



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
WESTERN STAR 4700SF HPHZ4512

Component
Diesel Engine

Fluid
TRC MOLY XL PRO-SPEC IV XP 15W40 (--- QTS)

RECOMMENDATION

No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06045704	TR05675218	---
Sample Date		Client Info		16 Dec 2023	18 Oct 2022	---
Machine Age	hrs	Client Info		7510	7375	---
Oil Age	hrs	Client Info		364	250	---
Filter Age	hrs	Client Info		364	250	---
Oil Changed		Client Info		Not Changd	Not Changd	---
Filter Changed		Client Info		Not Changd	Not Changd	---
Sample Status				ABNORMAL	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).

Iron	ppm	ASTM D5185m	>65	17	6	---
Chromium	ppm	ASTM D5185m	>5	1	<1	---
Nickel	ppm	ASTM D5185m	>3	0	0	---
Titanium	ppm	ASTM D5185m	>5	<1	<1	---
Silver	ppm	ASTM D5185m	>2	0	0	---
Aluminum	ppm	ASTM D5185m	>35	10	3	---
Lead	ppm	ASTM D5185m	>10	0	0	---
Copper	ppm	ASTM D5185m	>180	▲ 566	8	---
Tin	ppm	ASTM D5185m	>8	1	<1	---
Vanadium	ppm	ASTM D5185m		0	0	---
White Metal	scalar	*Visual	NONE	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	---

CONTAMINATION

There is no indication of any contamination in the oil.

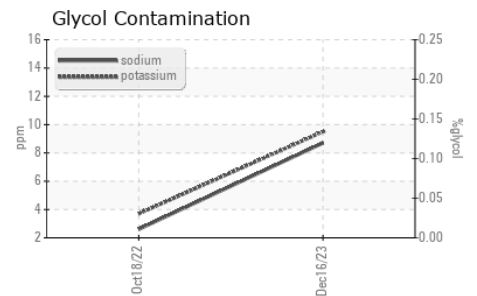
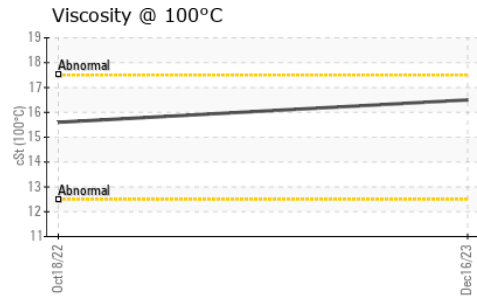
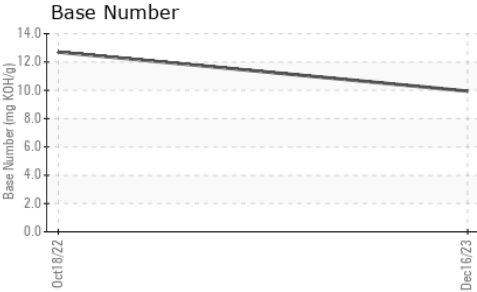
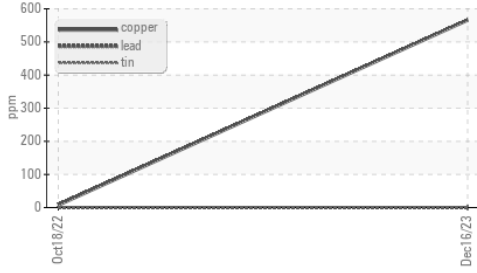
Silicon	ppm	ASTM D5185m	>15	5	6	---
Potassium	ppm	ASTM D5185m	>20	10	4	---
Fuel		WC Method	>3.0	<1.0	<1.0	---
Water		WC Method	>0.2	NEG	NEG	---
Glycol	%	*ASTM D2982		NEG	NEG	---
Soot %	%	*ASTM D7844	>3	0.2	0.2	---
Nitration	Abs/cm	*ASTM D7624	>20	9.9	9.0	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.9	19.2	---
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	---

FLUID CONDITION

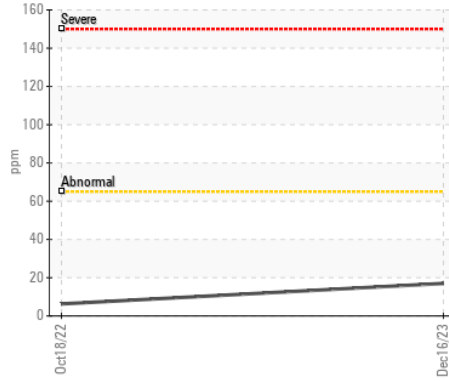
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		9	3	---
Boron	ppm	ASTM D5185m		5	8	---
Barium	ppm	ASTM D5185m		0	0	---
Molybdenum	ppm	ASTM D5185m		115	118	---
Manganese	ppm	ASTM D5185m		<1	<1	---
Magnesium	ppm	ASTM D5185m		87	93	---
Calcium	ppm	ASTM D5185m		3963	4009	---
Phosphorus	ppm	ASTM D5185m		891	904	---
Zinc	ppm	ASTM D5185m		1064	1089	---
Sulfur	ppm	ASTM D5185m		3319	5139	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	12.4	11.3	---
Base Number (BN)	mg KOH/g	ASTM D2896		9.94	12.7	---
Visc @ 100°C	cSt	ASTM D445		16.5	15.6	---

