



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
CATERPILLAR 972K L11 Z4W00455
 Component
Hydraulic System
 Fluid
CHEVRON RANDO HD 46 (--- QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06195893	TR06165695	TR06119578
Sample Date		Client Info		17 May 2024	03 Apr 2024	19 Feb 2024
Machine Age	hrs	Client Info		17940	17615	17326
Oil Age	hrs	Client Info		1614	1289	1000
Filter Age	hrs	Client Info		1614	1289	1000
Oil Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Filter Changed		Client Info		Not Chngd	Not Chngd	Not Chngd
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>20	3	2	2
Chromium	ppm	ASTM D5185m	>10	2	2	2
Nickel	ppm	ASTM D5185m	>10	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	0	0	0
Lead	ppm	ASTM D5185m	>10	0	0	0
Copper	ppm	ASTM D5185m	>75	4	3	2
Tin	ppm	ASTM D5185m	>10	0	0	0
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

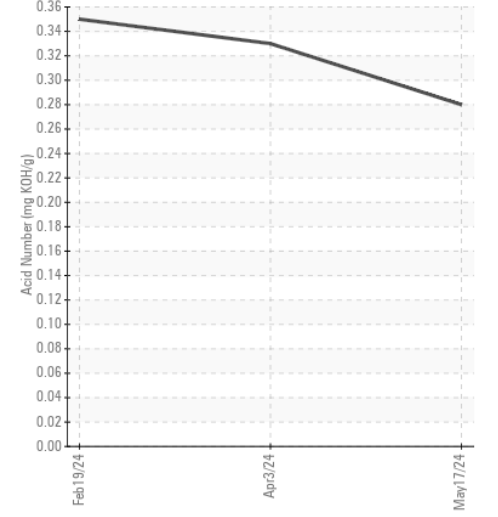
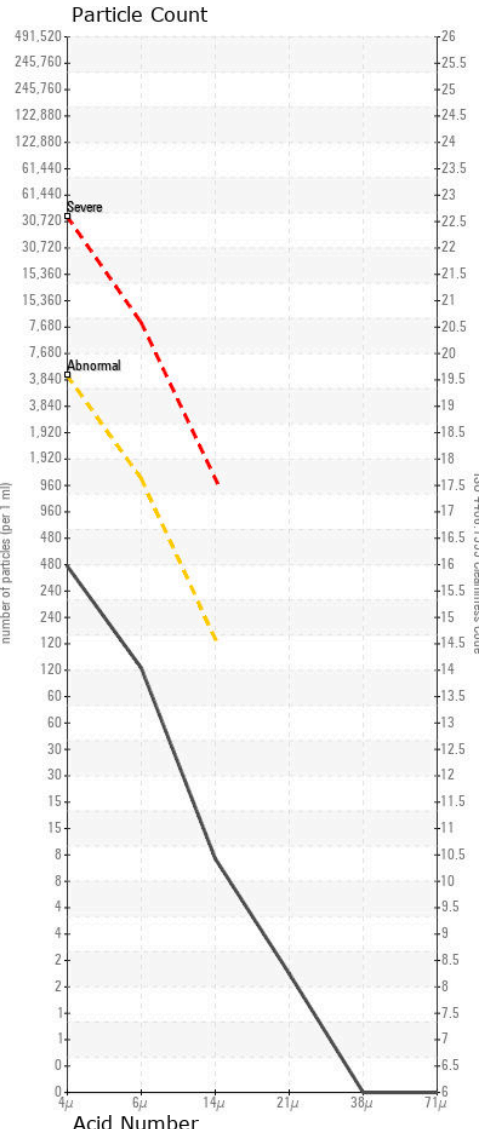
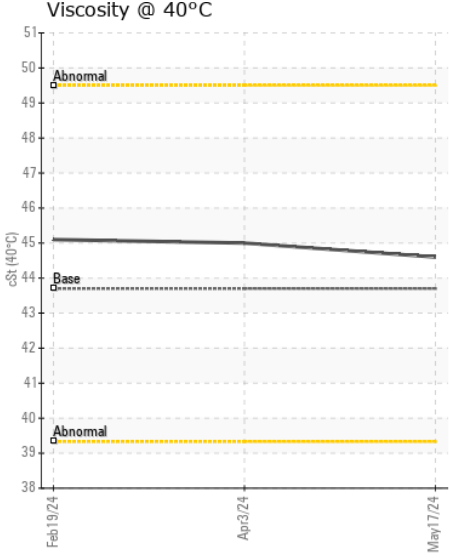
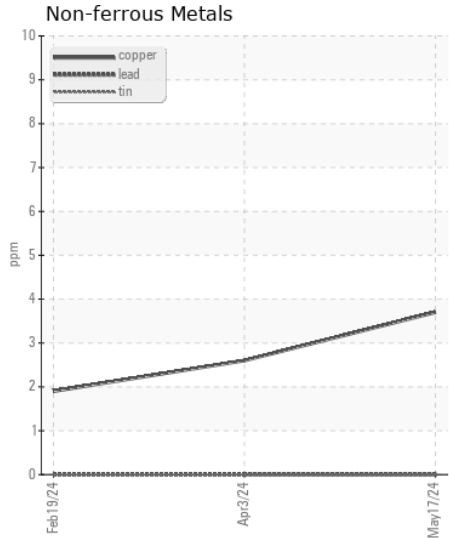
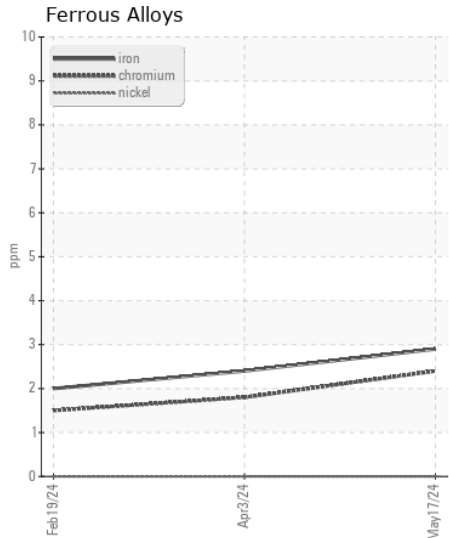
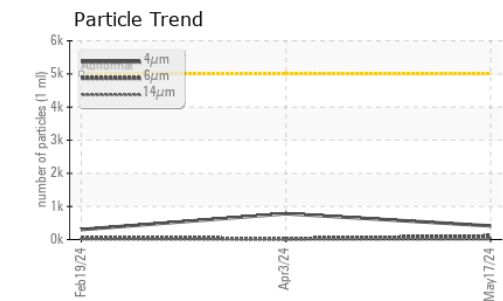
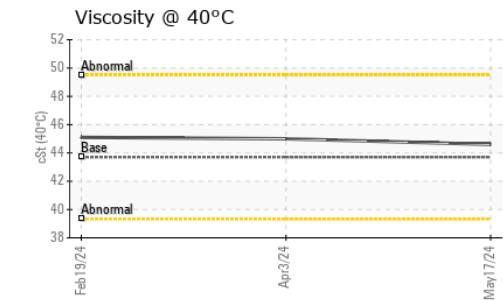
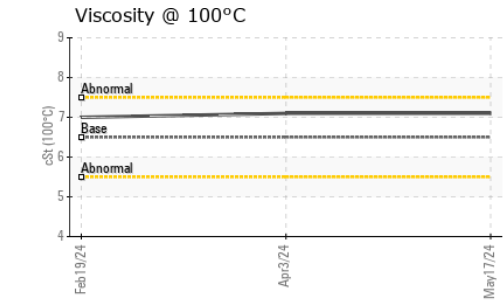
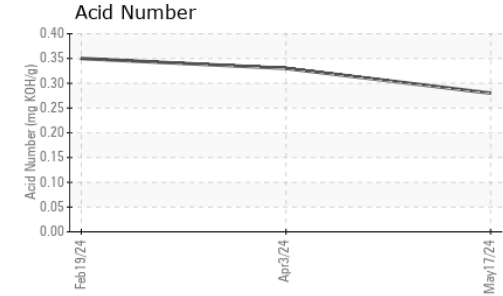
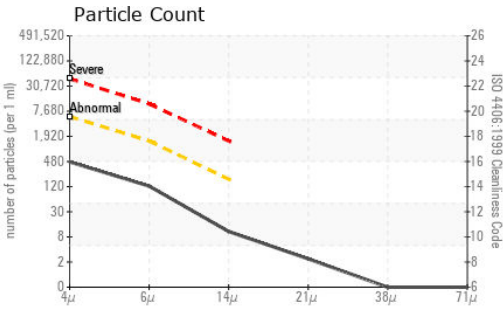
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Silicon	ppm	ASTM D5185m	>20	<1	<1	<1
Potassium	ppm	ASTM D5185m	>20	<1	0	0
