



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL



Machine Id
CATERPILLAR D4K II 319 (S/N KMM00283)
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (4 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		RW0005475	RW0003976	RW0002934
Sample Date		Client Info		20 Apr 2024	11 Jan 2023	14 Jan 2022
Machine Age	hrs	Client Info		6626	6360	5977
Oil Age	hrs	Client Info		266	383	331
Filter Age	hrs	Client Info		266	383	331
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL

WEAR

The aluminum level is abnormal. All other component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	34	22	21
Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	▲ 40	▲ 36	▲ 32
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	2	4
Tin	ppm	ASTM D5185m	>15	<1	<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

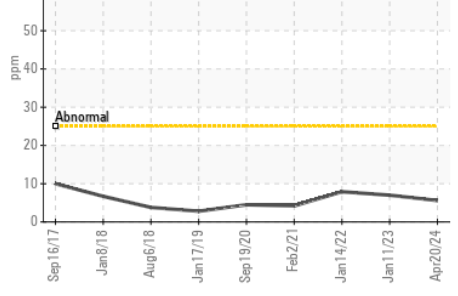
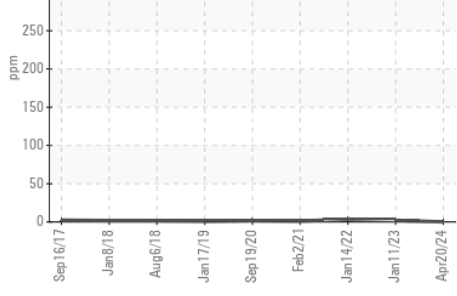
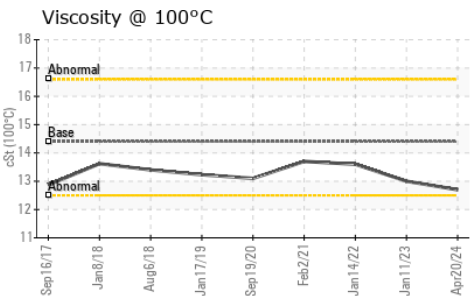
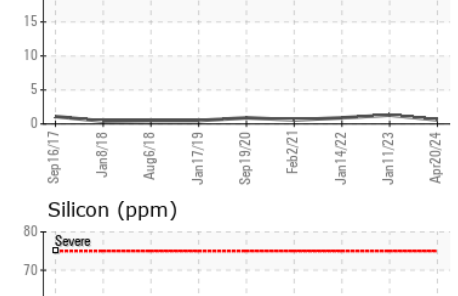
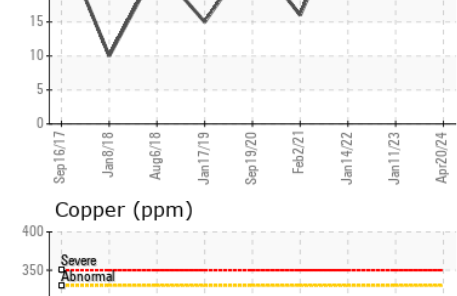
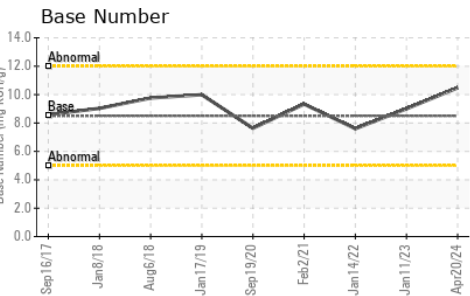
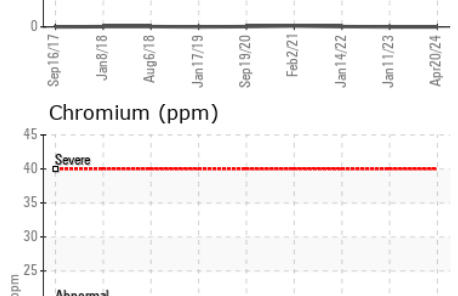
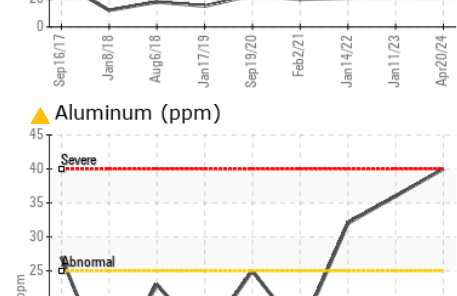
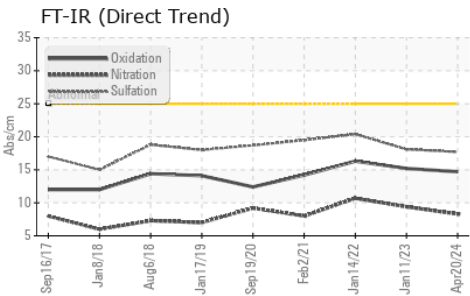
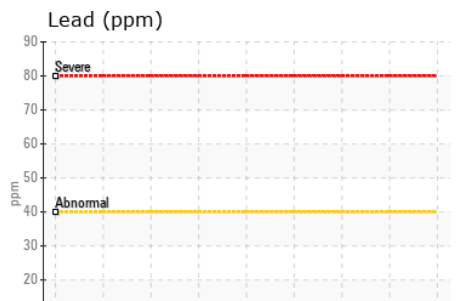
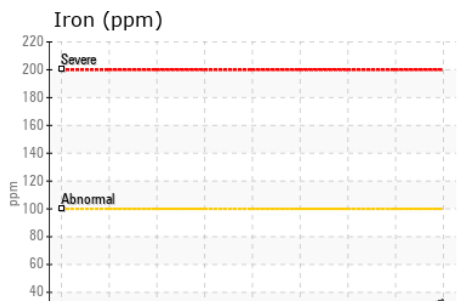
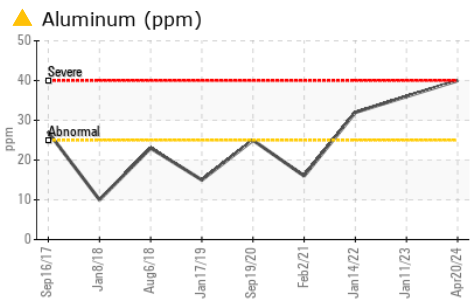
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	6	7	8
Potassium	ppm	ASTM D5185m	>20	0	0	<1
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	0.4	0.4
Nitration	Abs/cm	*ASTM D7624	>20	8.3	9.4	10.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.7	18.1	20.4
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	>158	2	2	4
Boron	ppm	ASTM D5185m	250	14	17	66
Barium	ppm	ASTM D5185m	10	<1	12	<1
Molybdenum	ppm	ASTM D5185m	100	64	60	81
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	915	732	202
Calcium	ppm	ASTM D5185m	3000	1163	1222	2191
Phosphorus	ppm	ASTM D5185m	1150	1124	956	1188
Zinc	ppm	ASTM D5185m	1350	1278	1132	1351
Sulfur	ppm	ASTM D5185m	4250	3779	3226	3471
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.7	15.2	16.3
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	10.48	9.00	7.60
Visc @ 100°C	cSt	ASTM D445	14.4	12.7	13.0	13.6



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : RW0005475
Lab Number : 06176219
Unique Number : 11022272
Test Package : MOB 2

Received : 10 May 2024
Tested : 13 May 2024
Diagnosed : 14 May 2024 - Don Baldrige

HALLACK CONTRACTING, INC.
 4223 W POLK
 HART, MI
 US 49420

Contact: DAN HALLACK KARL BUTCHER
 shop@hallackcontracting.com

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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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