Version

Title / Validity Declaration Page Form 1

Conducted For

V =

I =

the test procedure.

with the test procedure.

Valid; The Reference Oil / Non-Reference Oil was evaluated in accordance with

Invalid; The Reference / Non-Reference Oil was not evaluated in accordance

Results cannot be interpreted as representative of oil performance (Non-

			rence Oil) and shall ole Test Criteria.	not be used in dete	rmining average test results using	
		NR = Non-I	Reference Oil Test			
		RO = Refer	ence Oil Test			
			Test N	umber		
Stand:				Stand Run No.:		
End of T	Test Date:			End of Test Time:		
Oil Code	e / CMIR: A					
Formula	ation / Stand (Code: B				
Altcode	1:		Altcode 2:		Altcode 3:	
D XXXX		-		information letter	in accordance with Test Method system. The remarks included in	
A CMIR or	Non-Reference C	Oil Code ^B ACC	-Registered Tests Only	у		
		Submitted B	y:			
				Testir	ng Laboratory	
					Signature	
				Ту	ped Name	
					Title	

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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.

C-13 Test Conditions	3
Parameter	Value
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	93
Intake Manifold Pressure, kPa	280
Exhaust Back Pressure, kPa	6
Dew Point, °C	Record
Coolant System Pressure, kPa	99 - 107
Power, Kw	Record
Torque, Nm	Record
Oil Gallery Pressure, kPa	Record

Caterpiller C-13 Engine Oil Test Test Results Summary Form 4

Laboratory:	EOT Date:			EOT Time:	
Test Number:				·	
Oil Code:					
Formulation / Stand Code:					
Date Test Started					
Start Time					
Test Length					
Laboratory Oil Code					
TMC Oil Code ^A					
SAE Viscosity					
Engine Number					
Engine Hours					
Engine Serial No.					
Hot Ring Sticking? <yes no<="" or="" td=""><td>></td><td></td><td></td><td></td><td></td></yes>	>				
Piston, Ring, or Liner Scuffing?	? <yes no="" or=""></yes>				
Oil Consumption 100 – 150 Ho	urs, g/h				
Oil Consumption 450 – 500 Ho	urs, g/h				
				2 nd Ring	Oil Consumption
	TGC		TLC	Top Carbon	Delta
	(demerits)		(demerits)	(demerits)	(g/h)
Original Result					
Transformed Result B					
Correction Factor B					
Corrected Transformed Result B					
Final Transformed Result ^B					
Final Result					
Merits					
Total Merits					
	Last Stand	l Ref	ference Results		
Test Number:	Lust Stuffe		TOTOTICO PROSATOS		
Oil Code:					
Test Length					
TMC Oil Code					
EOT Date					
EOT Time					
Stand Calibration Expiration Date					
Oil Consumption 100 – 150 Hours					
Oil Consumption 450 – 500 Hours	, g/h	1			
				2 nd Ring	Oil Consumption
	TGC		TLC	Top Carbon	Delta
	(demerits)		(demerits)	(demerits)	(g/h)
Final Result					

 $^{^{\}rm A}$ Reference Tests Only $^{\rm B}$ $2^{\rm nd}$ Ring Top Carbon and Oil Consumption Delta Values in Transformed Units

Caterpiller C-13 Engine Oil Test Operational Summary

F	orn	. 5
r	оги	13

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

			Contro	olled Paramete	rs			
Parameter	Units	QI Threshold	EOT QI	Target	Average	Samples	BQD	Over/Under Range
Speed	r/min	0.000		1800				
Fuel Flow	g/min	0.000		1200				
Inlet Air Temp.	°C	0.000		25				
Intake Manifold Temp.	°C	0.000		40				
Fuel In Temp.	°C	0.000		40				
Coolant Out Temp.	°C	0.000		88				
Oil Gallery Temp.	°C	0.000		98				
Exhaust Back Press.	kPa	0.000		6				
			Non-QI (Control Paramo	eters			
Parameter	Units	Specification			Average	Samples	BQD	Over/Under Range
Inlet Air Pressure	kPa		93.0 ± 1.5					
			Rang	ged Parameter		•		
Parameter	Units		Specification			Samples	BQD	Over/Under Range
Inlet Manifold Press.	kPa		275 - 285					
			Non-Con	trolled Param	ters			
Parameter	Units		Typical Values	,	Average			
Engine Torque	Nm		Tbd					
Oil Sump Temp.	°C		Tbd					
Oil Gallery Press.	kPa		Tbd					
Dew Point	°C		Tbd					

