



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
CATERPILLAR 160H MOTOR GRADER-160H

Component
Diesel Engine

Fluid
TRC MOLY XL PRO-SPEC III SYNTHETIC15W40 (8 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		TR06155288	TR05541482	TR04863421
Sample Date		Client Info		11 Apr 2024	26 Apr 2022	14 Nov 2019
Machine Age	hrs	Client Info		15806	15426	15051
Oil Age	hrs	Client Info		380	375	391
Filter Age	hrs	Client Info		380	375	391
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	32	29	14
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	3	5
Lead	ppm	ASTM D5185m	>40	2	2	<1
Copper	ppm	ASTM D5185m	>330	21	22	12
Tin	ppm	ASTM D5185m	>15	<1	<1	1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

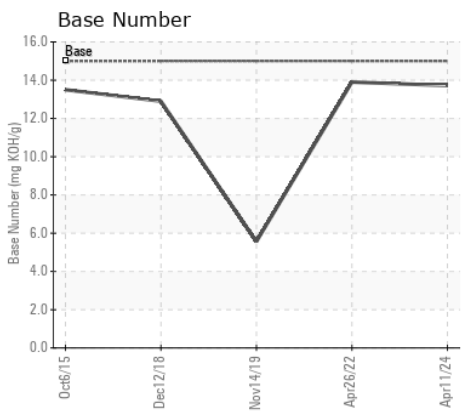
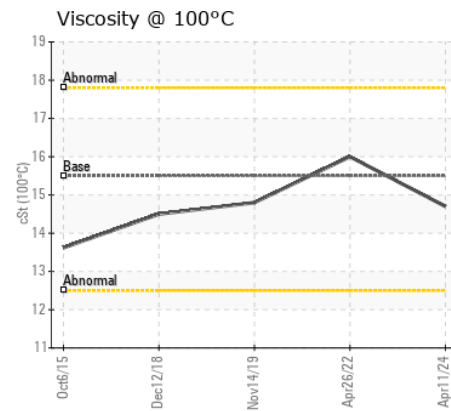
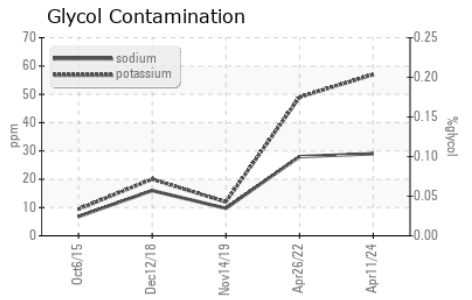
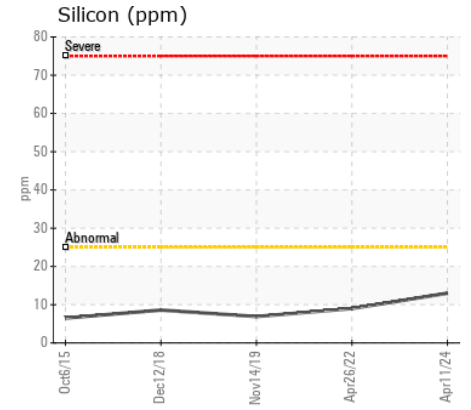
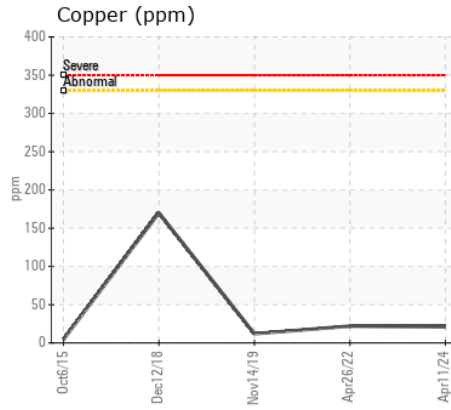
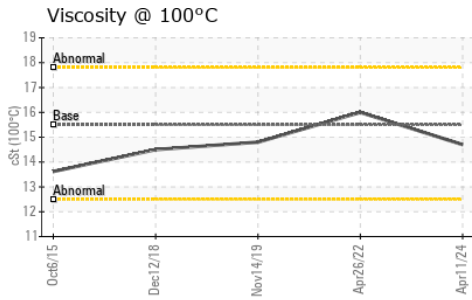
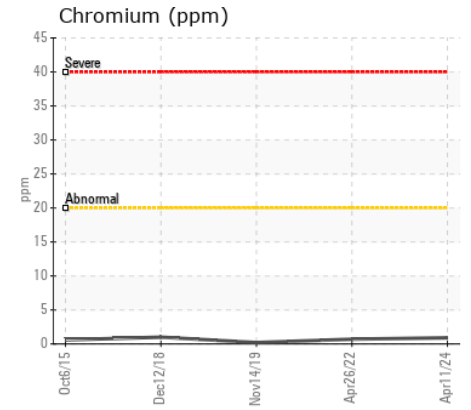
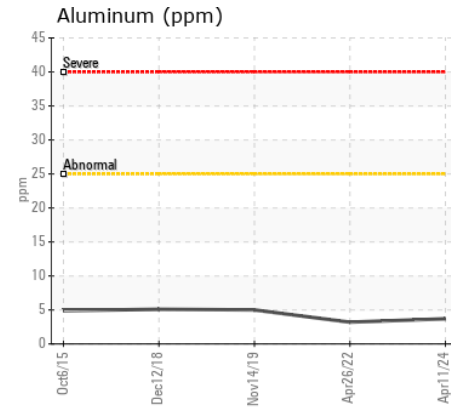
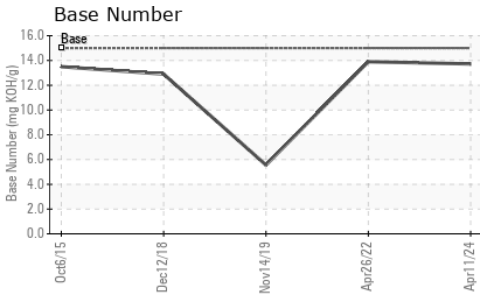
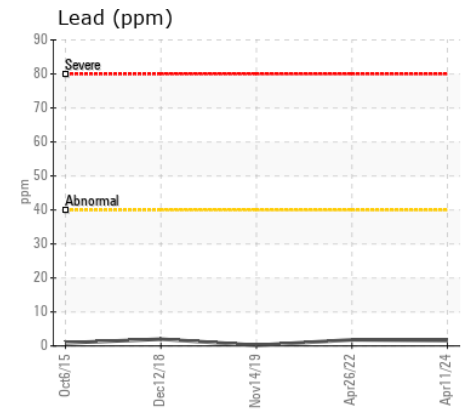
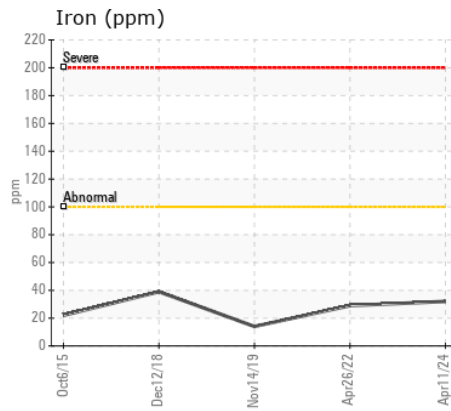
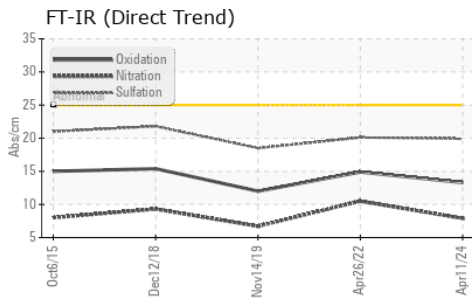
Sodium and/or potassium levels are high. Test for glycol is negative.

Silicon	ppm	ASTM D5185m	>25	13	9	7
Potassium	ppm	ASTM D5185m	>20	57	49	12
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol	%	*ASTM D2982		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.4	0.4	0.2
Nitration	Abs/cm	*ASTM D7624	>20	7.9	10.5	6.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.9	20.1	18.5
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 acceptable for the time in service.

Sodium	ppm	ASTM D5185m		29	28	10
Boron	ppm	ASTM D5185m		184	195	176
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		217	216	208
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		413	477	420
Calcium	ppm	ASTM D5185m	4500	3916	4251	3857
Phosphorus	ppm	ASTM D5185m		823	829	756
Zinc	ppm	ASTM D5185m	1400	985	1053	889
Sulfur	ppm	ASTM D5185m		3714	3291	937
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.3	14.9	12
Base Number (BN)	mg KOH/g	ASTM D2896	15	13.72	13.9	5.56
Visc @ 100°C	cSt	ASTM D445	15.5	14.7	16.0	14.8



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06155288
Lab Number : 06155288
Unique Number : 10990711
Test Package : MOB 2 (Additional Tests: Glycol)

Received : 19 Apr 2024
Tested : 24 Apr 2024
Diagnosed : 24 Apr 2024 - Jonathan Hester

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)

NOLL CONSTRUCTION

BOX 152
 GOLVA, ND
 US 58632

Contact: KELLY ZIETLOW

T:
 F: (701)872-3823