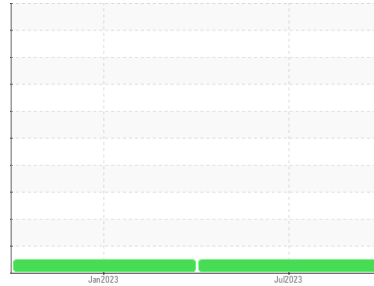




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
TRUCK - URBAN
Machine Id
WESTERN STAR M138
Component
Diesel Engine
Fluid
SHELL Rotella T5 15W-40 (7 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		PE0000468	PE0001193	---
Sample Date	Client Info		12 Jul 2023	09 Jan 2023	---
Machine Age	hrs	Client Info	11506	9860	---
Oil Age	hrs	Client Info	601	960	---
Oil Changed	Client Info		Changed	Changed	---
Sample Status			NORMAL	NORMAL	---

CONTAMINATION

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

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	15	33	---
Chromium	ppm	ASTM D5185m >20	<1	1	---
Nickel	ppm	ASTM D5185m >4	0	0	---
Titanium	ppm	ASTM D5185m	0	0	---
Silver	ppm	ASTM D5185m >3	0	0	---
Aluminum	ppm	ASTM D5185m >20	5	7	---
Lead	ppm	ASTM D5185m >40	<1	0	---
Copper	ppm	ASTM D5185m >330	1	2	---
Tin	ppm	ASTM D5185m >15	<1	<1	---
Vanadium	ppm	ASTM D5185m	0	0	---
Cadmium	ppm	ASTM D5185m	0	0	---

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	1	22	---
Barium	ppm	ASTM D5185m	0	0	---
Molybdenum	ppm	ASTM D5185m	63	80	---
Manganese	ppm	ASTM D5185m	<1	<1	---
Magnesium	ppm	ASTM D5185m	837	53	---
Calcium	ppm	ASTM D5185m	1168	2056	---
Phosphorus	ppm	ASTM D5185m	1016	908	---
Zinc	ppm	ASTM D5185m	1250	1072	---
Sulfur	ppm	ASTM D5185m	3302	3134	---

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	5	8	---
Sodium	ppm	ASTM D5185m	0	7	---
Potassium	ppm	ASTM D5185m >20	6	16	---

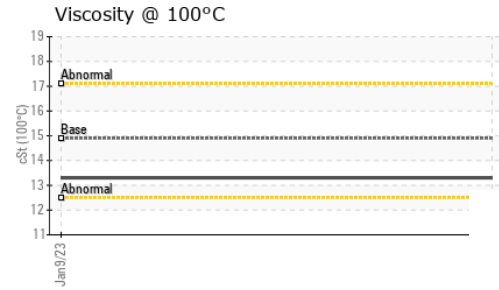
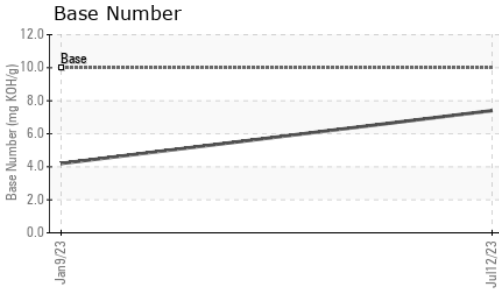
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.6	0.8	---
Nitration	Abs/cm	*ASTM D7624 >20	11.1	12.6	---
Sulfation	Abs/.1mm	*ASTM D7415 >30	21.9	27.0	---

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	19.8	22.8	---
Base Number (BN)	mg KOH/g	ASTM D2896 10	7.4	4.2	---

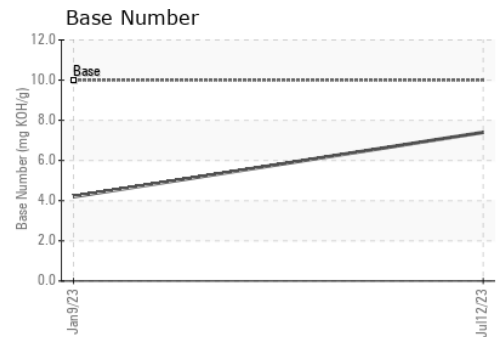
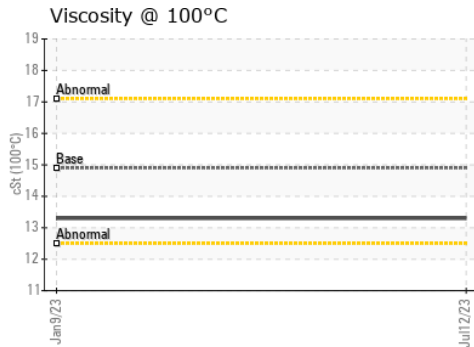
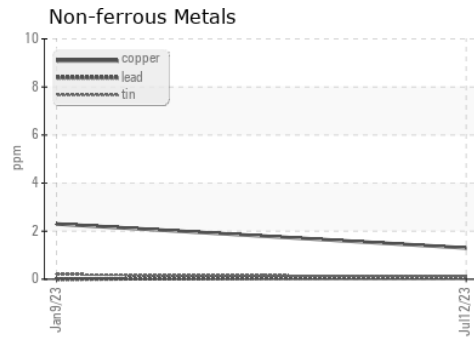
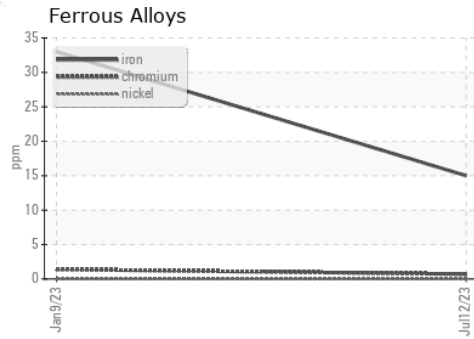
OIL ANALYSIS REPORT



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

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	14.9	13.3	13.3	---

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PE0000468 **Received** : 19 Jul 2023
Lab Number : **05902776** **Diagnosed** : 21 Jul 2023
Unique Number : 10564132 **Diagnostician** : Sean Felton
Test Package : CONST (Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN)

PetroCard - Aberdeen
 110 Commerce St
 Aberdeen, WA
 US 98520
 Contact: ED ROZMARYN
 erozmaryn@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)

T:
F: