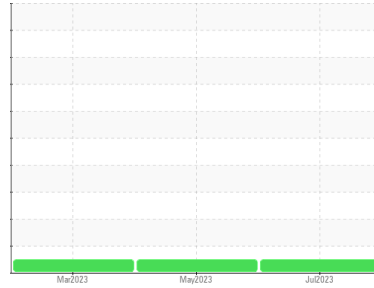




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
TRUCK - URBAN
 Machine Id
WESTERN STAR T147
 Component
Diesel Engine
 Fluid
SHELL Rotella T5 15W-40 (10 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			PE0001320	PE0001359	PE0001331
Sample Date	Client Info			17 Jul 2023	24 May 2023	29 Mar 2023
Machine Age	hrs	Client Info		2778	2220	1639
Oil Age	hrs	Client Info		558	581	743
Oil Changed	Client Info			Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel	WC Method	>3.0		<1.0	<1.0	<1.0
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>165	23	26	40
Chromium	ppm	ASTM D5185m	>5	<1	<1	2
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	8	15	29
Lead	ppm	ASTM D5185m	>150	3	2	4
Copper	ppm	ASTM D5185m	>90	1	3	7
Tin	ppm	ASTM D5185m	>5	<1	1	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0

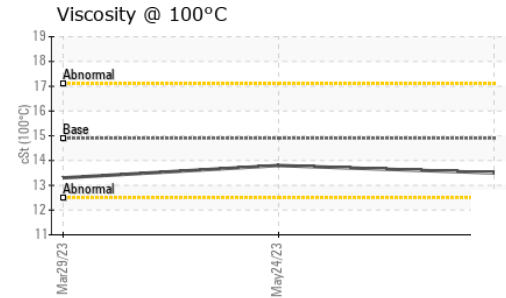
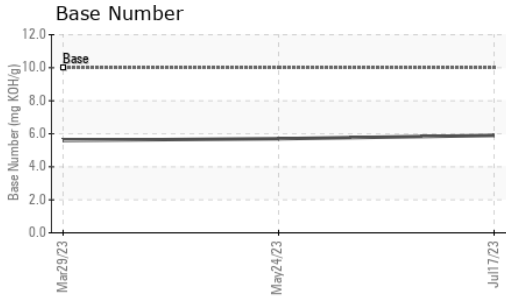
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		184	25	25
Barium	ppm	ASTM D5185m		<1	0	0
Molybdenum	ppm	ASTM D5185m		88	87	76
Manganese	ppm	ASTM D5185m		<1	<1	2
Magnesium	ppm	ASTM D5185m		358	66	106
Calcium	ppm	ASTM D5185m		1625	2262	2186
Phosphorus	ppm	ASTM D5185m		1060	1008	977
Zinc	ppm	ASTM D5185m		1354	1320	1232
Sulfur	ppm	ASTM D5185m		3744	4158	3587

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>35	7	8	11
Sodium	ppm	ASTM D5185m		2	2	3
Potassium	ppm	ASTM D5185m	>20	15	30	68

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>7.5	0.4	0.4	0.4
Nitration	Abs/cm	*ASTM D7624	>20	8.9	10.2	10.4
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.7	22.0	22.5

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	18.5	17.2	18.4
Base Number (BN)	mg KOH/g	ASTM D2896	10	5.9	5.7	5.6

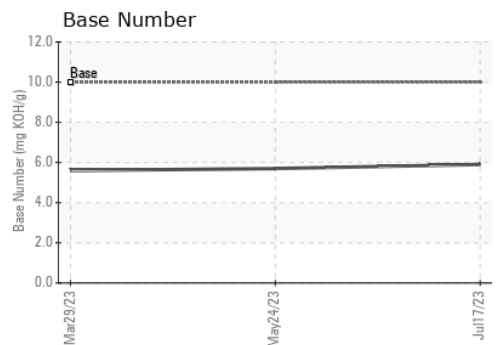
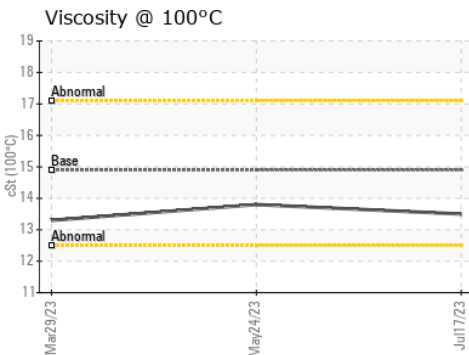
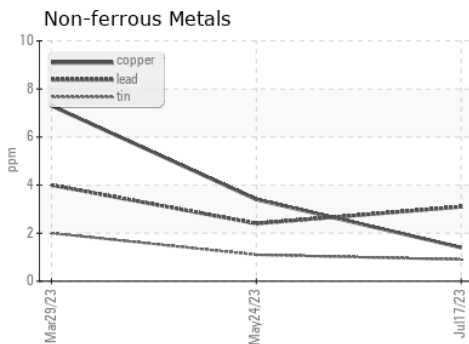
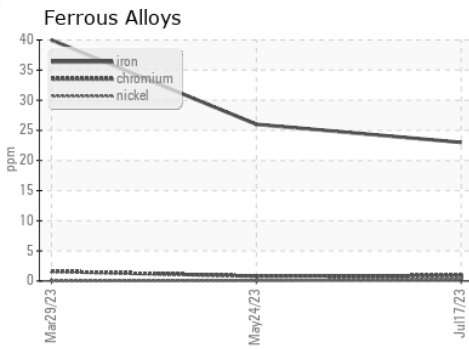
OIL ANALYSIS REPORT



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	13.5	13.8	13.3

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PE0001320 **Received** : 21 Jul 2023
Lab Number : **05904847** **Diagnosed** : 25 Jul 2023
Unique Number : 10566203 **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

Certificate L2367
 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)