>
<b>Engine Number:</b>	<b>Engine Hours:</b>	<b>Engine Serial No.:</b>

Oil Consumption, g/hr		
100 – 150	450 – 500	% Inc.

Piston No.	WD	TGC	TLC	TGF	IGF	IGC	AGF	Loss of Ring Side Clearance		
								Top	Int.	Oil
1										
2										
3										
4										
5										
6										
Average										

Piston No.		Top	Int.	Oil	Crown	Skirt	Liner
1	Stuck Ring						
	Scuffed						
2	Stuck Ring						
	Scuffed						
3	Stuck Ring						
	Scuffed						
4	Stuck Ring						
	Scuffed						
5	Stuck Ring						
	Scuffed						
6	Stuck Ring						
	Scuffed						

<sup>A</sup> Reference Oil Tests Only

**Caterpillar C-13  
Engine Oil Test  
Operational Summary  
Form 5**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

<b>Controlled Parameters</b>					
<b>Parameter</b>	<b>Units</b>	<b>Target</b>	<b>Tolerance</b>	<b>Average</b>	<b>Samples</b>
Engine Speed	r/min	1800	± 5		
Fuel Flow	g/min	1200	± 6		
<b>Temperature</b>					
Inlet Air	°C	25	± 2		
Intake Manifold Air	°C	40	± 2		
Fuel Inlet	°C	40	± 1		
Coolant Outlet	°C	88	± 2		
Oil Gallery	°C	98	± 2		
<b>Pressure</b>					
Inlet Air	kPa	95	± 3		
Exhaust Stack	kPa	6	± 1		
Intake Manifold	kPa	280	± 5		
<b>Non-Controlled Parameters</b>					
<b>Parameter</b>	<b>Units</b>	<b>Target</b>	<b>Tolerance</b>	<b>Average</b>	<b>Samples</b>
Engine Torque	Nm	1800	Record		
Humidity	g/kg	Record	Record		

**Caterpillar C-13  
Engine Oil Test  
Rod Bearing Weight Loss  
Form 6**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Cylinder No.	Location	SOT Weight, g	EOT Weight, g	Weight Change, mg
1	Upper			
2	Upper			
3	Upper			
4	Upper			
5	Upper			
6	Upper			
Upper Bearing Average Weight Loss, mg				
Upper Bearing Minimum Weight Loss, mg				
Upper Bearing Maximum Weight Loss, mg				

Cylinder No.	Location	SOT Weight, g	EOT Weight, g	Weight Change, mg
1	Lower			
2	Lower			
3	Lower			
4	Lower			
5	Lower			
6	Lower			
Lower Bearing Average Weight Loss, mg				
Lower Bearing Minimum Weight Loss, mg				
Lower Bearing Maximum Weight Loss, mg				

**Caterpillar C-13  
Engine Oil Test  
Ring Weight Loss  
Form 7**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Cylinder No.	Top Ring SOT Weight, g	Top Ring EOT Weight, g	Weight Loss, mg
1			
2			
3			
4			
5			
6			
	Top Ring Average Weight Loss, mg		
	Top Ring Weight Loss Std. Dev., mg		
	Top Ring Min. Weight Loss, mg		
	Top Ring Max. Weight Loss, mg		

Cylinder No.	2 <sup>nd</sup> Ring SOT Weight, g	2 <sup>nd</sup> Ring EOT Weight, g	Weight Loss, mg
1			
2			
3			
4			
5			
6			
	2 <sup>nd</sup> Ring Average Weight Loss, mg		
	2 <sup>nd</sup> Ring Weight Loss Std. Dev., mg		
	2 <sup>nd</sup> Ring Min. Weight Loss, mg		
	2 <sup>nd</sup> Ring Max. Weight Loss, mg		

Cylinder No.	Oil Ring SOT Weight, g	Oil Ring EOT Weight, g	Weight Loss, mg
1			
2			
3			
4			
5			
6			
	Oil Ring Average Weight Loss, mg		
	Oil Ring Weight Loss Std. Dev., mg		
	Oil Ring Min. Weight Loss, mg		
	Oil Ring Max. Weight Loss, mg		

