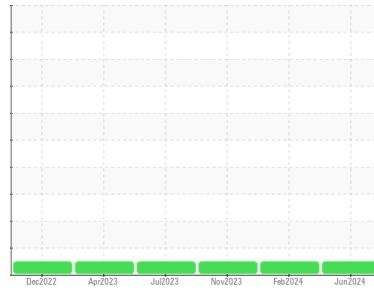




OIL ANALYSIS REPORT

Area
TRUCK - URBAN
 Machine Id
WESTERN STAR 144
 Component
Diesel Engine
 Fluid
SHELL Rotella T5 15W-40 (10 GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation
 Resample at the next service interval to monitor.

Wear
 All component wear rates are normal.

Contamination
 Fuel content negligible. 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		PE0004124	PE0000490	PE0002434
Sample Date	Client Info		13 Jun 2024	21 Feb 2024	03 Nov 2023
Machine Age	hrs	Client Info	4880	4338	6012
Oil Age	hrs	Client Info	542	462	610
Oil Changed	Client Info		Changed	Changed	Changed
Sample Status			NORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
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	14	18	14
Chromium	ppm	ASTM D5185m >20	<1	<1	<1
Nickel	ppm	ASTM D5185m >4	<1	0	<1
Titanium	ppm	ASTM D5185m	0	<1	0
Silver	ppm	ASTM D5185m >3	<1	0	<1
Aluminum	ppm	ASTM D5185m >20	6	5	8
Lead	ppm	ASTM D5185m >40	2	2	4
Copper	ppm	ASTM D5185m >330	<1	<1	0
Tin	ppm	ASTM D5185m >15	1	<1	1
Vanadium	ppm	ASTM D5185m	0	0	<1
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	13	29	124
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	63	67	84
Manganese	ppm	ASTM D5185m	<1	<1	<1
Magnesium	ppm	ASTM D5185m	912	817	352
Calcium	ppm	ASTM D5185m	1345	1255	1474
Phosphorus	ppm	ASTM D5185m	1077	1020	1062
Zinc	ppm	ASTM D5185m	1348	1277	1317
Sulfur	ppm	ASTM D5185m	3665	2977	3088

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	7	6	8
Sodium	ppm	ASTM D5185m	2	0	<1
Potassium	ppm	ASTM D5185m >20	7	10	11
Fuel	%	ASTM D3524 >5	0.5	<1.0	<1.0

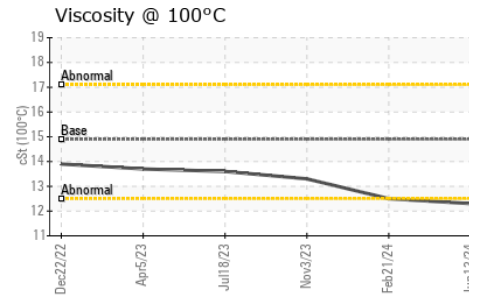
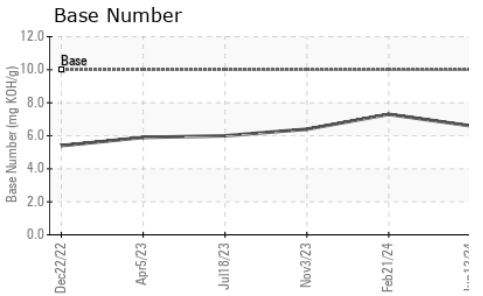
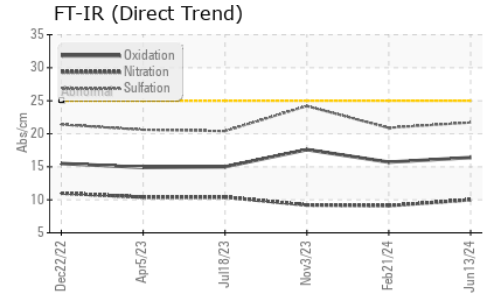
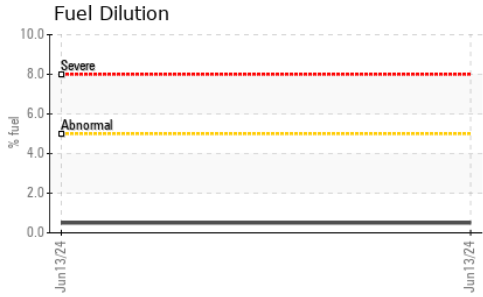
INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.7	0.6	0.8
Nitration	Abs/cm	*ASTM D7624 >20	10.0	9.1	9.2
Sulfation	Abs/.1mm	*ASTM D7415 >30	21.7	20.9	24.2

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	16.4	15.7	17.6
Base Number (BN)	mg KOH/g	ASTM D2896 10	6.6	7.3	6.4

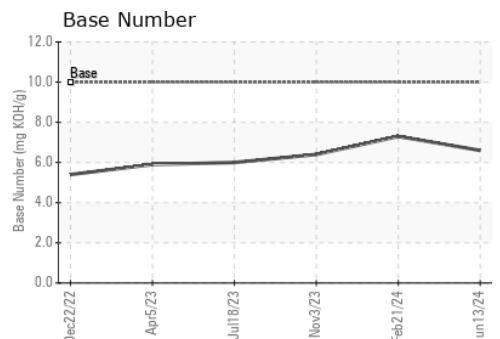
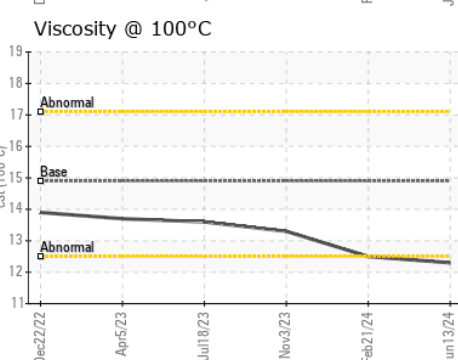
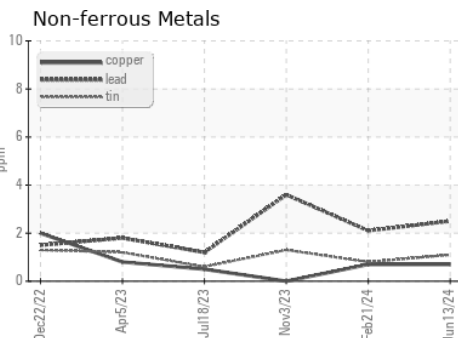
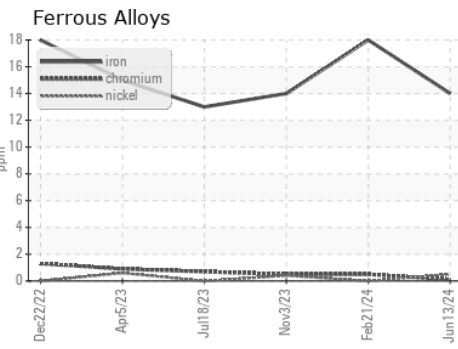
OIL ANALYSIS REPORT



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	12.3	12.5	13.3

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PE0004124 **Received** : 21 Jun 2024
Lab Number : **06217476** **Tested** : 27 Jun 2024
Unique Number : 11090340 **Diagnosed** : 27 Jun 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: FT-IR, FUELDILUTION, ICP, KV100, PercentFuel, SCREENING)

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)