



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
CATERPILLAR 924H CAT0924HHXC02109

Component
Rear Diesel Engine

Fluid
TRC PRO-SPEC III SYNTHETIC BLEND 15W40 (5 GAL)

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06219936	TR05868112	TR05324664
Sample Date		Client Info		09 Apr 2024	05 Feb 2023	03 Apr 2021
Machine Age	hrs	Client Info		17612	17063	15855
Oil Age	hrs	Client Info		549	455	367
Filter Age	hrs	Client Info		549	455	367
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	ABNORMAL	NORMAL

WEAR

The copper level is abnormal. Elemental level of copper (Cu) probably due to leaching of copper from copper components (i.e. cooling core) by the oil additives. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	23	16	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	1	0
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	▲ 217	▲ 260	<1
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

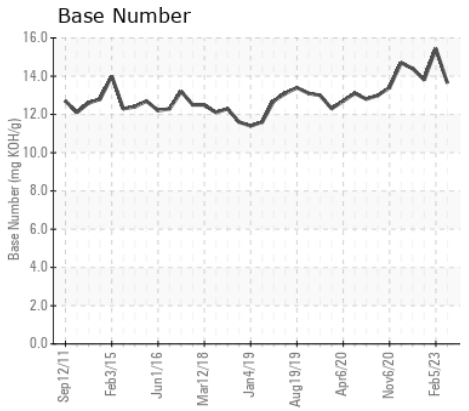
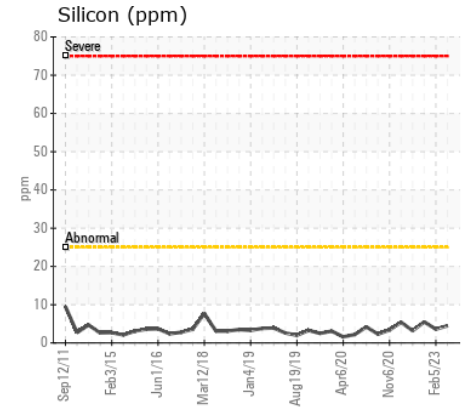
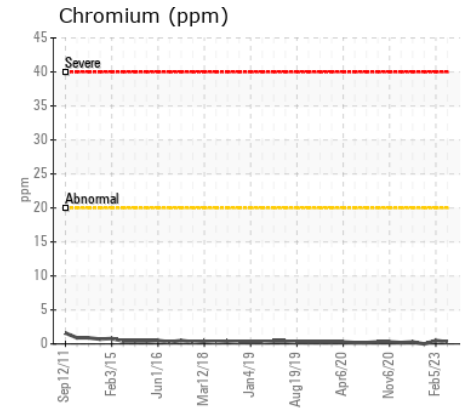
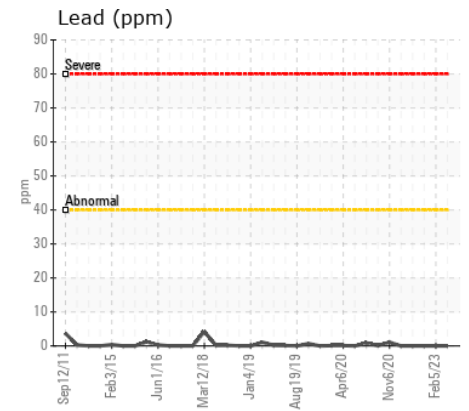
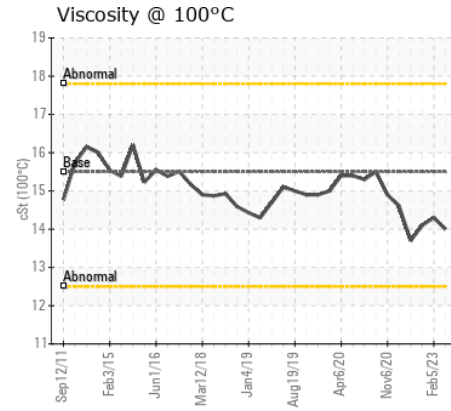
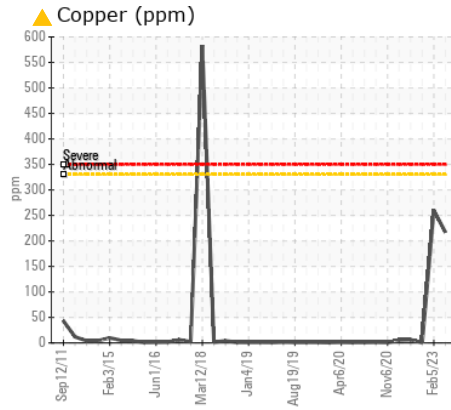
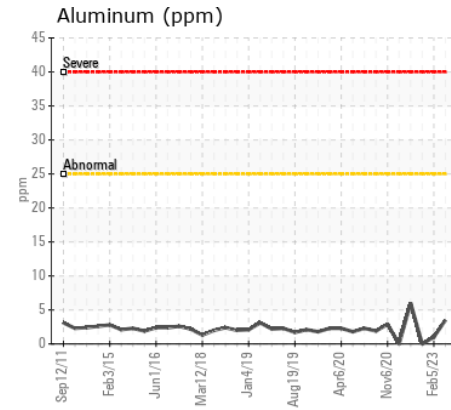
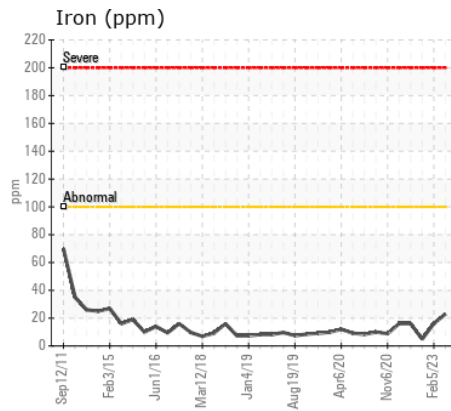
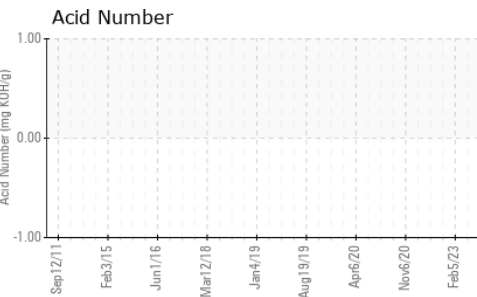
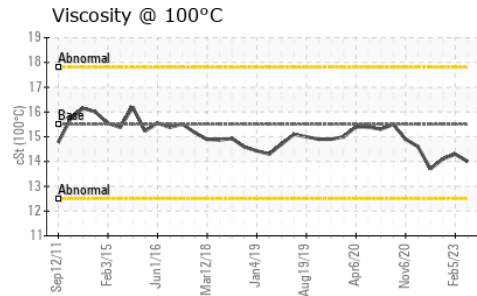