**Caterpillar C-13  
Engine Oil Test**

**Ring Side Clearance - Form 8**

<b>Laboratory:</b>	<b>EOT Time:</b>
<b>Test Number:</b>	
<b>Oil Code:</b>	
<b>Formulation / Stand Code:</b>	

Piston No. 1		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						

Piston No. 2		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						

Piston No. 3		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						

Piston No. 4		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						

Piston No. 5		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						

Piston No. 6		A	B	C	D	Avg.	Max
<b>Top</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Int.</b>	Pre-Test						
	Post-Test						
	LSC						
<b>Oil</b>	Pre-Test						
	Post-Test						
	LSC						





**Caterpillar C-13  
Engine Oil Test  
Liner Wear Summary  
Form 10**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

<b>Position</b>	<b>Wear Step (µm)</b>						
	<b>Cylinder Number</b>						
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>Average</b>
3:00 (Thrust)							
6:00 (Rear)							
9:00 (Anti-Thrust)							
12:00 (Front)							
<b>Average</b>							

<b>Summary</b>	<b>As Measured</b>
Average, µm	
Minimum, µm	
Maximum, µm	







**Caterpillar C-13  
Engine Oil Test  
Test Fuel Analysis (Last Batch)  
Form 12**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		
<b>Fuel Supplier:</b>		<b>Fuel Batch ID:</b>

Measurement	Specs.	Analysis		Test Method
		New	EOT	
<b>Total Sulfur, ppm</b>	<b>7 - 15</b>			<b>D 5453</b>
<b>Gravity, °API</b>	<b>34 - 37</b>			<b>D 4052</b>
<b>Hydrocarbon Composition</b>				
<b>Aromatics, % Weight</b>	<b>26 – 31.5</b>			<b>D 5186</b>
<b>Olefins, % Volume</b>	<b>Report</b>			<b>D 1319</b>
<b>Cetane Index</b>	<b>Report</b>			<b>D 976</b>
<b>Cetane No.</b>	<b>43 – 47</b>			<b>D 613</b>
<b>Copper Strip Corrosion</b>	<b>1 Maximum</b>			<b>D 130</b>
<b>Flash Point, °C</b>	<b>54 Minimum</b>			<b>D 93</b>
<b>Pour Point, °C</b>	<b>-18 Maximum</b>			<b>D 97</b>
<b>Carbon Residue on 10% Residuum, %</b>	<b>0.35 Maximum</b>			<b>D 524 (10% Bottoms)</b>
<b>Water &amp; Sediment, % Volume</b>	<b>0.05 Maximum</b>			<b>D 2709</b>
<b>Viscosity, cSt @ 40°C</b>	<b>2.0 – 2.6</b>			<b>D 445</b>
<b>Total Acid Number</b>	<b>0.05 Maximum</b>			<b>D 664</b>
<b>Strong Acid Number</b>	<b>0.00 Maximum</b>			<b>D 664</b>
<b>Accelerated Stability</b>	<b>1.5 max</b>			<b>D 2274</b>
<b>Ash, % Weight</b>	<b>0.005 Maximum</b>			<b>D 482</b>
<b>SLBOCLE, g</b>	<b>3100 min<sup>A</sup></b>			<b>D 6078<sup>A</sup></b>
<b>90% Distillation, °C</b>	<b>282 – 338</b>			<b>D 86</b>

<sup>A</sup> May be altered to be consistent with CARB or ASTM diesel fuel specifications.

**Caterpillar C-13  
Engine Oil Test  
Build-Up and Hardware Information  
Form 13**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

<b>Hardware</b>	
<b>Part</b>	<b>Part Number</b>
Intake Valve	
Exhaust Valve	
Cylinder Head	
Head Gasket	
Pistons	
Injectors	
Rod Bearings	
Liners	
Top Ring	
2 <sup>nd</sup> Ring	
Oil Ring	

**Caterpillar C-13  
Engine Oil Test  
Piston Deposit Rating Summary  
Form 14**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

<b>Piston Number</b>							
<b>Parameter</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>Average</b>
<b>TLHC, %</b>							
<b>TLC, dem.</b>							
<b>TGC, dem.</b>							
<b>AGF, %</b>							
<b>WD, dem.</b>							
<b>IGC, dem.</b>							
<b>2LC, dem.</b>							









