



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
TORO 5410-D 19182-3 (S/N 405498934)
 Component
Diesel Engine
 Fluid
TORO 10W30 (6 QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06196033	TR05841641	TR05388313
Sample Date		Client Info		16 May 2024	03 May 2023	20 Oct 2021
Machine Age	hrs	Client Info		1043	690	430
Oil Age	hrs	Client Info		1043	258	430
Filter Age	hrs	Client Info		1043	258	430
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	62	49	30
Chromium	ppm	ASTM D5185m	>20	1	1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	2	4
Lead	ppm	ASTM D5185m	>40	7	8	6
Copper	ppm	ASTM D5185m	>330	46	62	29
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	LIGHT	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

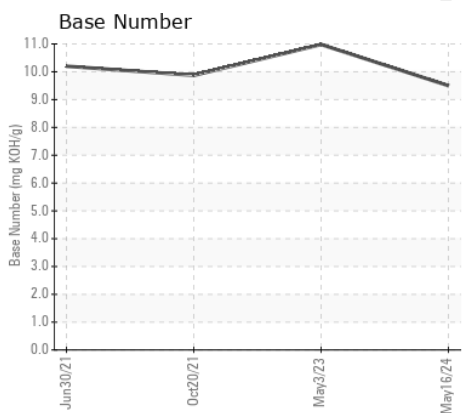
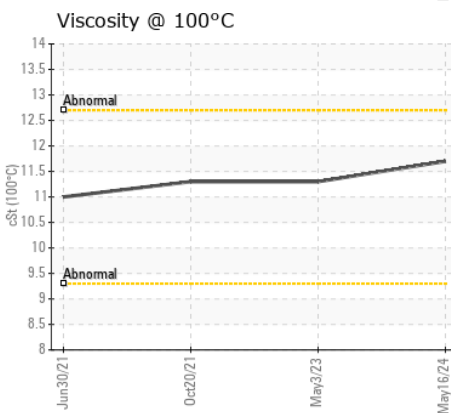
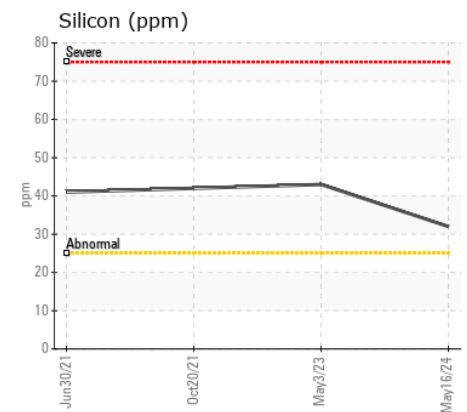
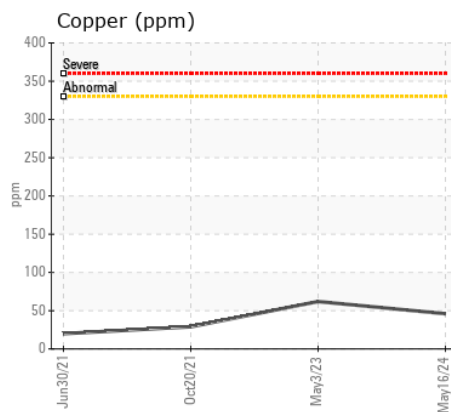
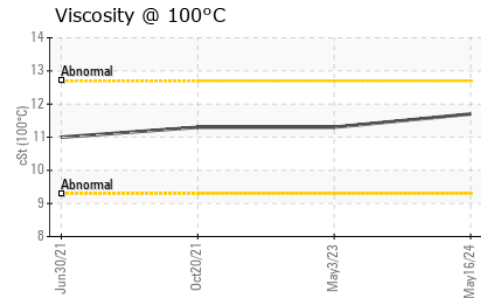
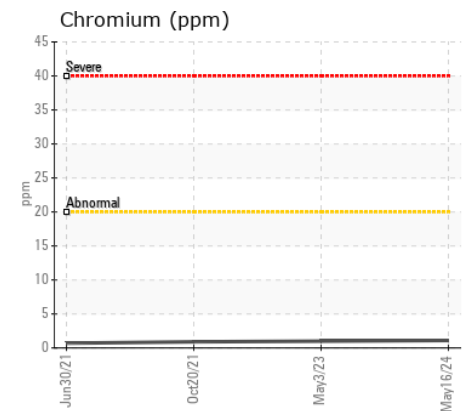
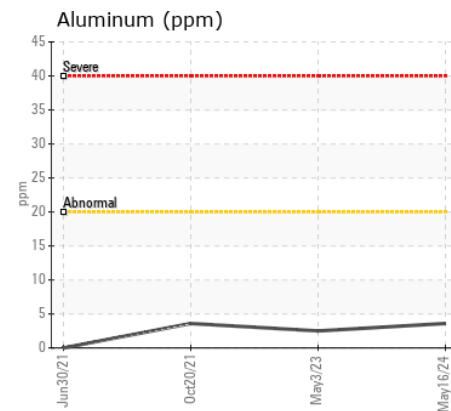
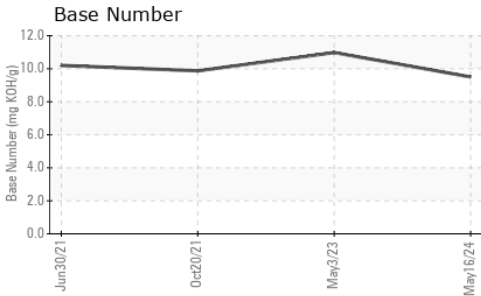
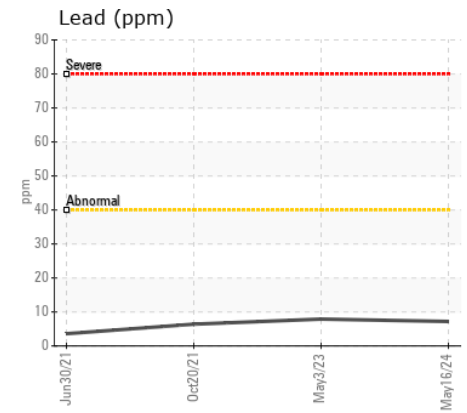
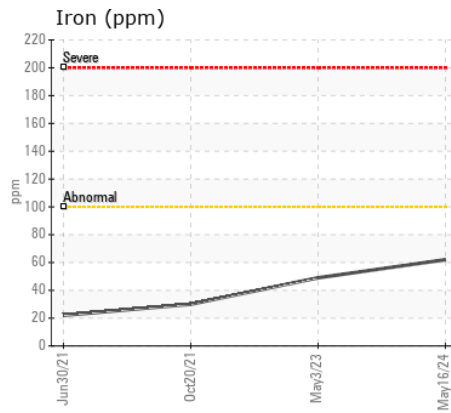
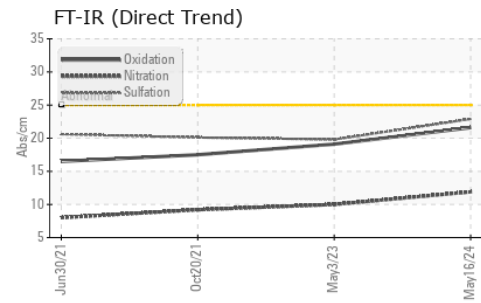
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	32	43	42
Potassium	ppm	ASTM D5185m	>20	0	2	0
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	0.3	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	11.9	10.0	9.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.9	19.8	20.1
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		10	9	10
Boron	ppm	ASTM D5185m		4	3	6
Barium	ppm	ASTM D5185m		3	0	1
Molybdenum	ppm	ASTM D5185m		84	74	71
Manganese	ppm	ASTM D5185m		2	2	2
Magnesium	ppm	ASTM D5185m		752	829	843
Calcium	ppm	ASTM D5185m		2350	1647	1594
Phosphorus	ppm	ASTM D5185m		1072	1050	1032
Zinc	ppm	ASTM D5185m		1403	1340	1337
Sulfur	ppm	ASTM D5185m		4131	3584	3161
Oxidation	Abs/.1mm	*ASTM D7414	>25	21.6	19.1	17.5
Base Number (BN)	mg KOH/g	ASTM D2896		9.50	10.98	9.87
Visc @ 100°C	cSt	ASTM D445		11.7	11.3	11.3



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06196033
Lab Number : 06196033
Unique Number : 11058156
Test Package : MOB 2
Received : 30 May 2024
Tested : 02 Jun 2024
Diagnosed : 02 Jun 2024 - Don Baldrige

CITY PARK GOLF COURSE
 3201 E 23RD AVE
 DENVER, CO
 US 80205
 Contact: COLIN MURPHY
 Colin.murphy@denvergov.org

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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