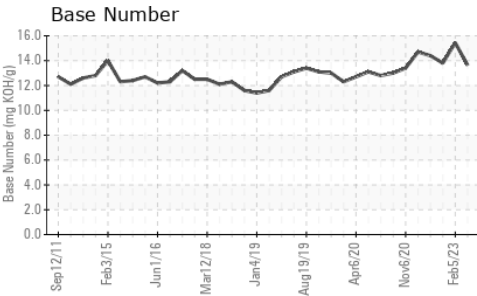
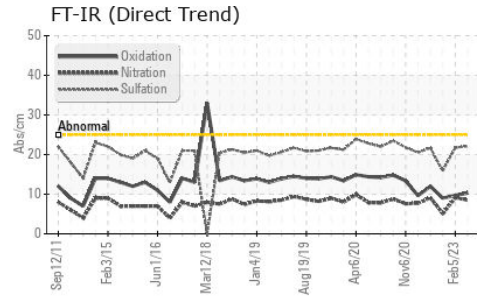
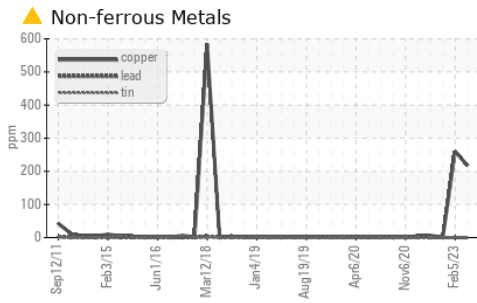
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	4	4	6
Potassium	ppm	ASTM D5185m	>20	2	2	13
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	2.1	2.3	0.5
Nitration	Abs/cm	*ASTM D7624	>20	8.5	9.1	5.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.1	21.7	15.9
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	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		4	2	27
Boron	ppm	ASTM D5185m		2	0	30
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		0	<1	1
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		35	13	14
Calcium	ppm	ASTM D5185m		5257	3461	4650
Phosphorus	ppm	ASTM D5185m		1040	681	946
Zinc	ppm	ASTM D5185m		1258	834	1128
Sulfur	ppm	ASTM D5185m		5225	3217	3801
Oxidation	Abs/.1mm	*ASTM D7414	>25	10.3	9.7	9
Base Number (BN)	mg KOH/g	ASTM D2896		13.64	15.44	13.8
Visc @ 100°C	cSt	ASTM D445	15.5	14.0	14.3	14.1



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06219936 **Received** : 25 Jun 2024
Lab Number : 06219936 **Tested** : 26 Jun 2024
Unique Number : 11098133 **Diagnosed** : 26 Jun 2024 - Sean Felton
Test Package : MOB 2 (Additional Tests: KV40, TAN Man)

DOUBLE S DAIRIES
 HARTLEY, TX
 US 79044
 Contact: MIKE LEWIS

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: