



TRAAP

Texas Refinery Advanced Analysis Program

# OIL ANALYSIS REPORT

WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>ABNORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**KENWORTH 11**

Component  
**Diesel Engine**

Fluid  
**TRC PRO-SPEC III SYNTHETIC BLEND 15W40 (11 GAL)**

## RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06231876	---	---
Sample Date		Client Info		01 Jun 2024	---	---
Machine Age	mls	Client Info		344000	---	---
Oil Age	mls	Client Info		18000	---	---
Filter Age	mls	Client Info		18000	---	---
Oil Changed		Client Info		Changed	---	---
Filter Changed		Client Info		Changed	---	---
Sample Status				ABNORMAL	---	---

## WEAR

Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>200	56	---	---
Chromium	ppm	ASTM D5185m	>10	2	---	---
Nickel	ppm	ASTM D5185m	>4	<1	---	---
Titanium	ppm	ASTM D5185m	>2	<1	---	---
Silver	ppm	ASTM D5185m	>2	0	---	---
Aluminum	ppm	ASTM D5185m	>30	2	---	---
Lead	ppm	ASTM D5185m	>30	▲ 47	---	---
Copper	ppm	ASTM D5185m	>30	3	---	---
Tin	ppm	ASTM D5185m	>4	5	---	---
Vanadium	ppm	ASTM D5185m		0	---	---
White Metal	scalar	*Visual	NONE	NONE	---	---
Yellow Metal	scalar	*Visual	NONE	NONE	---	---

## CONTAMINATION

Elemental level of silicon (Si) above normal indicating ingress of seal material.

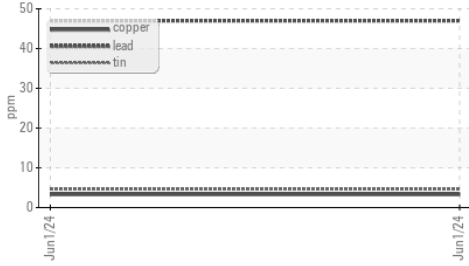
Silicon	ppm	ASTM D5185m	>30	▲ 86	---	---
Potassium	ppm	ASTM D5185m	>20	4	---	---
Fuel		WC Method	>3.0	<1.0	---	---
Water		WC Method	>0.2	NEG	---	---
Glycol		WC Method		NEG	---	---
Soot %	%	*ASTM D7844	>3	0.8	---	---
Nitration	Abs/cm	*ASTM D7624	>20	9.8	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	26.7	---	---
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	---	---

## FLUID CONDITION

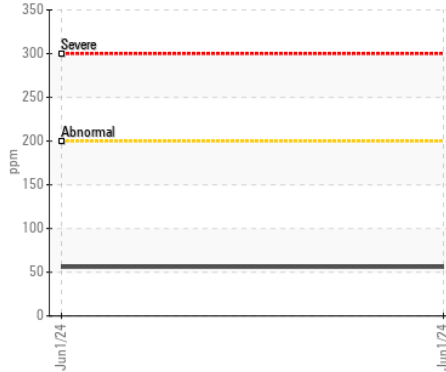
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m		8	---	---
Boron	ppm	ASTM D5185m		4	---	---
Barium	ppm	ASTM D5185m		0	---	---
Molybdenum	ppm	ASTM D5185m		2	---	---
Manganese	ppm	ASTM D5185m		<1	---	---
Magnesium	ppm	ASTM D5185m		23	---	---
Calcium	ppm	ASTM D5185m		2449	---	---
Phosphorus	ppm	ASTM D5185m		873	---	---
Zinc	ppm	ASTM D5185m		1027	---	---
Sulfur	ppm	ASTM D5185m		4085	---	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	21.0	---	---
Base Number (BN)	mg KOH/g	ASTM D2896		4.99	---	---
Visc @ 100°C	cSt	ASTM D445	15.5	13.6	---	---

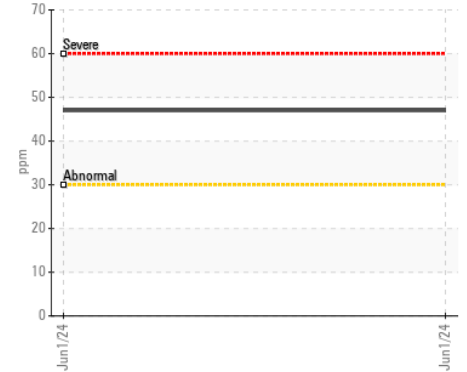
▲ Non-ferrous Metals



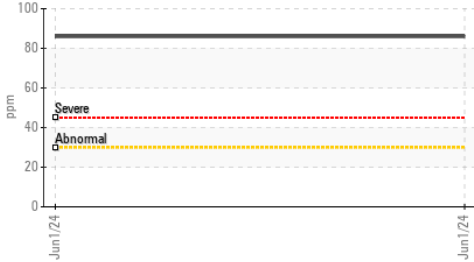
Iron (ppm)



