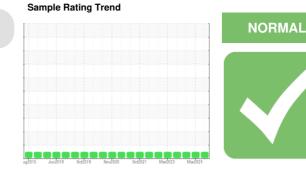


## **OIL ANALYSIS REPORT**





### Machine Samples - CAT LAB CATERPILLAR 990 LOADER G 6427 (S/N BCR00127) Rear Differential Eluid

#### Fluid TULCO LUBSOIL TO-4 50 (49 GAL)

### DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

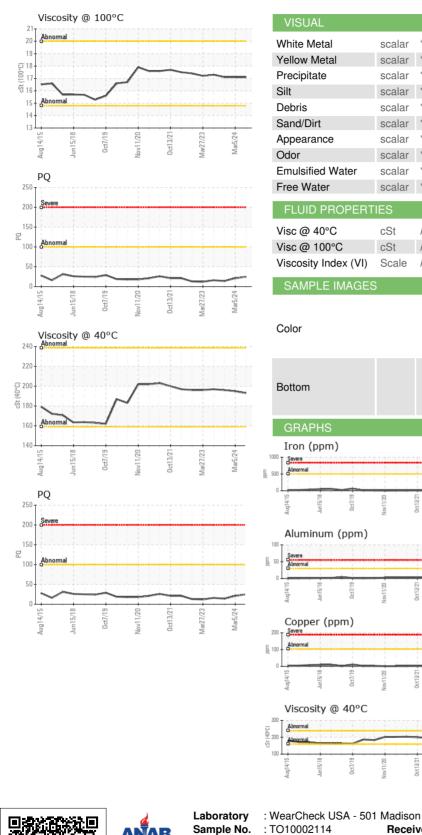
#### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		TO10002114	TO10003371	TO10002886
Sample Date		Client Info		31 May 2024	05 Mar 2024	13 Nov 2023
Machine Age	hrs	Client Info		49260	48658	48135
Oil Age	hrs	Client Info		4209	3607	3070
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Water		WC Method	>.2	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184		25	21	14
Iron	ppm	ASTM D5185m	>500	18	13	13
Chromium	ppm	ASTM D5185m	>3	<1	<1	<1
Nickel	ppm	ASTM D5185m	>3	<1	<1	1
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>30	4	3	3
Lead	ppm	ASTM D5185m	>13	3	2	1
Copper	ppm	ASTM D5185m	>103	7	3	4
Tin	ppm	ASTM D5185m	>5	2	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	<1	<1
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		3	<1	<1
Manganese	ppm	ASTM D5185m		2	<1	<1
Magnesium	ppm	ASTM D5185m		28	21	0
Calcium	ppm	ASTM D5185m		4433	3805	4099
Phosphorus	ppm	ASTM D5185m		892	795	714
Zinc	ppm	ASTM D5185m		1054	855	980
Sulfur	ppm	ASTM D5185m		5773	5044	4338
CONTAMINANTS	5	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>100	20	16	20
Sodium	ppm	ASTM D5185m		6	5	4
Potassium	ppm	ASTM D5185m	>20	5	3	0
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.95	0.92	1.02



# **OIL ANALYSIS REPORT**



++											
				White Metal	scalar	*Visual	NONE	NONE	NONE	NO	١E
				Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NO	١E
$\sim$				Precipitate	scalar	*Visual	NONE	NONE	NONE	NO	١E
				Silt	scalar	*Visual	NONE	NONE	NONE	NOM	١E
				Debris	scalar	*Visual	NONE	NONE	NONE	NO	١E
				Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NOM	١E
N0/11/00	0ct13/21	Mar27/23	Mar5/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NOF	RML
VoV	00	Mar	Ma	Odor	scalar	*Visual	NORML	NORML	NORML	NOF	RML
				Emulsified Water	scalar	*Visual	>.2	NEG	NEG	NEC	à
				Free Water	scalar	*Visual		NEG	NEG	NEC	à
				FLUID PROPER	TIES	method	limit/base	current	history1	his	story2
				Visc @ 40°C	cSt	ASTM D445		193	195	196	
				Visc @ 100°C	cSt	ASTM D445		17.1	17.1	17.1	
				Viscosity Index (VI)	Scale	ASTM D2270		94	93	92	
	-12			SAMPLE IMAGE	S	method	limit/base	current	history1	his	story2
Nov11/20	0ct13/21	Mar27/23	Mar5/24								
-		-		Color				no image	no image	no ii	nage
			manne -								
	-			Bottom				no image	no image	no ii	nage
_				GRAPHS							
				Iron (ppm)				Lead (ppm)			
2	21	33	54					Lead (ppin)			
ov11/20	Jct13/21	lar27/23	Mar5/24	1000 Severe			40	Severe			
Nov11/20	0ct13/21	Mar27/23	Mar5/24				40 Eg. 20	T 3000000500000			
02/11/voV	0ct13/21	Mar27/23	Mar5/24	E 500	11/20	(21/23 (21/23		Abnormal	ct//18	t13/21 c21/23	ar5/24
U2/11/V0V	0ct13/21		Mar5/24	Participant and the second sec	Nov11/20	0ct13/21		Severe Abnormal SI/ahlforry	0ct//19	Oct13/21	Mars/24
02/11/vov	0ct13/21	Mar27/23	Mar5/24	E 500		0ct13/21.		Abnormal	N	Oct13/21	Mar5/24
Nav11/20	0ct13/21	Mar27/23	Mar5/24	Aluminum (ppm)		0cr13/21		Abornal State State Chromium (p	N	0ct13/21 - 0ct	Mars/24
12/1 1/von	0ct13/21	Mar27/23	Ma5/24	Aluminum (ppm)			6, 20 0 10 10 10 10 0	Chromium (p	2 pm)		Mar5/24
17/11/00/	0ct13/21	Mar27/23	Ma5/24	Aluminum (ppm)			6, 20 17, 25 any 10	Sheee Abornal Sheer Chromium (p	2 pm)		Mars/24
			s/24 Mar5/24	Aluminum (ppm)		0ct1321 0ct1321 0ct321	6, 20 0 10 10 10 10 0	Sheee Ahorma Slithling Chromium (p	2 pm)	0cr13/21 0cr13/21	
07/1	0ct13/21 - 0ct13/21	Mar27/23		Aluminum (ppm)			6, 20 0 10 10 10 10 0	Sheee Ahormal Sheer Sheer Ahormal Sheer	2 pm)		
	3/21-		524	Aluminum (ppm)			10 10 10 10 10 10 10 10 10 10 10 10 10 1	Sheee Ahorma Slithling Chromium (p	2 pm)		
07/1	3/21-		524	Aluminum (ppm)			10 http://www.	Silicon (ppm)	2 pm)		
	3/21-		524	Aluminum (ppm)	Nort1/20	0ct11321 +	10 10 10 10 10 10 10 10 10 10 10 10 10 1	Silicon (ppm)	pm)	0ct1321 0ct1321 0ct1321	
	3/21-		524	Aluminum (ppm)	Nort1/20		10 10 10 10 10 10 10 10 10 10 10 10 10 1	Silicon (ppm)	2 pm)		
07/1	3/21-		524	Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Severe Aluminum (ppm) Severe	Nor1(20	0ct11321 +	10 10 10 10 10 10 10 10 10 10 10 10 10 1	Silicon (ppm)	pm)	0ct1321 0ct1321 0ct1321	
	3/21-		524	Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Severe Aluminum (ppm) Severe Severe Aluminum (ppm) Severe	Nor1(20	0ct11321 +	10 10 10 10 10 10 10 10 10 10	Silicon (ppm)	pm)	0ct1321 0ct1321 0ct1321	
	3/21-		524	Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Savere Aluminum (ppm) Savere	Nor1(20	0ct11321 +	10 10 10 10 10 10 10 10 10 10	Silicon (ppm)	pm)	0ct1321 0ct1321 0ct1321	
Nov11/20	3/21-		524	Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Severe Abormal Abormal Abo	Norti/20 Norti/20	0cr13/21 0cr13/21 0cr13/21 0cr13/21 0cr13/21 0cr13/21	10 10 10 10 10 10 10 10 10 10	Silicon (ppm)	pm) Nov1/20 Nov1/20 Nov1/20 Nov1/20	Oct1321 - Oct132	
1/20	3/21-	Labo Samp Lab I Unique	ratory ble No. Number e Number	Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Copper (ppm) Viscosity @ 40°C Aluminum E 00 Serve Aluminum (ppm) Serve Aluminum (ppm) Serve Serve Aluminum (ppm) Serve Aluminum (ppm) Serve Aluminum (ppm) Serve Aluminum (ppm) Serve Aluminum (ppm) Serve	01 Madisc Rece Teste Diagi	on Ave., Cary ived : 12 nosed : 12	10 10 10 10 10 10 10 10 10 10	Savee Abornal Shifting Chromium (p Savee Abornal Shifting Silicon (ppm) Silicon (ppm) S	pm)		HDS-HW HD
	IZELIDO	Labo Samp Lab I Unique Test I	ratory ble No. Number e Number Package	Aluminum (ppm)	01 Madisc Rece Tests Diagi	on Ave., Cary ived : 10 cod : 12 00, PQ, VI )	5, NC 27513 2 Jun 2024 - W	Savee Abornal Shifting Chromium (p Savee Abornal Shifting Silicon (ppm) Silicon (ppm) S	pm)	NE TULSA TH ST N 145TH TUL US ct: MIKE SI	ROC AVENU SA, O 7413 NYDE

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Submitted By: SKIP SAENGERHAUSEN