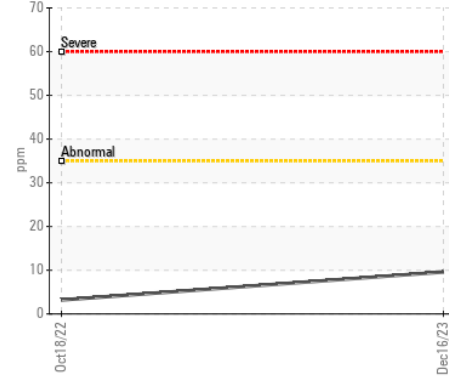
▲ Non-ferrous Metals



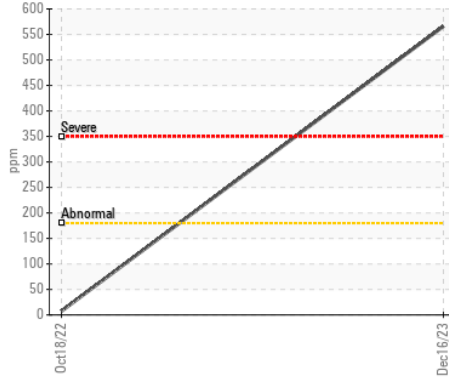
Iron (ppm)



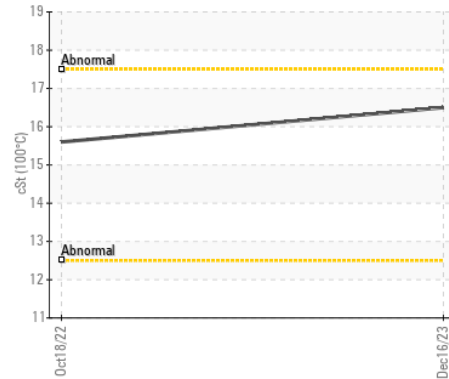
Aluminum (ppm)



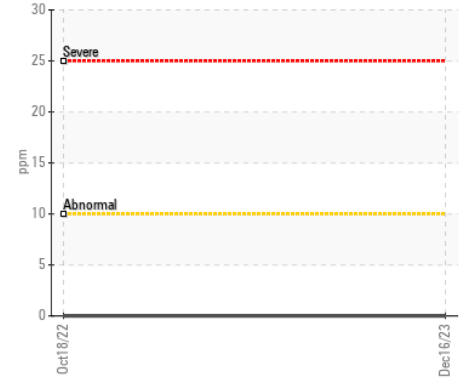
▲ Copper (ppm)



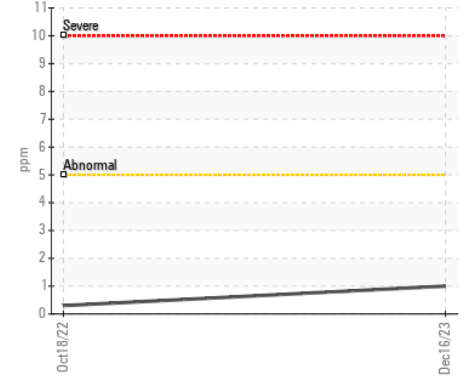
Viscosity @ 100°C



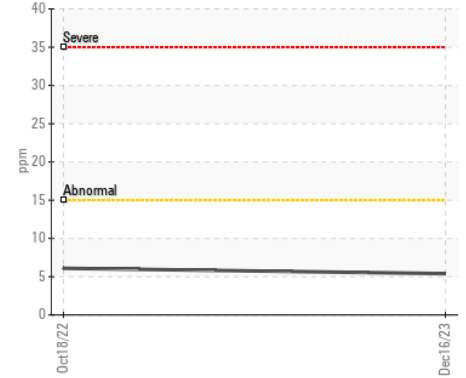
Lead (ppm)



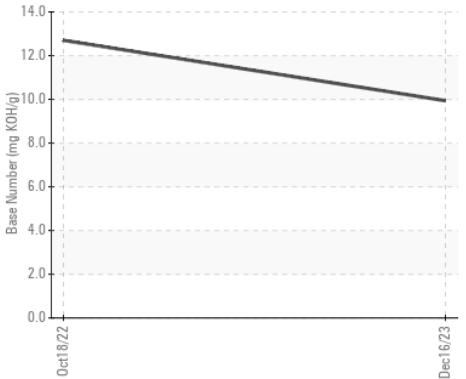
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06045704 **Received** : 26 Dec 2023
Lab Number : 06045704 **Tested** : 28 Dec 2023
Unique Number : 10806312 **Diagnosed** : 28 Dec 2023 - Jonathan Hester
Test Package : MOB 2 (Additional Tests: Glycol)

ADVANCE SITWORKS
 154 SOUTH RD
 NEWBURY, NH
 US 03255
 Contact: DON PERCY

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)

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F: