

OIL ANALYSIS REPORT





Machine Id **G3** Component

CATERPILLAR G3612 Reservoir Natural Gas Engine

ECOSYN GE 4004 (1200 LTR)

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

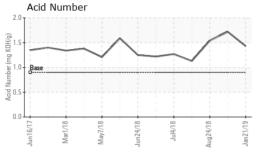
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sample Number Sample Date	0 LTR)				Jan2019		
Sample Date 21 Jan 2019 14 Sep 2018 24 Aug 2018 28704 27203 26703 26	SAMPLE INFORM	MATION	method	limit/base	current	history 1	history 2
Machine Age hrs 16235 14734 821	Sample Number				WC101726	WC101496	WC101503
	Sample Date				21 Jan 2019	14 Sep 2018	24 Aug 2018
Dil Changed N/A NORMAL	Machine Age	hrs			28704	27203	26703
NORMAL NORMAL NORMAL NORMAL WEAR METALS method limit/base current history 1 history 2 history 2 history 2 history 2 history 3 history 4 history 4 history 4 history 4 history 4 history 5 history 5 history 5 history 6 history 6 history 6 history 7 history 6 history 6 history 7 history 8 history 8 history 1 history 9 history 9 history 1 history 1 history 1 history 1 history 2 history 8 history 1 history 2 history 1 history 2 history 1 history 2 history 1 history 2 history 1 history 2 history 1 history 2 history 2 history 4 history 1 history 2 history 4 history 5 history 6 history 6 history 6 history 6 history 6 history 7 history 8 history 8 history 8 history 8 history 8 histor	Oil Age	hrs			16235	14734	821
WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185 >50 7 6 6 Chromium ppm ASTM D5185 >4 0 0 0 Nickel ppm ASTM D5185 >2 0 <1	Oil Changed				N/A	N/A	N/A
Chromium	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185 >4 0 0 0 Nickel ppm ASTM D5185 >2 0 <1	WEAR METALS		method	limit/base	current	history 1	history 2
Nickel	Iron	ppm	ASTM D5185	>50	7	6	6
Description	Chromium	ppm	ASTM D5185	>4	0	0	0
Silver	Nickel	ppm	ASTM D5185	>2	0	<1	<1
Aluminum	Titanium	ppm	ASTM D5185		0	0	0
Lead	Silver	ppm	ASTM D5185	>3	0	0	0
Copper ppm ASTM D5185 >35 2 2 2 2 Tin ppm ASTM D5185 >4 0 0 0 Antimony ppm ASTM D5185 0 0 0 Vanadium ppm ASTM D5185 0 0 0 Beryllium ppm ASTM D5185 0 0 0 Cadmium ppm ASTM D5185 <1	Aluminum	ppm	ASTM D5185	>9	<1	<1	<1
ASTM D5185 AST	Lead	ppm	ASTM D5185	>30	14	16	14
Antimony	Copper	ppm	ASTM D5185	>35	2	2	2
Vanadium ppm ASTM D5185 0 0 0 Beryllium ppm ASTM D5185 0 0 0 Cadmium ppm ASTM D5185 -1 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185 75 81 85 84 Barium ppm ASTM D5185 0 0 0 0 Molybdenum ppm ASTM D5185 0 2 2 2 2 Magnesium ppm ASTM D5185 0 2 2 2 2 Magnesium ppm ASTM D5185 1050 1479 1467 1435 Phosphorus ppm ASTM D5185 200 268 271 275 Zinc ppm ASTM D5185 200 353 353 341 Sulfur ppm ASTM D5185 >20 353 353 <th< td=""><td>Tin</td><td>ppm</td><td>ASTM D5185</td><td>>4</td><td>0</td><td>0</td><td>0</td></th<>	Tin	ppm	ASTM D5185	>4	0	0	0
Decyllium	Antimony	ppm	ASTM D5185		<1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185		0	0	0
ADDITIVES method limit/base current history 1 history 2	Beryllium	ppm	ASTM D5185		0	0	0
Boron ppm ASTM D5185 75 81 85 84	Cadmium	ppm	ASTM D5185		<1	0	0
Barium	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum ppm ASTM D5185 0 2 2 2 Manganese ppm ASTM D5185 <1	Boron	ppm	ASTM D5185	75	81	85	84
Manganese ppm ASTM D5185 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Barium	ppm	ASTM D5185	0	0	0	0
Magnesium ppm ASTM D5185 5 8 8 7 Calcium ppm ASTM D5185 1050 1479 1467 1435 Phosphorus ppm ASTM D5185 200 268 271 275 Zinc ppm ASTM D5185 250 353 353 341 Sulfur ppm ASTM D5185 900 757 774 758 Lithium ppm ASTM D5185 0 0 <1	Molybdenum	ppm	ASTM D5185	0	2	2	2
Calcium ppm ASTM D5185 1050 1479 1467 1435 Phosphorus ppm ASTM D5185 200 268 271 275 Zinc ppm ASTM D5185 250 353 353 341 Sulfur ppm ASTM D5185 900 757 774 758 Lithium ppm ASTM D5185 0 0 <1	Manganese	ppm	ASTM D5185		<1	<1	<1
Phosphorus ppm ASTM D5185 200 268 271 275 Zinc ppm ASTM D5185 250 353 353 341 Sulfur ppm ASTM D5185 900 757 774 758 Lithium ppm ASTM D5185 0 0 <1 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185 >+100 2 2 1 Sodium ppm ASTM D5185 2 3 4 Potassium ppm ASTM D5185 >20 <1 <1 1 INFRA-RED method limit/base current history 1 history 2 Soot % % ASTM D7686 0 0 0 0 Nitration Abs/cm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1	Magnesium	ppm	ASTM D5185	5	8	8	7
Zinc ppm ASTM D5185 250 353 353 341 Sulfur ppm ASTM D5185 900 757 774 758 Lithium ppm ASTM D5185 0 0 <1	Calcium	ppm	ASTM D5185	1050	1479	1467	1435
Sulfur ppm ASTM D5185 900 757 774 758 Lithium ppm ASTM D5185 0 0 <1 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185 >+100 2 2 1 Sodium ppm ASTM D5185 >20 <1	Phosphorus	ppm	ASTM D5185	200	268	271	275
Lithium ppm ASTM D5185 0 0 <1 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185 >+100 2 2 1 Sodium ppm ASTM D5185 2 3 4 Potassium ppm ASTM D5185 >20 <1 <1 1 INFRA-RED method limit/base current history 1 history 2 Soot % % ASTM D7686 0 0 0 0 Nitration Abs/cm ASTM D7624 >30 20.6 20.7 20.7 Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9	Zinc	ppm	ASTM D5185	250	353	353	341
CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185 >+100 2 2 1 Sodium ppm ASTM D5185 2 3 4 Potassium ppm ASTM D5185 >20 <1	Sulfur	ppm	ASTM D5185	900	757	774	758
Silicon ppm ASTM D5185 >+100 2 2 1 Sodium ppm ASTM D5185 2 3 4 Potassium ppm ASTM D5185 >20 <1 <1 1 INFRA-RED method limit/base current history 1 history 2 Soot % % ASTM D7686 0 0 0 0 Nitration Abs/cm ASTM D7624 >30 20.6 20.7 20.7 Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg K0H/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg K0H/g ASTM D2896 4.2 4.09 3.57 3.49	Lithium	ppm	ASTM D5185		0	0	<1
Sodium ppm ASTM D5185 2 3 4 Potassium ppm ASTM D5185 >20 <1	CONTAMINANTS	;	method	limit/base	current	history 1	history 2
Sodium	Silicon	ppm	ASTM D5185	>+100	2	2	1
Potassium ppm ASTM D5185 >20 <1 <1 1 INFRA-RED method limit/base current history 1 history 2 Soot % % ASTM D7686 0 0 0 Nitration Abs/cm ASTM D7624 >30 20.6 20.7 20.7 Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOHlg ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOHlg ASTM D2896 4.2 4.09 3.57 3.49							4
Soot % % ASTM D7686 0 0 0 Nitration Abs/cm ASTM D7624 >30 20.6 20.7 20.7 Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Potassium		ASTM D5185	>20	<1	<1	1
Nitration Abs/cm ASTM D7624 >30 20.6 20.7 20.7 Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	INFRA-RED		method	limit/base	current	history 1	history 2
Sulfation Abs/.1mm ASTM D7415 >110 109.0 113.3 105.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Soot %	%	ASTM D7686		0	0	0
FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Nitration	Abs/cm	ASTM D7624	>30	20.6	20.7	20.7
Oxidation Abs/.1mm ASTM D7414 >195 192.8 175.2 172.6 Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Sulfation	Abs/.1mm	ASTM D7415	>110	109.0	113.3	105.3
Acid Number (AN) mg KOH/g ASTM D664 0.9 1.43 1.72 1.54 Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	FLUID DEGRADA	NOITA	method	limit/base	current	history 1	history 2
Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Oxidation	Abs/.1mm	ASTM D7414	>195	192.8	175.2	172.6
Base Number (BN) mg KOH/g ASTM D2896 4.2 4.09 3.57 3.49	Acid Number (AN)	mg KOH/g	ASTM D664	0.9	1.43	1.72	1.54
i-pH Scale 0-14 ASTM D7946 < 4.5 3.9 4.0	Base Number (BN)		ASTM D2896	4.2	4.09	3.57	3.49
	i-pH	Scale 0-14	ASTM D7946	<4.5	3.9	4.0	



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VISUAL		method			history 1	history 2
Emulsified Water	scalar	Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	Visual		NEG	NEG	NEG
FLUID PROPERTIES		method	limit/base	current	history 1	history 2
Visc @ 100°C	cSt	ASTM D7279	13.0	15.2	15.5	15.3
GRAPHS						
Iron (ppm)				Lead (ppm)		

GRAP	HS											
Iron (p	pm)						ad (ppn	1)				
Severe						60 -	vere					
)						50						
1						40-						
Abnormal		-				E 30 - A	normal		1			
						20						
I											-	-
-						10						
#	18 18	18	18	18	19	01	18	18	18	18	18	_
Jun16/17	Mar1/18 May7/18	Jun24/18	Jul4/18	Aug24/18	Jan21/19	Jun16/17	Mar1/18	May7/18	Jun24/18	Jul4/18	Aug24/18	
	ium (ppm)			⋖	7		nromium	(nnm)			⋖	
Severe	(ppiii)					7T 7		(PP)				
1						6 - \$	vere					
Ahnormal						5						
Abnormal						E AL	normal	-				+
						3						
						2						
+						1+ -						
17	8 8		18	80	- 6	0 =	00	8	80		80	-
Jun16/17	Mar1/18 May7/18	Jun24/18	Jul4/18	Aug24/18	Jan21/19	Jun16/17	Mar1/18	May7/18	Jun24/18	Jul4/18	Aug24/18	
	r (ppm)	7		⋖	7		icon (pp				⋖	
T :	(ppiii)						vere (PP			********		
Severe		+	-									
						150						
I						트 100 - At	normal					
Abnormal						4 100						
						50-						
-	8 8	- 80	18	- 80	19	0 =		- 82	- 00	00		-
Jun16/17	Mar1/18 May7/18	Jun24/18	Jul4/18	Aug24/18	Jan21/19	Jun16/17	Mar1/18	May7/18	Jun24/18	Jul4/18	Aug24/18	
_	ty @ 100°			Ā	7		se Num		7		Ā	
VISCOSI	ry @ 100°					4.5 T 3 8		pei				
Abnormal						40						/
-		~				(mpper (mg KOH/g))						
Base						B 2.5						
						les I						

0.0



Laboratory: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

Sample No.: WC1234567Received: 22 Jan 2019Lab Number: 01234567Diagnosed: 24 Jan 2019Unique Number: 12345678Diagnostician: Wes Davis

Test Package : MOB 2 (Additional Tests: i-pH, TAN Auto)

To discuss diagnosis or test data, contact Technical Support at 1-800-268-2131. To change component or sample information, contact Customer Service at 1-800-268-2131. **Cusany Logistics Inc.**

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