



T R A A P
Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
FREIGHTLINER COLUMBIA 17 (S/N W57062)

Component
Diesel Engine

Fluid
TRC PRO-SPEC III TBN 15 PLUS 15W40 (10 GAL)

RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06055061	TR05764154	TR05176823
Sample Date		Client Info		04 Jan 2024	02 Feb 2023	07 Feb 2021
Machine Age	mls	Client Info		533507	527401	520692
Oil Age	mls	Client Info		23501	17395	10686
Filter Age	mls	Client Info		6106	6709	7549
Oil Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>200	76	69	51
Chromium	ppm	ASTM D5185m	>10	4	3	2
Nickel	ppm	ASTM D5185m	>4	1	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>30	2	4	1
Lead	ppm	ASTM D5185m	>30	1	2	<1
Copper	ppm	ASTM D5185m	>30	▲ 264	6	8
Tin	ppm	ASTM D5185m	>4	1	1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

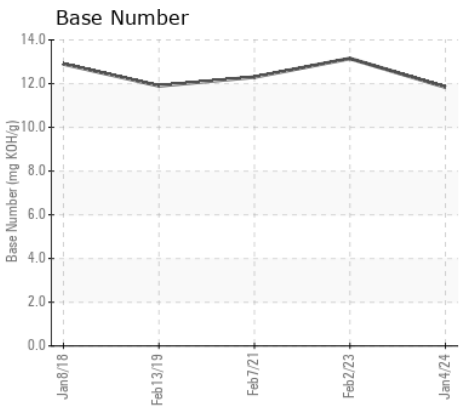
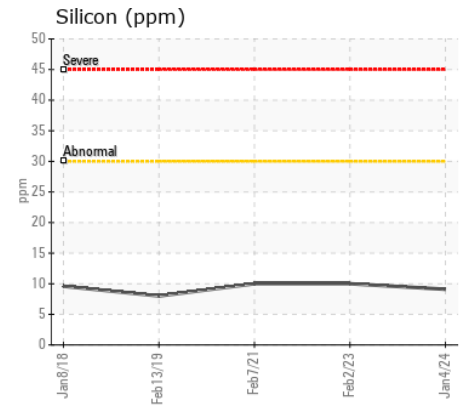
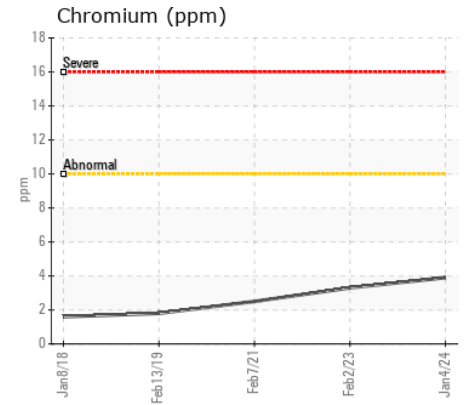
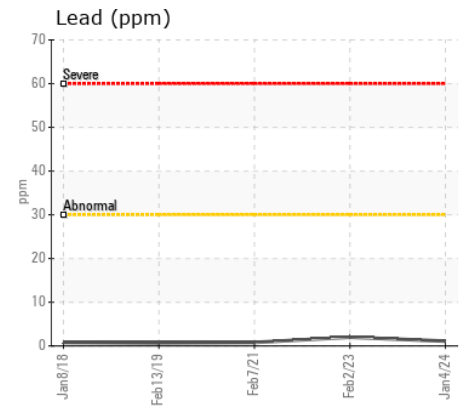
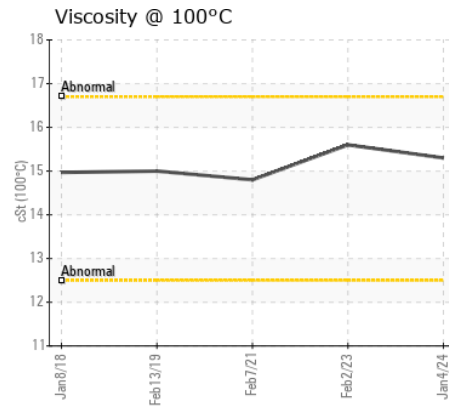
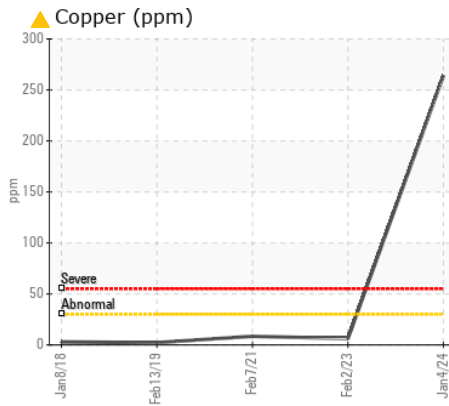
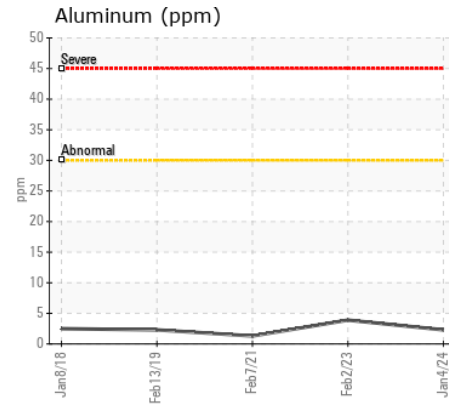
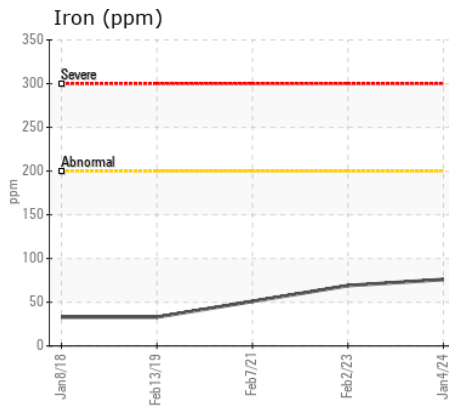
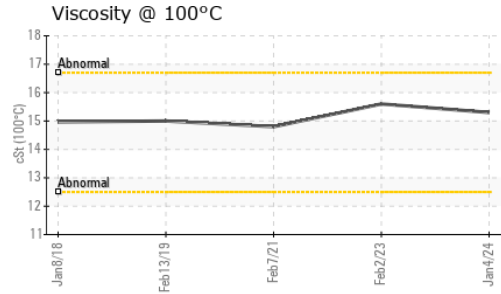
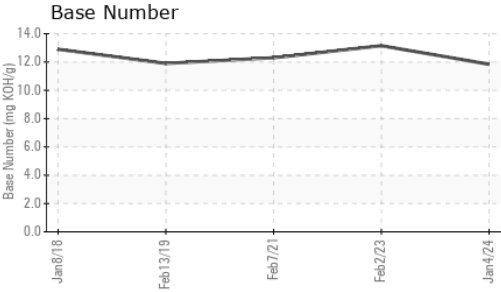
