



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	SEVERE
FLUID CONDITION	ABNORMAL

Machine Id
INTERNATIONAL 228
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (22 QTS)

RECOMMENDATION

We advise that you check the fuel injection system. 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.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0948931	WC0761289	WC0697043
Sample Date		Client Info		07 Jun 2024	13 Dec 2022	09 May 2022
Machine Age	mls	Client Info		243982	229162	23336
Oil Age	mls	Client Info		0	0	0
Filter Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				SEVERE	NORMAL	NORMAL

WEAR

The iron level is abnormal. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	▲ 97	13	19
Chromium	ppm	ASTM D5185m	>20	4	<1	<1
Nickel	ppm	ASTM D5185m	>50	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>50	● 6	3	3
Lead	ppm	ASTM D5185m	>40	4	<1	1
Copper	ppm	ASTM D5185m	>330	128	<1	6
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

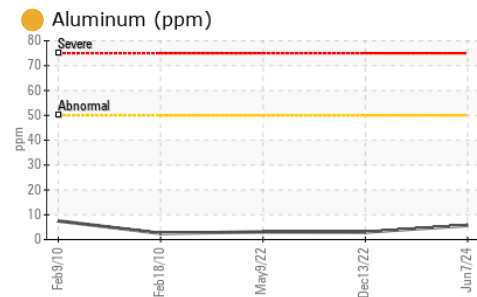
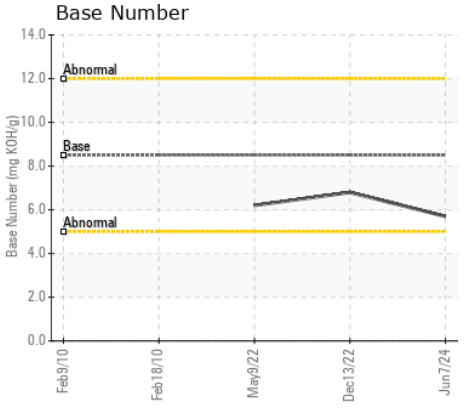
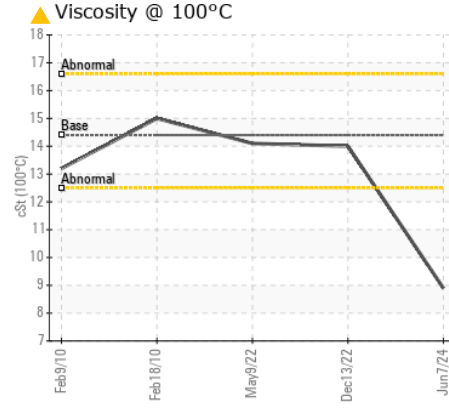
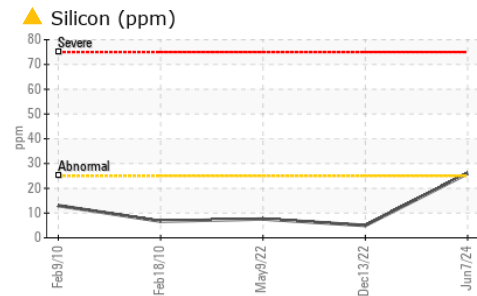
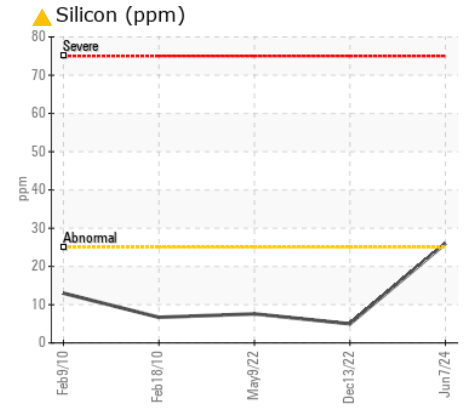
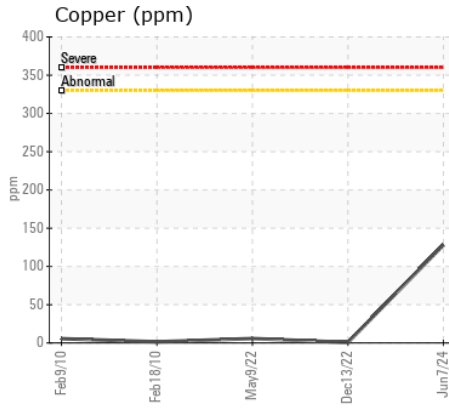
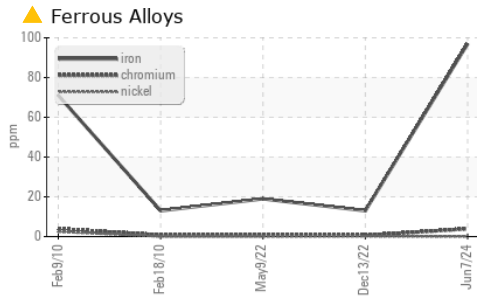
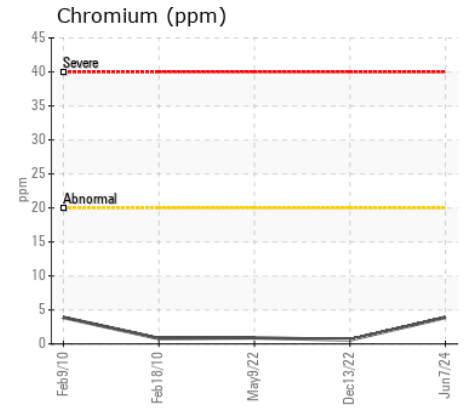
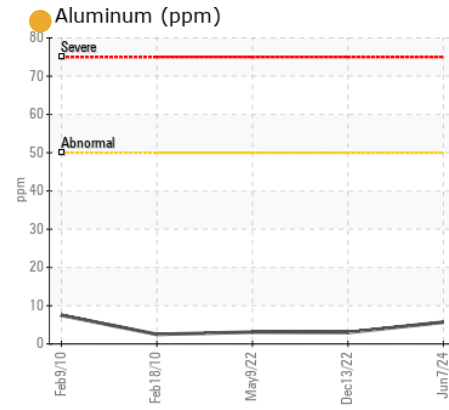
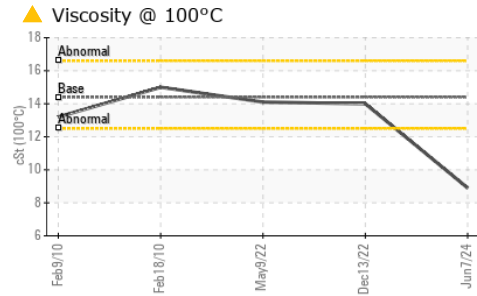
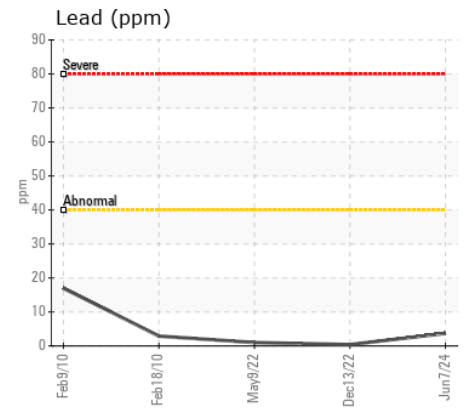
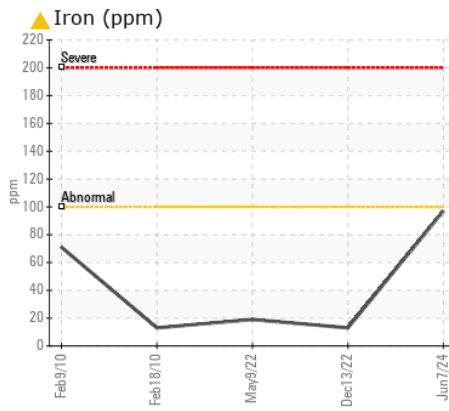
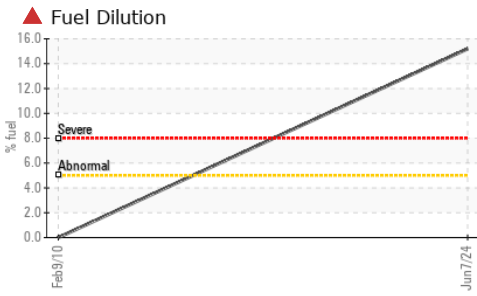
There is a high amount of fuel present in the oil. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>25	▲ 26	5	8
Potassium	ppm	ASTM D5185m	>20	3	0	0
Fuel	%	ASTM D3524	>5	▲ 15.2	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.6	0.4	0.5
Nitration	Abs/cm	*ASTM D7624	>20	11.3	9.9	9.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.8	19.1	20.0
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

FLUID CONDITION

Fuel is present in the oil and is lowering the viscosity. The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Sodium	ppm	ASTM D5185m	>158	5	2	1
Boron	ppm	ASTM D5185m	250	51	34	44
Barium	ppm	ASTM D5185m	10	3	0	0
Molybdenum	ppm	ASTM D5185m	100	77	72	85
Manganese	ppm	ASTM D5185m		4	<1	<1
Magnesium	ppm	ASTM D5185m	450	323	48	55
Calcium	ppm	ASTM D5185m	3000	1536	1979	2305
Phosphorus	ppm	ASTM D5185m	1150	772	910	1079
Zinc	ppm	ASTM D5185m	1350	907	1124	1258
Sulfur	ppm	ASTM D5185m	4250	2835	3611	3431
Oxidation	Abs/.1mm	*ASTM D7414	>25	19.9	14.3	15.1
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	5.7	6.8	6.2
Visc @ 100°C	cSt	ASTM D445	14.4	▲ 8.9	14.0	14.1



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0948931 **Received** : 26 Jun 2024
Lab Number : 06220897 **Tested** : 01 Jul 2024
Unique Number : 11099094 **Diagnosed** : 01 Jul 2024 - Jonathan Hester
Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel, TBN)

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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)