TRAAP
Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	ABNORMAL

Machine Id
WP2
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 40 (6 QTS)

RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

WEAR

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

CONTAMINATION

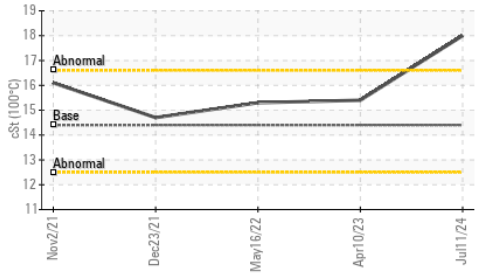
Sodium and/or potassium levels are high. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

FLUID CONDITION

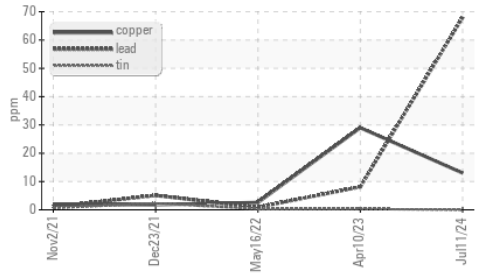
The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR0001671	TR0000795	TR0000690
Sample Date		Client Info		11 Jul 2024	10 Apr 2023	16 May 2022
Machine Age	hrs	Client Info		17812	15488	13656
Oil Age	hrs	Client Info		17812	1	2262
Filter Age	hrs	Client Info		17812	1	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	SEVERE	NORMAL
Iron	ppm	ASTM D5185m	>100	97	▲ 123	19
Chromium	ppm	ASTM D5185m	>20	3	3	<1
Nickel	ppm	ASTM D5185m	>4	0	4	0
Titanium	ppm	ASTM D5185m		1	3	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	● 22	● 31	9
Lead	ppm	ASTM D5185m	>40	▲ 68	8	<1
Copper	ppm	ASTM D5185m	>330	13	29	3
Tin	ppm	ASTM D5185m	>15	0	<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
Silicon	ppm	ASTM D5185m	>25	▲ 59	▲ 101	22
Potassium	ppm	ASTM D5185m	>20	▲ 22	11	4
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol	%	*ASTM D2982		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.2	0.1
Nitration	Abs/cm	*ASTM D7624	>20	18.7	10.9	9.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	31.2	22.6	20.8
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
Sodium	ppm	ASTM D5185m	>216	▲ 164	9	6
Boron	ppm	ASTM D5185m	250	16	17	4
Barium	ppm	ASTM D5185m	10	<1	0	0
Molybdenum	ppm	ASTM D5185m	100	140	101	118
Manganese	ppm	ASTM D5185m		1	2	<1
Magnesium	ppm	ASTM D5185m	450	46	116	34
Calcium	ppm	ASTM D5185m	3000	4695	3611	4736
Phosphorus	ppm	ASTM D5185m	1150	1170	933	940
Zinc	ppm	ASTM D5185m	1350	1405	1212	1129
Sulfur	ppm	ASTM D5185m	4250	5666	4471	4211
Oxidation	Abs/.1mm	*ASTM D7414	>25	24.1	16.1	12.5
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	9.95	10.20	14.3
Visc @ 100°C	cSt	ASTM D445	14.4	▲ 18.0	15.4	15.3

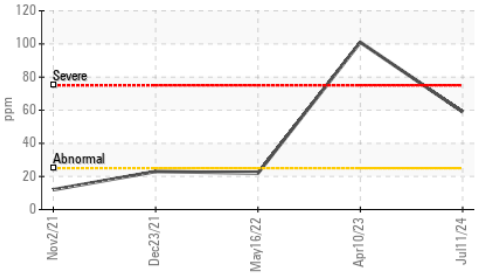
Viscosity @ 100°C



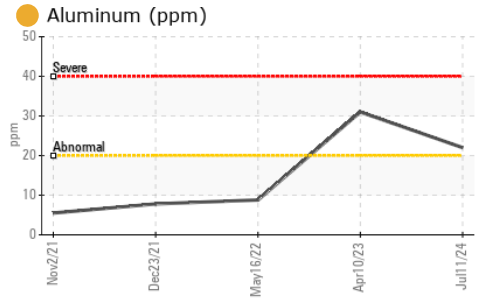
Non-ferrous Metals



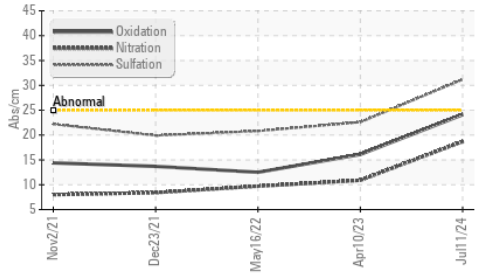
Silicon (ppm)



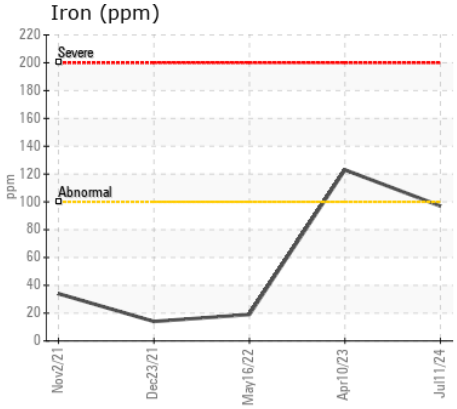
Aluminum (ppm)



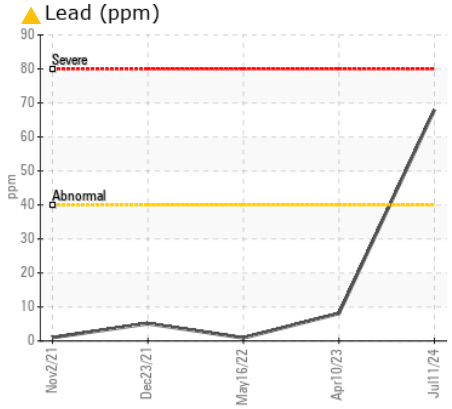
FT-IR (Direct Trend)



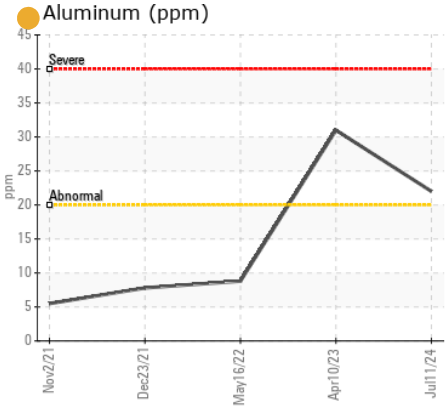
Iron (ppm)



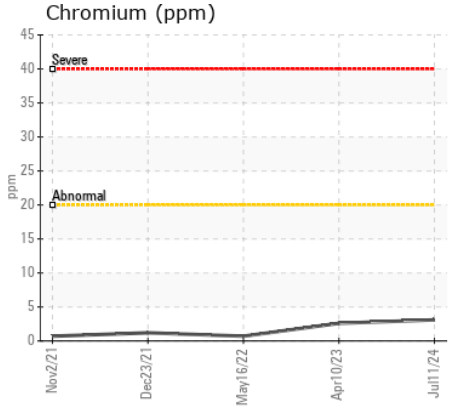
Lead (ppm)



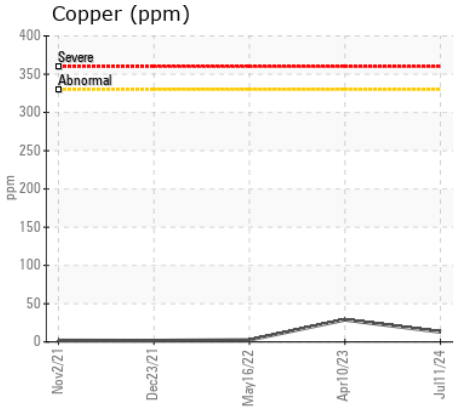
Aluminum (ppm)



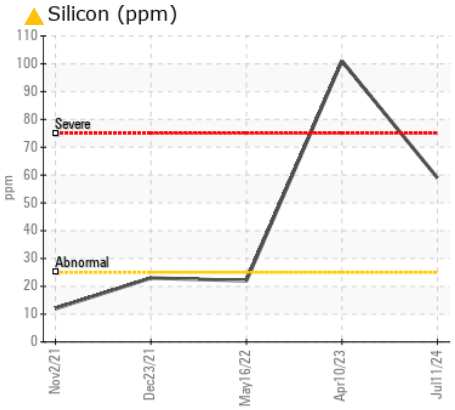
Chromium (ppm)



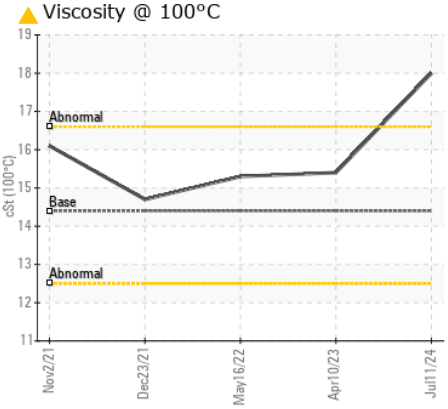
Copper (ppm)



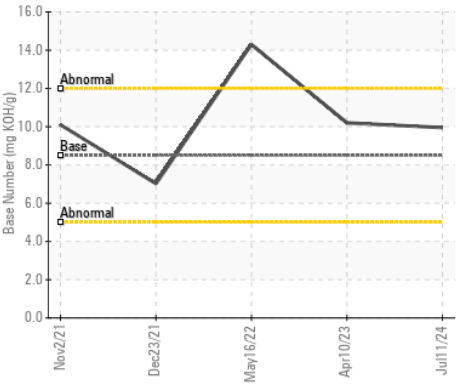
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR0001671
Lab Number : 06236295
Unique Number : 11125129
Test Package : MOB 2 (Additional Tests: Glycol)

Received : 15 Jul 2024
Tested : 17 Jul 2024
Diagnosed : 17 Jul 2024 - Jonathan Hester

To discuss this sample report, contact Customer Service at 1-800-827-0711.
** - 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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