**Caterpillar C-13  
Engine Oil Test  
Rating Summary: Piston No. 4  
Form 18**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>	<b>Oil Code:</b>	
<b>Formulation / Stand Code:</b>		
<b>Date Rated:</b>	<b>Rater Initials:</b>	<b>Verified By:</b>

Total Piston Ratings Summary																		
	Deposit Factor	Grooves			Lands			Deposit Factor	Groove			Lands			Oil		Under Crown	
		No. 1 A, DEM.	No. 2 A, DEM.	No. 1 A, DEM.	No. 2 A, DEM.	No. 1 A, DEM.	No. 2 A, DEM.		No. 3 A, DEM.	No. 3 A, DEM.	No. 4 A, DEM.	No. 3 A, DEM.	No. 3 A, DEM.	No. 4 A, DEM.	Cooling Gallery	A, DEM.	A, DEM.	
C																		
A	HC - 1.0																	
R	MC - 0.5																	
B	LC - .25																	
O																		
N	Total																	
	8 - 9																	
	7 - 7.9							7.5										
	6 - 6.9																	
V	5 - 5.9																	
A	4 - 4.9							4.5										
R	3 - 3.9																	
N	2 - 2.9																	
I	1 - 1.9																	
S	>0 - 0.9																	
H	Clean	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	
	Total																	
Rating																		
Location Factor		2	3	1	3												1	
Ind. Rating									20	20	60					Top Land Flaked Carbon %		
<b>WDP</b>																		
<b>TGF</b>																		

**Caterpillar C-13  
Engine Oil Test  
Rating Summary: Piston No. 5  
Form 19**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>	<b>Oil Code:</b>	
<b>Formulation / Stand Code:</b>		
<b>Date Rated:</b>	<b>Rater Initials:</b>	<b>Verified By:</b>

Total Piston Ratings Summary																		
	Deposit Factor	Grooves						Deposit Factor	Lands									
		No. 1 A, DEM.	No. 2 A, DEM.	No. 1 A, DEM.	No. 1 A, DEM.	No. 2 A, DEM.	No. 2 A, DEM.		No. 3 A, DEM.	No. 3 A, DEM.	No. 3 A, DEM.	No. 4 A, DEM.	No. 4 A, DEM.	Oil Cooling Gallery	Under Crown A, DEM.			
C																		
A	HC - 1.0																	
R	MC - 0.5																	
B	LC - .25																	
O																		
N	Total																	
	8 - 9																	
	7 - 7.9																	
	6 - 6.9																	
V	5 - 5.9							7.5										
A	4 - 4.9																	
R	3 - 3.9																	
N	2 - 2.9																	
I	1 - 1.9																	
S	>0 - 0.9																	
H	Clean	0	0	0	0	0	0					0	0	0	0	0	0	0
	Total																	
Rating																		
Location Factor		2	3	1	3													1
Ind. Rating																		
		<b>WDP</b>			<b>TGC</b>			<b>TLC</b>			<b>Unweighted Deposits</b>			<b>Top Land Flaked Carbon %</b>				
<b>TGF</b>		<b>IGF %</b>			<b>TLLC %</b>			<b>Acc. Groove Fill %</b>										

**Caterpillar C-13  
Engine Oil Test  
Rating Summary: Piston No. 6  
Form 20**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>	<b>Oil Code:</b>	
<b>Formulation / Stand Code:</b>		
<b>Date Rated:</b>	<b>Rater Initials:</b>	<b>Verified By:</b>

Total Piston Ratings Summary																									
	Deposit Factor	Grooves			Lands			Deposit Factor	Groove			Lands			Oil		Under Crown								
		No. 1 A, DEM.	No. 2 A, DEM.	No. 1 A, DEM.	No. 1 A, DEM.	No. 2 A, DEM.	No. 2 A, DEM.		No. 3 A, DEM.	No. 3 A, DEM.	No. 3 A, DEM.	No. 3 A, DEM.	No. 4 A, DEM.	No. 4 A, DEM.	Cooling Gallery	A, %	DEM.	A, %	DEM.						
C																									
A	HC - 1.0																								
R	MC - 0.5																								
B	LC - .25																								
O																									
N	Total																								
														7.5											
														4.5											
														1.5											
	Clean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
														20				60							
														20				20				1			
														Unweighted Deposits				Top Land Flaked Carbon %							
														TLC				TLLC							
														TGC				TLHC %							
														WDP				TGF							
														IGF %				Acc. Groove Fill %							

**Caterpillar C-13  
Engine Oil Test  
Supplemental Rating Summary: Piston No. 1  
Form 21**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Carbon				Varnish											
Deposit		HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean	
Groove Top And Bottom	1	T													
		B													
	2	T													
		B													
	3	T													
		B													
Top Bottom And Back Of Rings	1	T													
		B													
		BK													
	2	T													
		B													
		BK													
	3	T													
		B													
		BK													
Top Ring Stuck						%									
Top Ring Scuffed						%									
Second Ring Stuck						%									
Second Ring Scuffed						%									
Oil Ring Stuck						%									
Oil Ring Scuffed						%									
Crown Scuffed						%									
Skirt Scuffed						%									
Liner Scuffed						%									

**Caterpillar C-13  
 Engine Oil Test  
 Supplemental Rating Summary: Piston No. 2  
 Form 22**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Carbon				Varnish											
Deposit		HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean	
Groove Top And Bottom	1	T													
		B													
	2	T													
		B													
	3	T													
		B													
Top Bottom And Back Of Rings	1	T													
		B													
		BK													
	2	T													
		B													
		BK													
	3	T													
		B													
		BK													
Top Ring Stuck								%							
Top Ring Scuffed								%							
Second Ring Stuck								%							
Second Ring Scuffed								%							
Oil Ring Stuck								%							
Oil Ring Scuffed								%							
Crown Scuffed								%							
Skirt Scuffed								%							
Liner Scuffed								%							



**Caterpillar C-13  
 Engine Oil Test  
 Supplemental Rating Summary: Piston No. 3  
 Form 23**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Carbon				Varnish										
Deposit		HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean
Groove Top And Bottom	1	T												
		B												
	2	T												
		B												
	3	T												
		B												
Top Bottom And Back Of Rings	1	T												
		B												
		BK												
	2	T												
		B												
		BK												
	3	T												
		B												
		BK												
Top Ring Stuck					%									
Top Ring Scuffed					%									
Second Ring Stuck					%									
Second Ring Scuffed					%									
Oil Ring Stuck					%									
Oil Ring Scuffed					%									
Crown Scuffed					%									
Skirt Scuffed					%									
Liner Scuffed					%									

**Caterpillar C-13  
Engine Oil Test  
Supplemental Rating Summary: Piston No. 4  
Form 24**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Carbon				Varnish											
Deposit		HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean	
Groove Top And Bottom	1	T													
		B													
	2	T													
		B													
	3	T													
		B													
Top Bottom And Back Of Rings	1	T													
		B													
		BK													
	2	T													
		B													
		BK													
	3	T													
		B													
		BK													
Top Ring Stuck						%									
Top Ring Scuffed						%									
Second Ring Stuck						%									
Second Ring Scuffed						%									
Oil Ring Stuck						%									
Oil Ring Scuffed						%									
Crown Scuffed						%									
Skirt Scuffed						%									
Liner Scuffed						%									



