



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	MARGINAL

Machine Id
5919554
 Component
Diesel Engine
 Fluid
VALVOLINE 15W40 (--- GAL)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		IL0036658	IL0035075	IL0034216
Sample Date		Client Info		18 Jun 2024	19 Mar 2024	21 Dec 2023
Machine Age	mls	Client Info		469090	437999	401183
Oil Age	mls	Client Info		0	0	0
Filter Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				MARGINAL	ABNORMAL	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	89	▲ 101	▲ 112
Chromium	ppm	ASTM D5185m	>20	2	4	4
Nickel	ppm	ASTM D5185m	>4	<1	2	<1
Titanium	ppm	ASTM D5185m		1	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	11	11	▲ 18
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	5	6	7
Tin	ppm	ASTM D5185m	>15	<1	1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

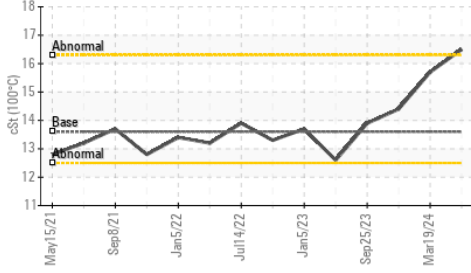
Silicon	ppm	ASTM D5185m	>25	10	12	13
Potassium	ppm	ASTM D5185m	>20	8	8	14
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	1.6	1.4	2
Nitration	Abs/cm	*ASTM D7624	>20	19.4	17.2	17.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	38.5	39.9	37.9
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

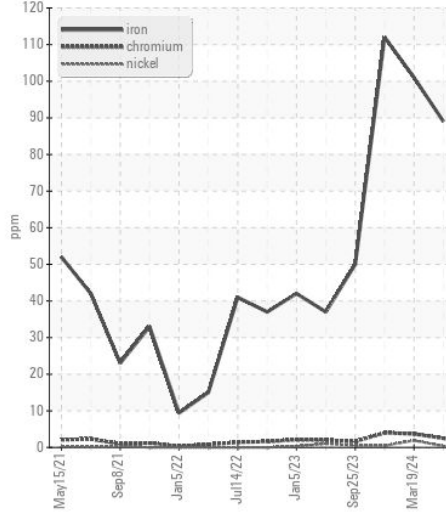
The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m		5	0	2
Boron	ppm	ASTM D5185m	39	21	60	45
Barium	ppm	ASTM D5185m	1	0	<1	0
Molybdenum	ppm	ASTM D5185m	49	91	110	110
Manganese	ppm	ASTM D5185m	1	2	2	0
Magnesium	ppm	ASTM D5185m	616	1105	727	755
Calcium	ppm	ASTM D5185m	1554	1863	1933	1751
Phosphorus	ppm	ASTM D5185m	899	1137	1307	1116
Zinc	ppm	ASTM D5185m	1069	1403	1552	1438
Sulfur	ppm	ASTM D5185m	2624	3244	3276	3171
Oxidation	Abs/.1mm	*ASTM D7414	>25	46.9	46.3	41.4
Base Number (BN)	mg KOH/g	ASTM D2896	6.9	5.1	4.0	4.8
Visc @ 100°C	cSt	ASTM D445	13.6	▲ 16.5	15.7	14.4

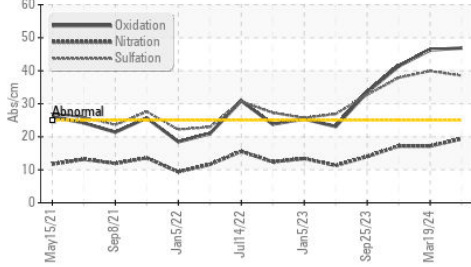
▲ Viscosity @ 100°C



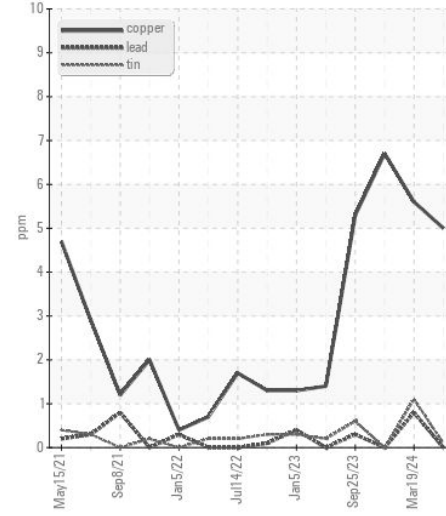
Ferrous Alloys



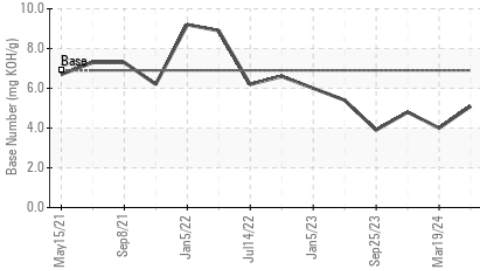
FT-IR (Direct Trend)



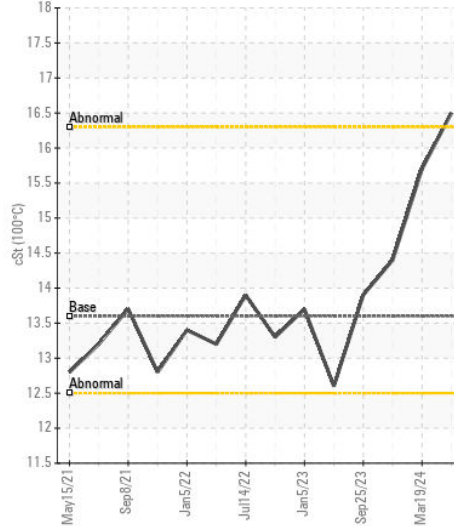
Non-ferrous Metals



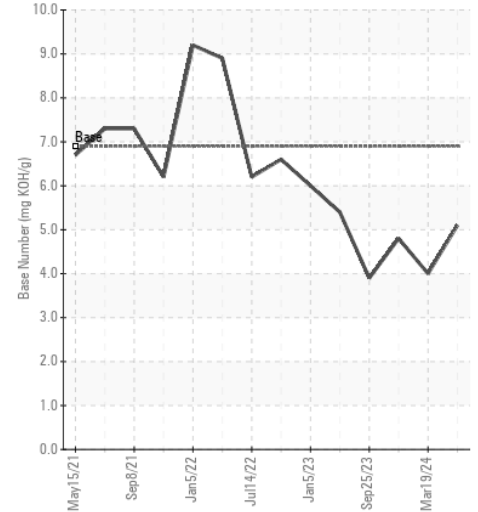
Base Number



▲ Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : IL0036658

Lab Number : 06220671

Unique Number : 11098868

Test Package : FLEET

Received : 26 Jun 2024

Tested : 27 Jun 2024

Diagnosed : 27 Jun 2024 - Jonathan Hester

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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)