Water		WC Method	>0.1	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>5000	413	781	303
Particles >6µm		ASTM D7647	>1300	109	24	61
Particles >14µm		ASTM D7647	>160	9	3	9
Particles >21µm		ASTM D7647	>40	2	1	4
Particles >38µm		ASTM D7647	>10	0	0	0
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	16/14/10	17/12/9	15/13/10
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	>0.1	NEG	NEG	NEG

FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		<1	<1	3
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		0	0	0
Manganese	ppm	ASTM D5185m		0	0	0
Magnesium	ppm	ASTM D5185m		6	5	3
Calcium	ppm	ASTM D5185m		116	115	100
Phosphorus	ppm	ASTM D5185m		412	405	330
Zinc	ppm	ASTM D5185m		537	506	416
Sulfur	ppm	ASTM D5185m		1153	1129	904
Acid Number (AN)	mg KOH/g	ASTM D8045		0.28	0.33	0.35
Visc @ 40°C	cSt	ASTM D445	43.7	44.6	45.0	45.1
Visc @ 100°C	cSt	ASTM D445	6.5	7.1	7.1	7.0
Viscosity Index (VI)	Scale	ASTM D2270	97	118	117	112



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06195893 **Received** : 30 May 2024
Lab Number : 06195893 **Tested** : 02 Jun 2024
Unique Number : 11058016 **Diagnosed** : 02 Jun 2024 - Wes Davis
Test Package : MOB 2 (Additional Tests: KV100, VI)

BARR-TECH COMPOSTING
 9117 KALLENBERGER RD N
 SPRAGUE, WA
 US 99032
 Contact: RON GROGAN

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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