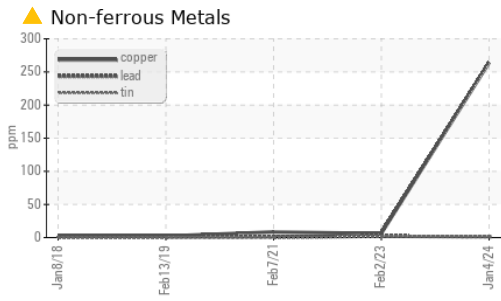
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>30	9	10	10
Potassium	ppm	ASTM D5185m	>20	4	1	3
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	2.5	2.3	1.3
Nitration	Abs/cm	*ASTM D7624	>20	10.1	10.3	8.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	25.2	24.8	22.7
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		4	7	2
Boron	ppm	ASTM D5185m		1	2	6
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		4	5	5
Manganese	ppm	ASTM D5185m		1	<1	<1
Magnesium	ppm	ASTM D5185m		50	60	62
Calcium	ppm	ASTM D5185m		4554	4526	4382
Phosphorus	ppm	ASTM D5185m		1001	1080	1204
Zinc	ppm	ASTM D5185m		1297	1334	1332
Sulfur	ppm	ASTM D5185m		5324	5634	4432
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	14.8	14.9
Base Number (BN)	mg KOH/g	ASTM D2896		11.84	13.15	12.3
Visc @ 100°C	cSt	ASTM D445		15.3	15.6	14.8



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06055061 **Received** : 08 Jan 2024
Lab Number : 06055061 **Diagnosed** : 10 Jan 2024
Unique Number : 10821010 **Diagnostician** : Sean Felton
Test Package : MOB 2

CUSTOM CROP CARE - HELENA AGRI ENT
 309 SOLLID RD
 CONRAD, MT
 US 59425
 Contact: MARK OPHEIM

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)

T:
F: