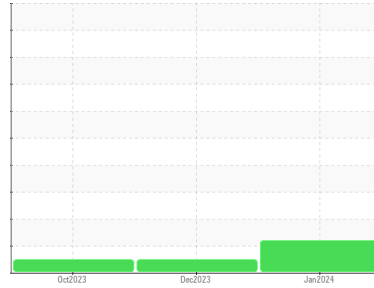


# OIL ANALYSIS REPORT



Machine Id  
**CATERPILLAR 980M 6161 (S/N MK210767)**  
Component  
**Diesel Engine**  
Fluid  
**TULCO LUBSOIL CK-4 15W40 (--- GAL)**

Sample Rating Trend



## DIAGNOSIS

### ▲ Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### ▲ Contamination

Light fuel dilution occurring.

### ▲ Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>TO10003034</b>	TO10003048	TO10002799
Sample Date	Client Info		<b>26 Jan 2024</b>	15 Dec 2023	18 Oct 2023
Machine Age	hrs	Client Info	<b>8990</b>	8765	8534
Oil Age	hrs	Client Info	<b>456</b>	231	300
Oil Changed	Client Info		<b>Changed</b>	Not Changd	Changed
Sample Status			<b>ATTENTION</b>	NORMAL	NORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol	WC Method		<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	<b>17</b>	4	0
Chromium	ppm	ASTM D5185m >20	<b>&lt;1</b>	0	<1
Nickel	ppm	ASTM D5185m >2	<b>&lt;1</b>	0	0
Titanium	ppm	ASTM D5185m >2	<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m >2	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m >25	<b>1</b>	<1	<1
Lead	ppm	ASTM D5185m >40	<b>2</b>	<1	0
Copper	ppm	ASTM D5185m >330	<b>2</b>	3	<1
Tin	ppm	ASTM D5185m >15	<b>2</b>	0	0
Vanadium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>11</b>	9	58
Barium	ppm	ASTM D5185m	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m 65	<b>56</b>	56	39
Manganese	ppm	ASTM D5185m	<b>&lt;1</b>	0	<1
Magnesium	ppm	ASTM D5185m 1060	<b>912</b>	872	492
Calcium	ppm	ASTM D5185m 1140	<b>1015</b>	1074	1516
Phosphorus	ppm	ASTM D5185m 1170	<b>1024</b>	1050	933
Zinc	ppm	ASTM D5185m 1230	<b>1204</b>	1215	1109
Sulfur	ppm	ASTM D5185m 3130	<b>3154</b>	3118	2945

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	<b>6</b>	3	7
Sodium	ppm	ASTM D5185m	<b>2</b>	14	2
Potassium	ppm	ASTM D5185m >20	<b>1</b>	<1	1
Fuel	%	ASTM D3524 >5	<b>▲ 2.3</b>	<1.0	<1.0

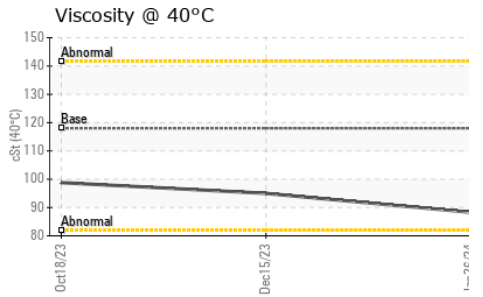
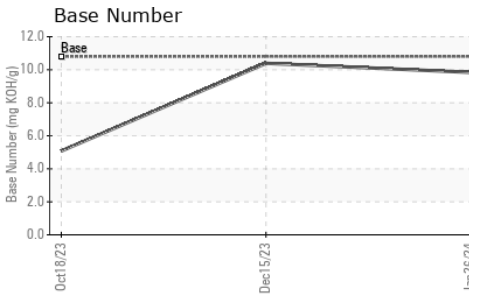
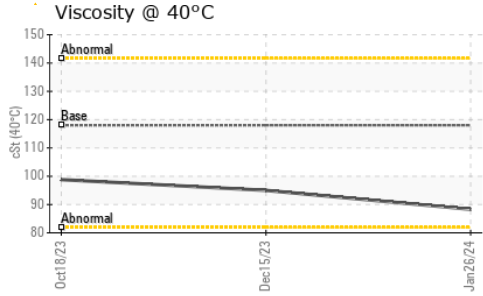
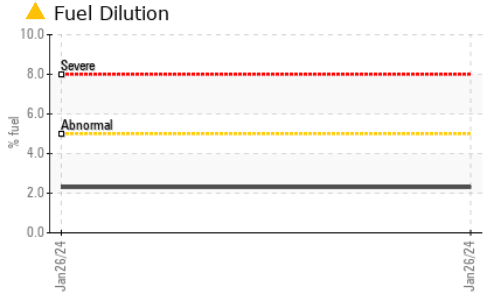
## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	<b>0.7</b>	0.2	0.1
Nitration	Abs/cm	*ASTM D7624 >20	<b>6.8</b>	8.1	5.0
Sulfation	Abs/.1mm	*ASTM D7415 >30	<b>19.7</b>	20.1	21.2

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	<b>13.9</b>	16.7	18.3
Base Number (BN)	mg KOH/g	ASTM D2896 10.8	<b>9.84</b>	10.39	5.08

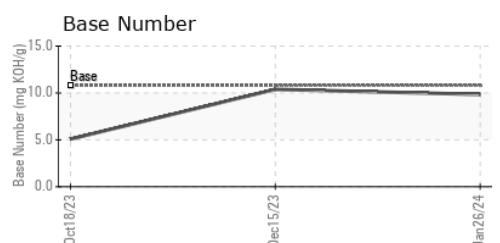
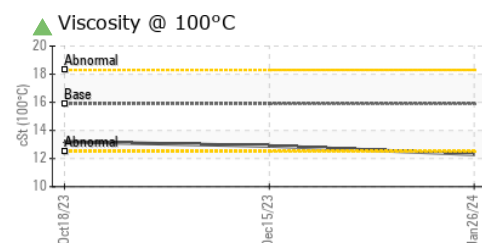
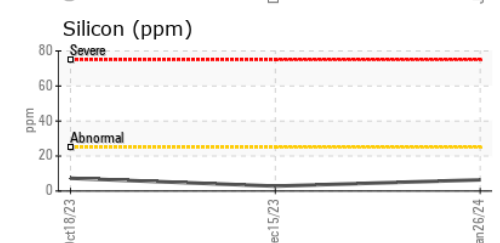
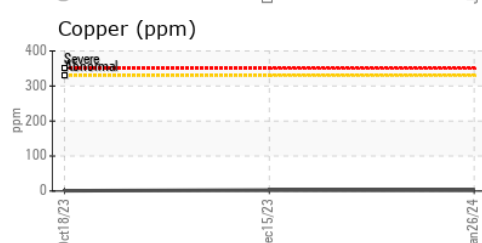
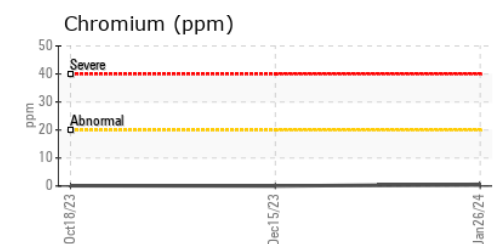
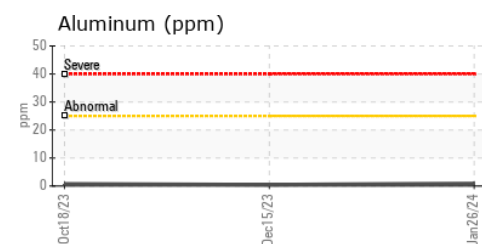
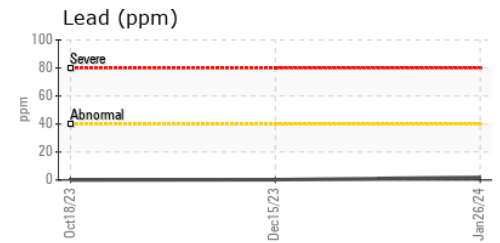
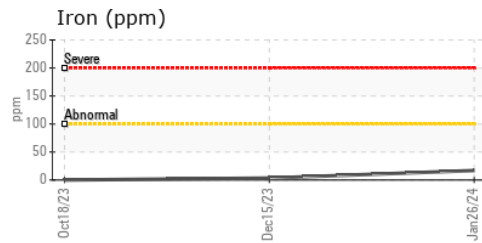
# OIL ANALYSIS REPORT



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	118	88.3	95.0
Visc @ 100°C	cSt	ASTM D445	15.9	12.3	12.9
Viscosity Index (VI)	Scale	ASTM D2270	143	134	132

## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : TO10003034 **Received** : 31 Jan 2024  
**Lab Number** : 06076432 **Diagnosed** : 05 Feb 2024  
**Unique Number** : 10858523 **Diagnostician** : Jonathan Hester  
**Test Package** : MOB 2 ( Additional Tests: FuelDilution, KV40, PercentFuel, VI )

**ANCHOR STONE TULSA ROCK**  
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 US 74137  
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To discuss this sample report, contact Customer Service at 1-800-237-1369.  
 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.  
 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)