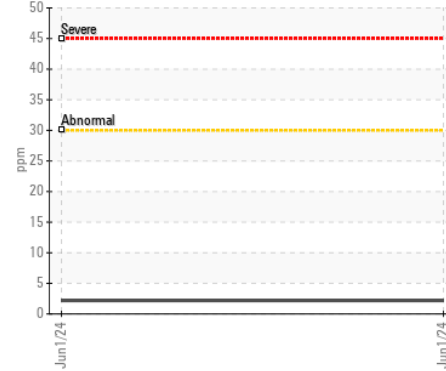
▲ Lead (ppm)



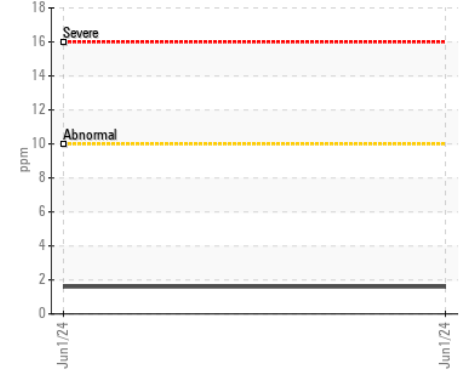
▲ Silicon (ppm)



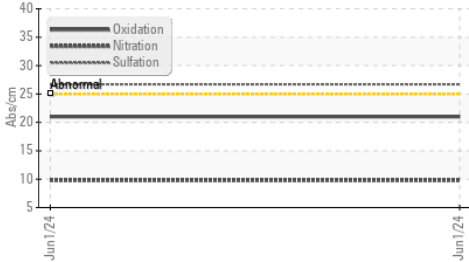
Aluminum (ppm)



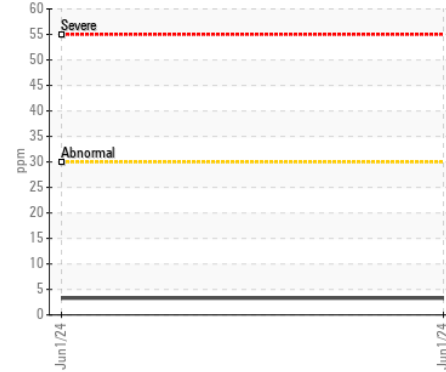
Chromium (ppm)



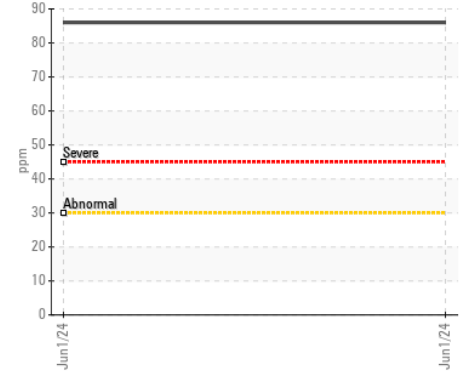
FT-IR (Direct Trend)



Copper (ppm)



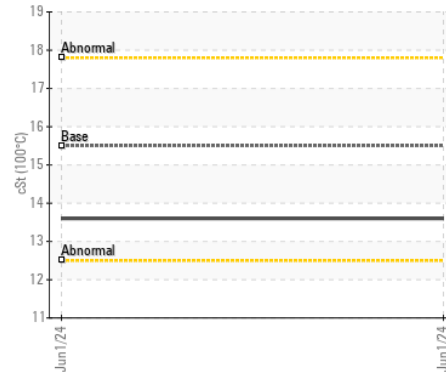
▲ Silicon (ppm)



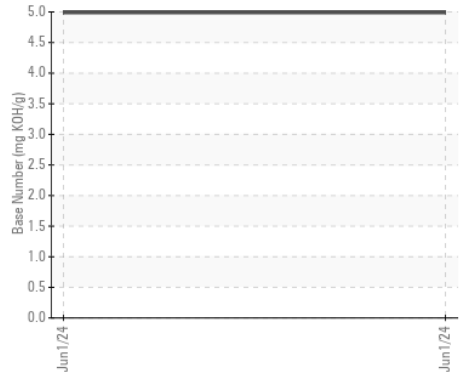
Base Number



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : TR06231876  
 Lab Number : 06231876  
 Unique Number : 11115369  
 Test Package : MOB 2 ( Additional Tests: TAN MAN )

Received : 09 Jul 2024  
 Tested : 11 Jul 2024  
 Diagnosed : 11 Jul 2024 - Jonathan Hester

**DN HINES CO LLC**  
 PO BOX 901  
 NAPAVINE, WA  
 US 98565  
 Contact: JEFF WARREN

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)

T:  
F: