



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
C197
 Component
Diesel Engine
 Fluid
SHELL 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0916569	WC0916565	WC0902272
Sample Date		Client Info		14 May 2024	05 Apr 2024	22 Feb 2024
Machine Age	hrs	Client Info		6919	6648	6408
Oil Age	hrs	Client Info		271	240	335
Filter Age	hrs	Client Info		271	240	335
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	27	8	28
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		72	76	59
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	4	2	2
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	4	2	22
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

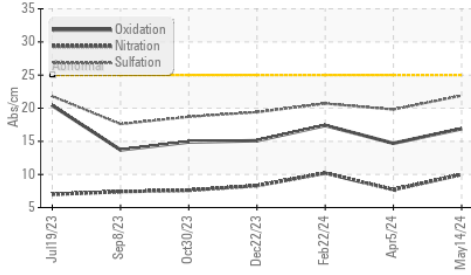
Silicon	ppm	ASTM D5185m	>25	5	4	6
Potassium	ppm	ASTM D5185m	>20	3	4	▲ 48
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	1.4	0.6	0.4
Nitration	Abs/cm	*ASTM D7624	>20	10.0	7.7	10.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.9	19.8	20.7
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

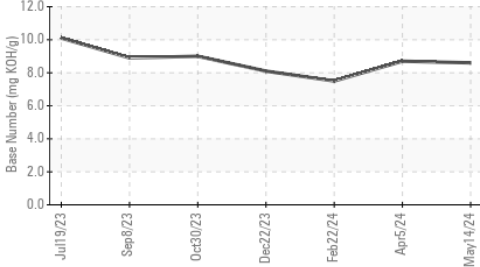
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>150	3	3	19
Boron	ppm	ASTM D5185m		84	119	63
Barium	ppm	ASTM D5185m		0	1	0
Molybdenum	ppm	ASTM D5185m		15	13	25
Manganese	ppm	ASTM D5185m		<1	1	<1
Magnesium	ppm	ASTM D5185m		526	529	573
Calcium	ppm	ASTM D5185m		1820	1667	1529
Phosphorus	ppm	ASTM D5185m		1030	1049	999
Zinc	ppm	ASTM D5185m		1233	1218	1204
Sulfur	ppm	ASTM D5185m		4217	4241	3586
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.9	14.7	17.4
Base Number (BN)	mg KOH/g	ASTM D2896		8.6	8.7	7.5
Visc @ 100°C	cSt	ASTM D445		14.3	13.9	13.5

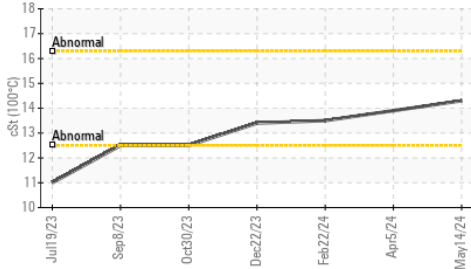
FT-IR (Direct Trend)



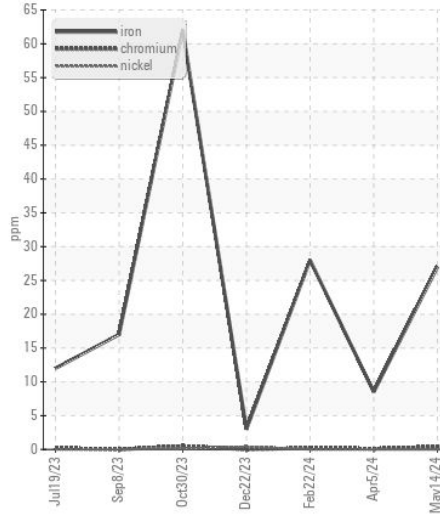
Base Number



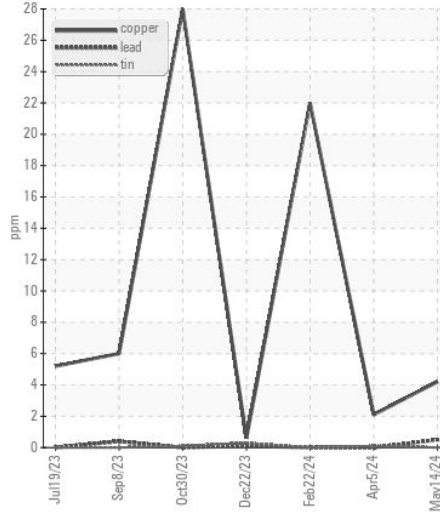
Viscosity @ 100°C



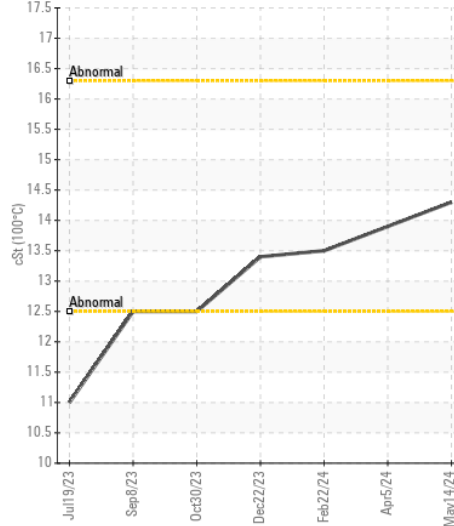
Ferrous Alloys



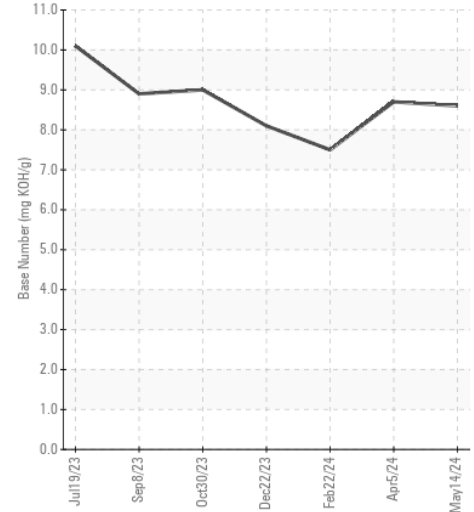
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0916569

Lab Number : 06193501

Unique Number : 11050253

Test Package : CONST (Additional Tests: TBN)

Received : 29 May 2024

Tested : 30 May 2024

Diagnosed : 30 May 2024 - Wes Davis

METRO METALS NORTHWEST INC

2202 EAST RIVER ST

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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)