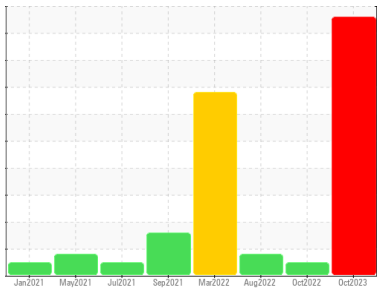
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
CATERPILLAR 5177
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- QTS)

DIAGNOSIS

Recommendation
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

Wear
Cylinder, crank, or cam shaft wear is indicated.

Contamination
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0745210**	WC0744234	WC0682072
Sample Date		Client Info		**20 Oct 2023**	19 Oct 2022	03 Aug 2022
Machine Age	hrs	Client Info		**0**	7013	6611
Oil Age	hrs	Client Info		**0**	0	250
Oil Changed		Client Info		**N/A**	N/A	Changed
Sample Status				**SEVERE**	NORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**495**	32	34
Chromium	ppm	ASTM D5185m	>20	**3**	1	1
Nickel	ppm	ASTM D5185m	>4	**0**	2	2
Titanium	ppm	ASTM D5185m		**<1**	0	<1
Silver	ppm	ASTM D5185m	>3	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**8**	19	22
Lead	ppm	ASTM D5185m	>40	**0**	0	<1
Copper	ppm	ASTM D5185m	>330	**54**	1	12
Tin	ppm	ASTM D5185m	>15	**0**	0	<1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**0**	5	6
Barium	ppm	ASTM D5185m	10	**0**	0	0
Molybdenum	ppm	ASTM D5185m	100	**2**	61	58
Manganese	ppm	ASTM D5185m		**3**	<1	<1
Magnesium	ppm	ASTM D5185m	450	**34**	827	875
Calcium	ppm	ASTM D5185m	3000	**2854**	1178	1076
Phosphorus	ppm	ASTM D5185m	1150	**961**	973	934
Zinc	ppm	ASTM D5185m	1350	**1166**	1189	1177
Sulfur	ppm	ASTM D5185m	4250	**5127**	3523	2809

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**32**	16	18
Sodium	ppm	ASTM D5185m	>158	**8**	<1	1
Potassium	ppm	ASTM D5185m	>20	**8**	2	0
Fuel	%	ASTM D3524	>5	**3.4**	<1.0	<1.0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.1**	0.7	0.7
Nitration	Abs/cm	*ASTM D7624	>20	**4.5**	9.7	9.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	**21.3**	21.1	21.3

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**10.2**	16.6	16.5
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**7.2**	8.4	8.9

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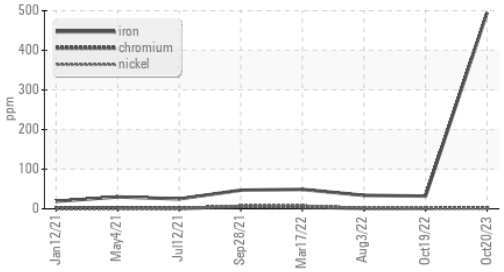
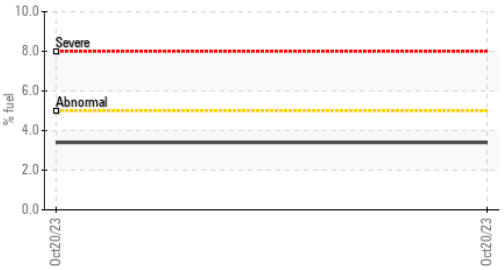
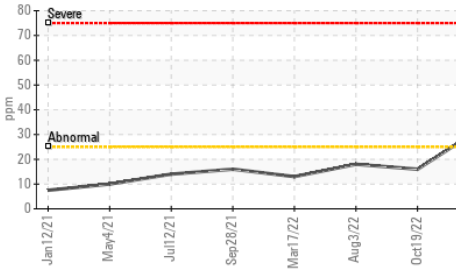
Ferrous Alloys



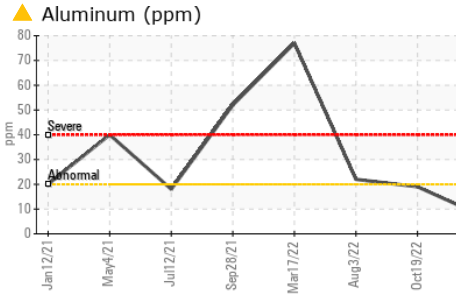
Fuel Dilution



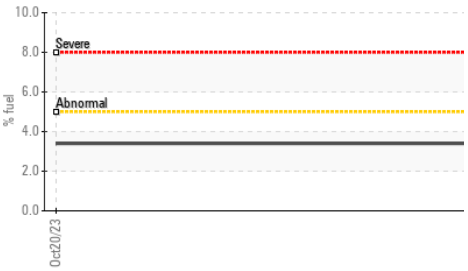
Silicon (ppm)



Aluminum (ppm)



Fuel Dilution

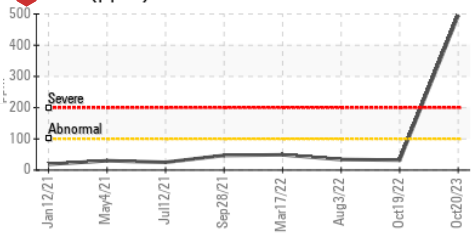


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

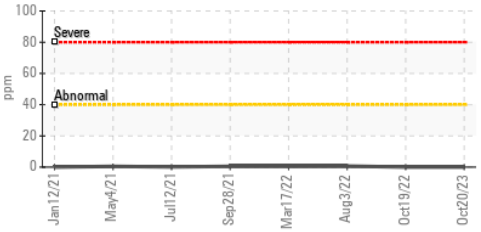
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	▲ **10.6**	13.6	14.6

GRAPHS

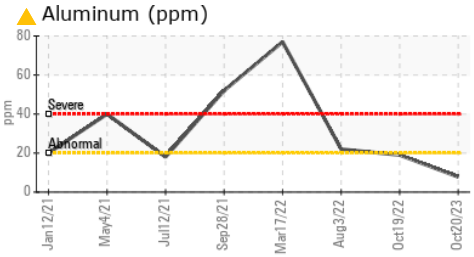
Iron (ppm)



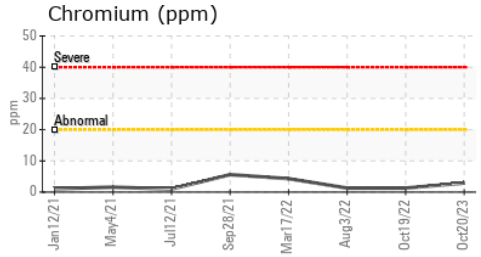
Lead (ppm)



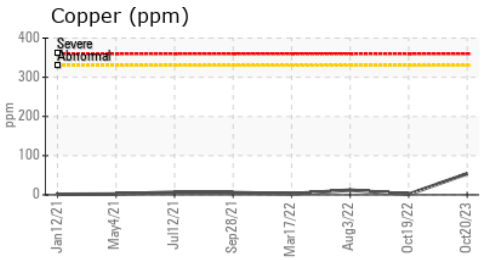
Aluminum (ppm)



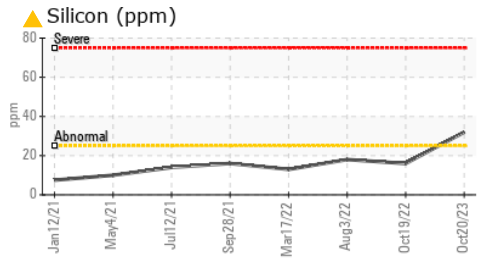
Chromium (ppm)



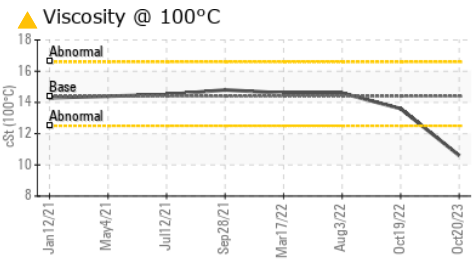
Copper (ppm)



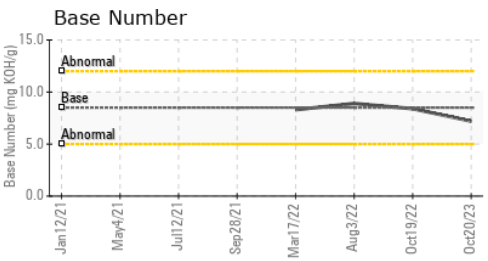
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0745210 **Received** : 06 Nov 2023
Lab Number : 05998699 **Diagnosed** : 07 Nov 2023
Unique Number : 10727059 **Diagnostician** : Doug Bogart
Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel, TBN)

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)

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