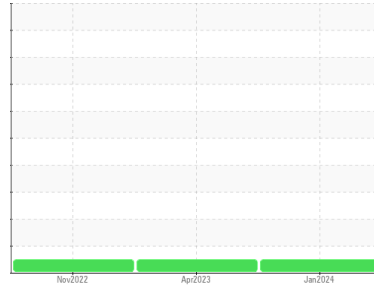




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
TRUCK - URBAN
 Machine Id
WESTERN STAR 88

Component
Diesel Engine
 Fluid
SHELL Rotella T5 15W-40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			PE0003195	PE0001352	PE0000413
Sample Date	Client Info			16 Jan 2024	11 Apr 2023	18 Nov 2022
Machine Age	mls	Client Info		607868	594966	577363
Oil Age	mls	Client Info		12902	17603	17300
Oil Changed	Client Info			Changed	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel	WC Method	>5		<1.0	<1.0	<1.0
Water	WC Method	>0.2		NEG	NEG	NEG
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	23	53	45
Chromium	ppm	ASTM D5185m	>20	<1	2	1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	2
Lead	ppm	ASTM D5185m	>40	2	0	1
Copper	ppm	ASTM D5185m	>330	5	6	6
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0

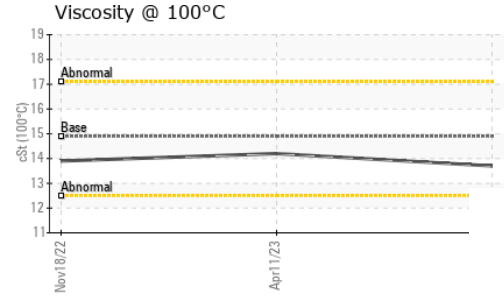
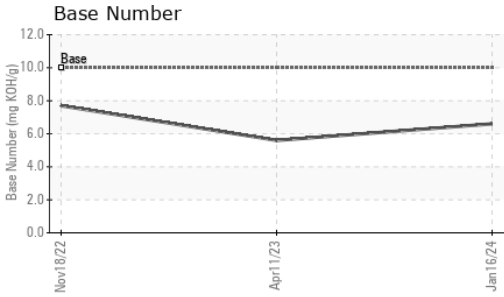
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		25	33	31
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		57	70	60
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		335	453	367
Calcium	ppm	ASTM D5185m		1560	1674	1763
Phosphorus	ppm	ASTM D5185m		859	971	954
Zinc	ppm	ASTM D5185m		1036	1197	1177
Sulfur	ppm	ASTM D5185m		2868	3778	3706

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	3	5	5
Sodium	ppm	ASTM D5185m		2	3	<1
Potassium	ppm	ASTM D5185m	>20	1	<1	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.3	0.3	0.4
Nitration	Abs/cm	*ASTM D7624	>20	12.2	12.5	13.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.1	23.3	25.0

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	23.2	27.4	25.5
Base Number (BN)	mg KOH/g	ASTM D2896	10	6.6	5.6	7.7

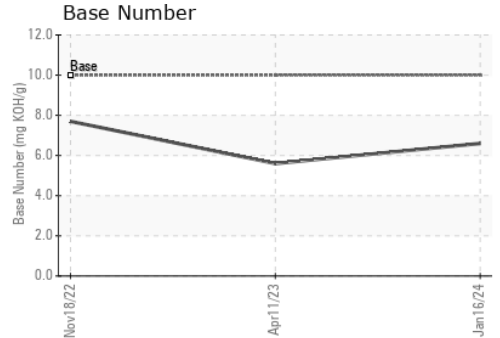
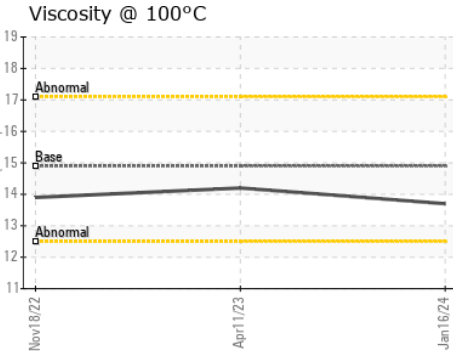
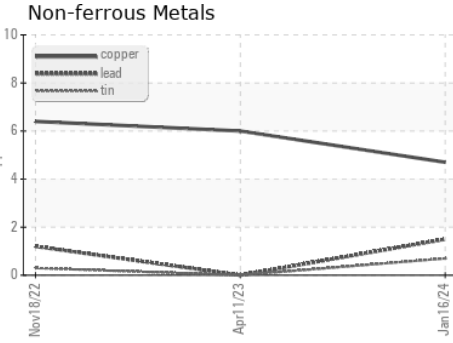
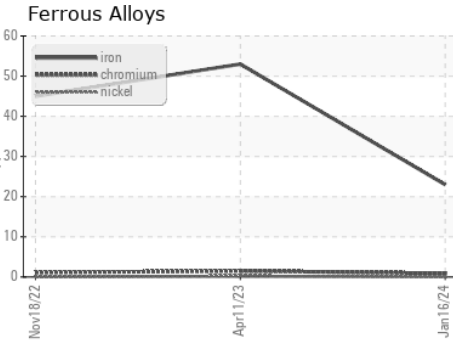
OIL ANALYSIS REPORT



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	14.9	13.7	14.2	13.9

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PE0003195 **Recieved** : 31 Jan 2024
Lab Number : **06076355** **Diagnosed** : 02 Feb 2024
Unique Number : 10858446 **Diagnostician** : Don Baldrige
Test Package : CONST (Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN)

PetroCard - Aberdeen
 110 Commerce St
 Aberdeen, WA
 US 98520
 Contact: Sean McNealley
 smcnealley@petrocard.com

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)