Caterpiller C-13 Engine Oil Test Oil Analysis Summary - Form 6

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

Hours	Soot Wt.% TGA	Viscosity @ 100°C cSt,D445	TBN D 4739	TAN D 664	Integrated IR Oxidation	Fuel Dilution Wt. %, D 3524
	1					
		1				
	1					

Hours		Metal Elements (ppm)								
	Fe	Pb	Cu	Cr	Al	Si	Sn	Na		

Caterpiller C-13 Engine Oil Test Unscheduled Downtime & Maintenance Summary Form 7

Laboratory	y:		EOT Date:	EOT Time:
Test Numb	er:			
Oil Code:				
Formulatio	on / Stand	Code:		
Number o	of Downtin	me Occurrenc	es	
700 4				
Test Hours	Date	Downtime		Reasons
Hours	Date	Downtime		Reasons
				T (I D)
				Total Downtime
0	ther Com	ments		
		nent Lines		

Caterpiller C-13 Engine Oil Test Unscheduled Downtime & Maintenance Summary Form 7A

boratory:	1		EOT Date:	EOT Time:	
st Numbe	r:			•	
Code:					
rmulatior	/ Stand (Code:			
					_
Number o	f Downtir	ne Occurren	ces		
Test	Date	Downtime		Daggang	
Hours	Date	Downtime		Reasons	
				Total Downtime	
			1		
Ot	her Comn	nents			
Number	of Commo	ent Lines			

Caterpiller C-13 Engine Oil Test Unscheduled Downtime & Maintenance Summary Form 7B

Test Number: Oil Code: Formulation / Number of Do Test Hours					
Formulation / Number of Do					
Number of Do					
Test	owntime () ccurrence			
Test	owntime C)ccurrence			
Test	owntime C)ccurrence			_
Test					
		Jecuitence,	9		
Hours 1					
	Date Do	owntime		Reasons	
				T (I D) (
				Total Downtime	
Othe	r Commen	ts			
Number of					
		l			

Caterpiller C-13 Engine Oil Test Test Fuel Analysis (Last Batch) Form 8

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

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

A May be altered to be consistent with CARB or ASTM diesel fuel specifications.

Caterpiller C-13 Engine Oil Test Build-Up and Hardware Information Form 9

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

	Hardware
Part	Part Number
Intake Valve	
Exhaust Valve	
Cylinder Head	
Head Gasket	
Pistons	
Injectors	
Rod Bearings	
Liners	
Top Ring	
2 nd Ring	
Oil Ring	•

Caterpiller C-13 Engine Oil Test Piston Deposit Rating Summary Form 10

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

				Parameter				
Piston	TGC	TLC	R2TC	TLHC	AGF	WD	IGC	2LC
No.	Demerits	Demerits	Demerits	%	%	Demerits	Demerits	Demerits
1								
2								
3								
4								
5								
6								
Average								
Std. Dev.								
Outlier								
(Outlier Scre	ened Result	S					
Average								

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

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 1

										Form	11									
Lal	boratory:						I	EOT Da	ate:					EO	T Tim	e:				
Tes	st Number	r:									Oil	Code:								
For	rmulation	/ Star	nd Code	e:																
Dat	te Rated:							Rater	Initial	s:			Vei	rified I	By:					
Tota	al Piston Ra	atings S	Summary	7						_										
			Gro	oves			La	nds			Gro	ove		Lar	nds		O	il	Un	der
	Deposit	N	o. 1	No	o. 2	No	o. 1	No	o. 2	Deposit	No	. 3	No	. 3	No	o. 4	Cooling	Gallery	Cro	own
	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM.
C																				
A	HC - 1.0																			
1	3.50	1	1				1				I									

			Gro	oves			La				Gro	ove		Lan			C			der
	Deposit	N	o. 1	No	o. 2	No	o. 1	No	o. 2	Deposit	No.	. 3	No	. 3	No	. 4	Cooling	Gallery	Cro	own
	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM.
C										_										
A	HC - 1.0																	<u> </u>		
R	MC - 0.5				1			L	L				L							
В	LC25									_										
О				L	1	L	L	L	L		<u> </u>	1	1					<u> </u>	1	
N	Total																	1		
					1	1														
	8 - 9																			
	7 - 7.9									7.5										
	6 - 6.9									1										
V	5 - 5.9																			
Α	4 - 4.9									4.5										
R	3 - 3.9																			
N	2 - 2.9																	i		
I	1 - 1.9									1.5										
S	>0 - 0.9																			
Н	Clean		0		0		0		0			0		0		0		Ì		0
	Total																			
Ra	iting		I .		I		1					ı		1		1				II.
	cation																			
Fa	ctor		2		3		1		3		20)	2	0	6	0			·	1
Inc	d.Rating																			

ma.ramg						
WDP	TGC	TLC	Unweighted Deposit	ts T	op Land Flaked	Carbon %
TGF	IGF %	TLHC %	Acc. Groove Fill %			

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 2 Form 12

Laboratory:	EOT Date:			EOT Time:
Test Number:		Oil Code:		
Formulation / Stand Code:				
Date Rated:	Rater Initials:		Verified By:	:
Total Piston Ratings Summary				

otal Piston R	8		oves			La	nds			Gro	ove		Lar	nds		Oil		Un	der
Deposit	N	o. 1		o. 2	No	o. 1		o. 2	Deposit	No		No	o. 3		o. 4	Cooling Gal	lery	Cro	own
Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM.
HC - 1.0			1						-										
MC - 0.5 LC25									-									l	
							1			1		1					1		
Total				1	1							1						· ·	
Total										1								1	
8 - 9		'		'			'	<u>'</u>			'	'						·	
7 - 7.9									7.5										
6 - 6.9									7.5								=		
5 - 5.9																	1		
4 - 4.9									4.5								- 1		
3 - 3.9																			
2 - 2.9																			
1 - 1.9									1.5										
>0 - 0.9		0		0		0		0			0		0		0				0
Clean		0		0		0		0			0		0		0				0
Total		'		1			1	'											
Rating									_								'		
									-										
Location		2		2		1		2		2	0		20		50				1
actor		2		3		1		3	-		U		U	C	50				1
nd.Rating					T				~							·		~ .	
	WDP				TGC			TL	<u> </u>		Unweig	hted D	eposits	}	To	op Land Fla	iked	Carbon	1 %
	TGF]	IGF %			TLHO	C %		Acc. G	roove	Fill %						

WDP	TGC	TLC	Unweighted Deposits	Top Land Flaked Carbon %
TGF	IGF %	TLHC %	Acc. Groove Fill %	

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 3 Form 13

Laboratory:	EOT Date:		EOT Time:
Test Number:		Oil Code:	
Formulation / Stand Code:			
Date Rated:	Rater Initials:	V	erified By:

			Gro	oves			Lai				Gro	ove		Lar	ıds			Dil	Ur	der
	Deposit		o. 1		o. 2		o. 1		o. 2	Deposit	No			. 3		o. 4	Cooling	Gallery		own
	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM
	IIC 10					<u> </u>		1		<u> </u>										
	HC - 1.0							1		- I										
	MC - 0.5			I		I		I		-						T				
	LC25			1														<u> </u>		
	Total				'		1	1	1		<u> </u>		'					1	<u> </u>	
	Total					1												i		
	8 - 9		·			'	1	1	1										<u> </u>	
	7 - 7.9									7.5										
	6 - 6.9									".5										
	5 - 5.9																			
	4 - 4.9									4.5										
	3 - 3.9																			
	2 - 2.9																			
	1 - 1.9									1.5										
	>0 - 0.9																			
	Clean		0		0		0		0			0		0		0				0
	Total			I		I	I	I										<u> </u>	<u> </u>	
<u>~</u> +										-								'		
	ing									-										
	cation		•		2				2	1	•	0	2	0						
	ctor		2		3	-	l		3		2	U	2	0	6	50				1
ıd	.Rating																			
	V	VDP				TGC			TL	C	l	Unweig	hted D	eposits		To	p Land	l Flaked	Carbon	1 %

Rating Summary: Piston No. 4

Form 14

Laboratory:	EOT Date:		EOT Time:
Test Number:		Oil Code:	
Formulation / Stand Code:			
Date Rated:	Rater Initials:	Ver	rified By:

Total P	Piston Ra	tings S				Т				7 r			T						
1				oves			Laı				Gro			Lan			Oil		der
	eposit		o. 1		o. 2	No			p. 2	Deposit	No		No			o. 4	Cooling Gallery		own
	actor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.		A,%	DEM.
C	IC - 1.0									_									
_	IC - 1.0 IC - 0.5							1					1						
	C25			1	<u> </u>		I	1	'				1					l l	
o E	.23						1												
	Total		· ·																
.,	Total			1									1						
8 -	- 9								'									<u>'</u>	
	- 7.9									7.5									
	- 6.9																		
	- 5.9																		
	- 4.9									4.5									
	- 3.9																		
	- 2.9																		
	- 1.9									1.5									
	0.9																		
H Cle	lean		0		0		0		0			0		0		0			0
7	Total		<u> </u>	<u> </u>	1												'	<u>'</u>	
Rating									I.										
Locati																			
Factor			2		3		1		3		20	0	2	0	6	0			1
Ind.Ra	ating																		
		VDP				TGC			TLO	С	J	J nweig	hted D	eposits		To	p Land Flaked	Carbon	%
										~ ~ /		. ~							
	TGF				IGF %			TLHC	· %		Acc. G	roove l	Fill %						

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 5 Form 15

Laboratory:	EOT Date:		EOT Time:
Test Number:		Oil Code:	
Formulation / Stand Code:			
Date Rated:	Rater Initials:	V	erified By:

			Gro	oves			Lai				Gro	ove		Lar	ıds			Dil	Ur	der
	Deposit		o. 1		o. 2		o. 1		o. 2	Deposit	No			. 3		o. 4	Cooling	Gallery		own
	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM
	IIC 10					<u> </u>		1		<u> </u>										
	HC - 1.0							1		- I										
	MC - 0.5			I		I		I		-						T				
	LC25			1														<u> </u>		
	Total				'	1	1	1	1		<u> </u>		'					1	<u> </u>	
	Total					1												i		
	8 - 9		·			'	1	1	1										<u> </u>	
	7 - 7.9									7.5										
	6 - 6.9									".5										
	5 - 5.9																			
	4 - 4.9									4.5										
	3 - 3.9																			
	2 - 2.9																			
	1 - 1.9									1.5										
	>0 - 0.9																			
	Clean		0		0		0		0			0		0		0				0
	Total			I		I	I	I										<u> </u>	<u> </u>	
<u>~</u> +										-								'		
	ing									-										
	cation		•		2				2	1	•	0	2	0						
	ctor		2		3	-	l		3		2	U	2	0	6	50				1
ıd	.Rating																			
	V	VDP				TGC			TL	C	l	Unweig	hted D	eposits		To	p Land	l Flaked	Carbon	1 %

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 6

Form 16

Laboratory:	EOT Date:		EOT Time:
Test Number:		Oil Code:	
Formulation / Stand Code:			
Date Rated:	Rater Initials:	V	erified By:

			Gro	oves			Lai				Gro	ove		Lar	ıds			Dil	Ur	der
	Deposit		o. 1		o. 2		o. 1		o. 2	Deposit	No			. 3		o. 4	Cooling	Gallery		own
	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.	A,%	DEM.	Factor	A,%	DEM.	A,%	DEM.	A,%	DEM.			A,%	DEM
	IIC 10					<u> </u>		1		<u> </u>										
	HC - 1.0							1		- I										
	MC - 0.5					I		I		-						T				
	LC25			1														<u> </u>		
	Total				'	1	1	1	1		<u> </u>		'					1	<u> </u>	
	Total					1												i		
	8 - 9		·			'	1	1	1										<u> </u>	
	7 - 7.9									7.5										
	6 - 6.9									".5										
	5 - 5.9																			
	4 - 4.9									4.5										
	3 - 3.9																			
	2 - 2.9																			
	1 - 1.9									1.5										
	>0 - 0.9																			
	Clean		0		0		0		0			0		0		0				0
	Total			I		I	I	I										<u> </u>	<u> </u>	
<u>~</u> +										-								'		
	ing									-										
	cation		•		2				2	1	•	0	2	0						
	ctor		2		3	-	l		3		2	U	2	0	6	50				1
ıd	.Rating																			
	V	VDP				TGC			TL	C	l	Unweig	hted D	eposits		To	p Land	l Flaked	Carbon	1 %

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 1 Form 17

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

		Carl	bon			Yarnish										
Deposit			НС	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5			2.9-2	1.9-1	0.9-0	Clean	
Groove	1	T														
Top	1	В														
And	2	T														
Bottom		В														
% ^	3	T														
Area	3	В														
		T														
Top	1	В														
Bottom		BK														
And		T														
Back Of	2	В														
Rings		BK														
%		T														
Area	3	В														
		BK														
Top Rin	g Stu	ck					%									
Top Rin	g Scu	ıffed														
Second 1	l Ring Stuck						%									
	Ring Scuffed						%									
Oil Ring							%									
Oil Ring							%									
Crown S							%									
Skirt Sci							%									
Liner Sc	uffed						%									

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 2 Form 18

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

						1									
		Car		T	T			1	T		nish	1	1		1
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	1	T													
Top		В													
And Bottom	2	T													
B 0000111		В													
Area	3	<u>T</u>													
		В													
		T													
Top	1	В													
Bottom And Back Of		BK													
	_	T													
	2	В													
Rings		BK													
%		T													
Area	3	В													
		BK													
Top Rin	g Stu	ck					%								
Top Rin							%								
Second 1							%								
Second 1			1				%								
Oil Ring							%								
Oil Ring							%								
Crown S							%								
Skirt Scu							%								
Liner Sc	uffed						%								

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 3 Form 19

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

		Car			T	9.0-8	7.9-7	T	T		nish	T	T	T	T
Deposit	DepositHCMCLC							6.9-6	5.9-5	4.9-4	3.9-3	2.9-2	1.9-1	0.9-0	Clean
Groove	1	T													
Тор	1	В													
And	2	T													
Bottom	2	В													
%	2	T													
Area	3	В													
		T													
Тор	1	В													
Bottom		BK													
And Back 2		T													
	2	В													
Of Rings		BK													
Kiligs %		T													
Area	3	В													
		BK													
Top Ring	o Stu						%								
Top Ring							%								
Second I							%								
			1				%								
Second I Oil Ring			l				%								
Oil Ring							%								
Crown S							%								
	Skirt Scuffed						%								
Liner Sc							%								

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 4 Form 20

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

						1									
		Car		T	T		T	1	T		nish	T	T	T	
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	1	T B													
And Bottom	2	Т													
%		В													
Area	3	T B													
		T													
Тор	1	В													
Bottom	1	BK													
And		T													
Back Of	2	В													
Rings		BK													
%		T													
Area	3	В													
		BK													
Top Ring	g Stu	ck					%								
Top Ring							%								
Second I	Ring	Stuck					%								
Second I	Ring	Scuffec	l				%								
Oil Ring	Stuc	k					%								
Oil Ring	Scuf	fed					%								
Crown S							%								
Skirt Scu	ıffed						%								
Liner Sc	uffed	-					%								

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 5 Form 21

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

						1									
		Car		T	1		T	1	T		nish	T	T	T	
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	1	T B													
And Bottom	2	Т													
%		B T													
Area	3	В													
		Т													
Тор	1	В													
Bottom	_	BK													
And		T													
Back Of	2	В													
Rings		BK													
%		T													
Area	3	В													
		BK													
Top Ring							%								
Top Ring							%								
Second I							%								
Second I			l				%								
Oil Ring	Stuc	k					%								
Oil Ring							%								
Crown S		ed					%								
Skirt Scu							%								
Liner Sc	uffed	1					%								

Caterpiller C-13 Engine Oil Test Rating Summary: Piston No. 6 Form 22

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

		Car	hon							Var	nish				
Deposit		Car	HC	MC	LC	9.0-8	7.9-7	6.9-6	5.9-5			2.9-2	1.9-1	0.9-0	Clean
Groove Top	1	T B													
And Bottom	2	Т													
% Area	3	B T													
Tirea		B T													
Top Bottom	1	B BK													
And Back	2	T B													
Of Rings	2	BK													
% Area	3	T B													
		BK													
Top Ring	g Scu	ffed					% % %								
Second I	Second Ring Stuck Second Ring Scuffed Dil Ring Stuck					% %									
Oil Ring	Scuf	fed					%								
Skirt Scu	rown Scuffed kirt Scuffed iner Scuffed				% % %										

Caterpiller C-13 Engine Oil Test Oil Consumption Plot Form 23

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

Test Hours	50	100	150	200	250	300	350	400	450	500
Oil Consumption, g/h										
\mathbb{R}^2										

Test Hours

Caterpiller C-13 Engine Oil Test Form 24 Ring Weight Loss

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

Cylinder No.	Top Ring SOT Weight, g	Top Ring EOT Weight, g	Weight Loss, mg
1			
2			
3			
4			
5			
6			

American Chemistry Council Code of Practice Test Laboratory Conformance Statement

Test Labo	oratory					
Test Sponsor						
	ion/Stand Code					
Test Num						
Start Date	2	Start Time		Time Zone		
		Declarations				
	<u>-</u>	the ACC Code of Practice for uct of this test. Yes		est laboratory *	is responsible	
(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*					
1	from operational va	is Declaration is "No", does lidity requirements that occ* No				
1	for the test as being	for one of the test parameters a special case. Yes?	* No	(This cur	on responsible rently applies	
		Check The Appropriate Conc	elusion			
		eview of this test indicates t Acceptance Criteria calculati		should be in	cluded in the	
	*Operational review of this test indicates that the results should not be included in th Multiple Test Acceptance Criteria calculations.				ncluded in the	
Note: Supp	oorting comments are	required for all responses id	entified with ar	ı asterisk.		
		Comments				
Signature			Date			
Typed Nar	ne		Title			