**Caterpillar C-13  
Engine Oil Test  
Supplemental Rating Summary: Piston No. 6  
Form 26**

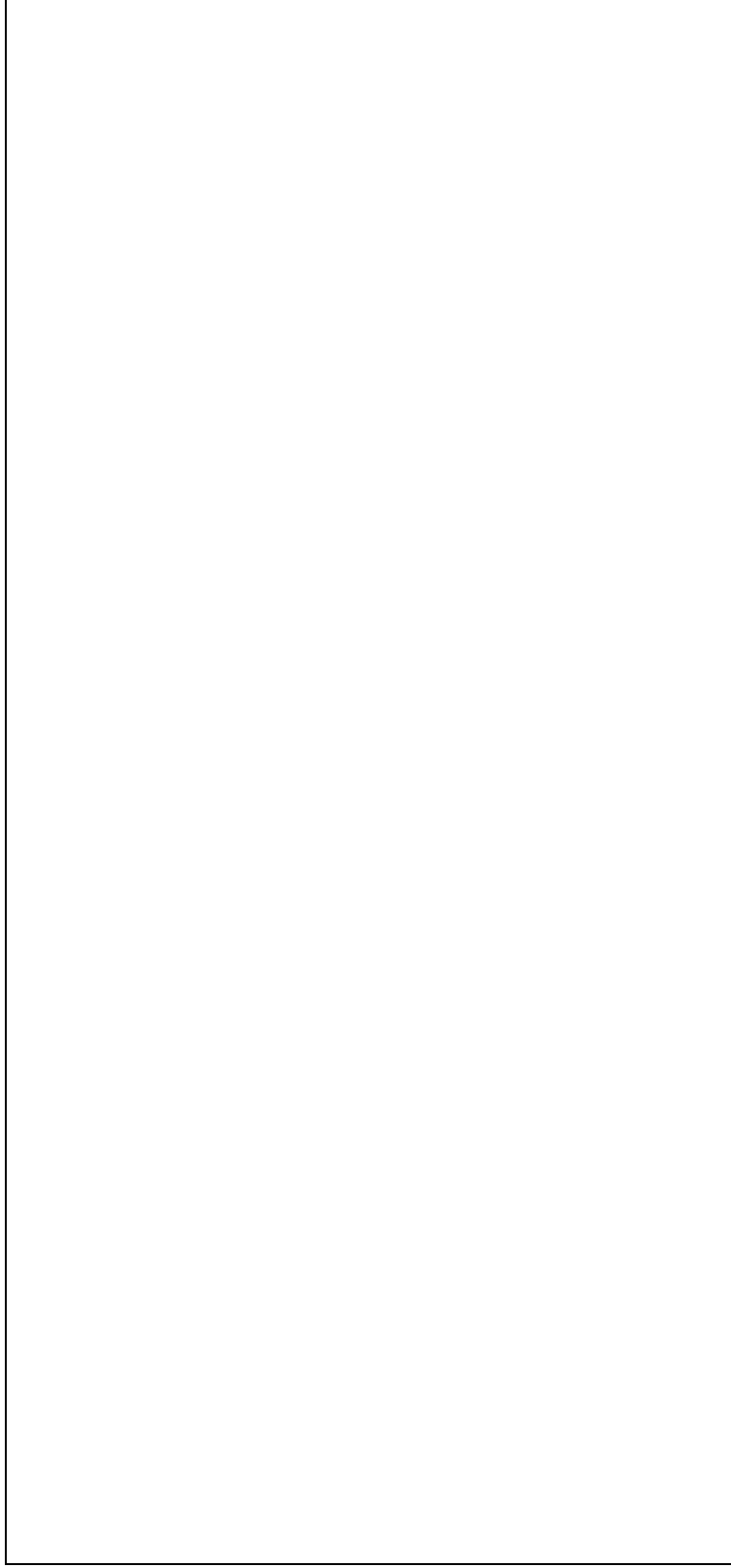
<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Carbon				Varnish										
Deposit		HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean
Groove Top And Bottom	1	T												
		B												
	2	T												
		B												
	3	T												
		B												
Top Bottom And Back Of Rings	1	T												
		B												
		BK												
	2	T												
		B												
		BK												
	3	T												
		B												
		BK												
Top Ring Stuck						%								
Top Ring Scuffed						%								
Second Ring Stuck						%								
Second Ring Scuffed						%								
Oil Ring Stuck						%								
Oil Ring Scuffed						%								
Crown Scuffed						%								
Skirt Scuffed						%								
Liner Scuffed						%								

**Caterpillar C-13  
Engine Oil Test  
Oil Consumption Plot  
Form 27**

<b>Laboratory:</b>	<b>EOT Date:</b>	<b>EOT Time:</b>
<b>Test Number:</b>		
<b>Oil Code:</b>		
<b>Formulation / Stand Code:</b>		

Test Hours	50	100	150	200	250	300	350	400	450	500
Oil Consumption, g/h										
R <sup>2</sup>										



**100 – 150 h  
Oil  
Consumption:**

**450 – 500 h  
Oil  
Consumption:**

**% Increase:**

Test Hours