



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
MORBARK 002060
 Component
Hydraulic System
 Fluid
CASTROL DUAL RANGE HV HYD OIL ISO 46 (100 GAL)

RECOMMENDATION

The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0856127	WC0724614	WC0701021
Sample Date		Client Info		10 Apr 2024	08 Aug 2023	21 Oct 2022
Machine Age	hrs	Client Info		3866	3386	3223
Oil Age	hrs	Client Info		643	163	1500
Filter Age	hrs	Client Info		480	163	242
Oil Changed		Client Info		Not Changed	Not Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	SEVERE	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>20	2	▲ 136	6
Chromium	ppm	ASTM D5185m	>10	<1	1	0
Nickel	ppm	ASTM D5185m	>10	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m		<1	0	0
Aluminum	ppm	ASTM D5185m	>10	1	2	<1
Lead	ppm	ASTM D5185m	>10	1	2	2
Copper	ppm	ASTM D5185m	>75	2	<1	7
Tin	ppm	ASTM D5185m	>10	1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

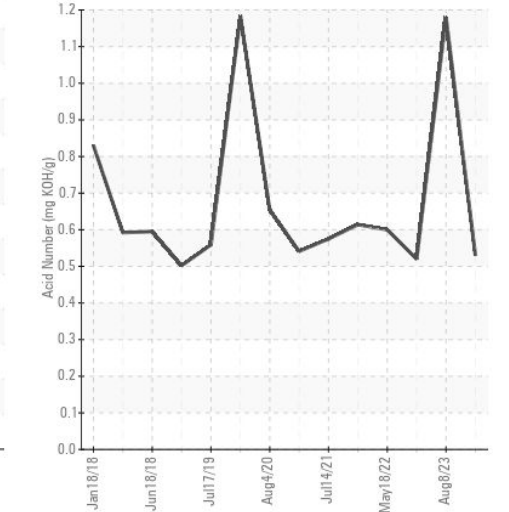
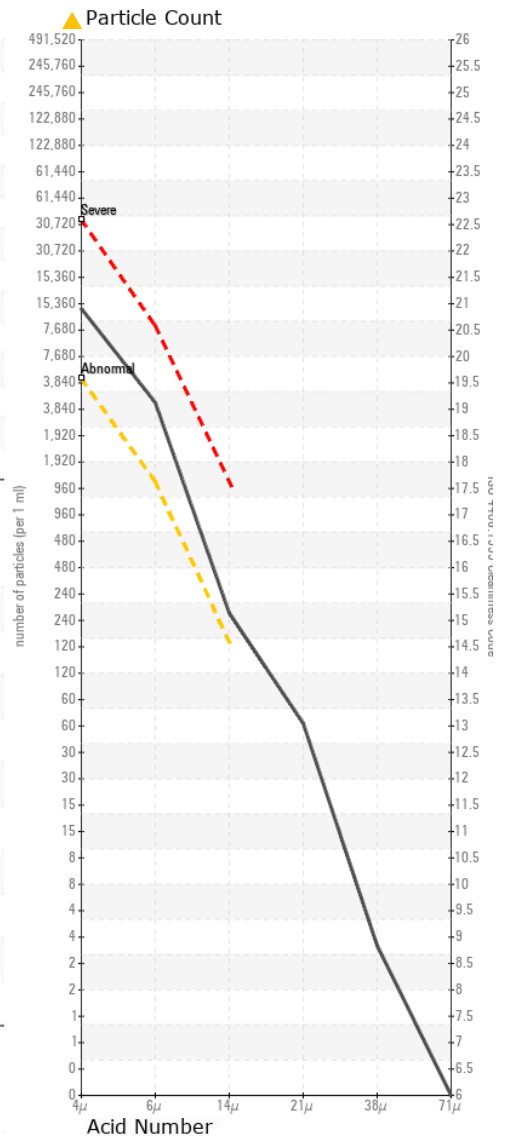
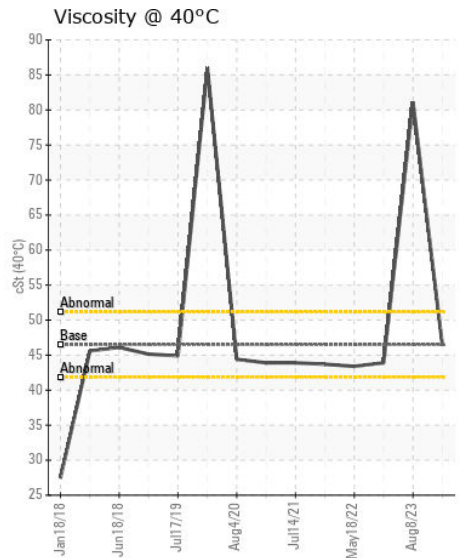
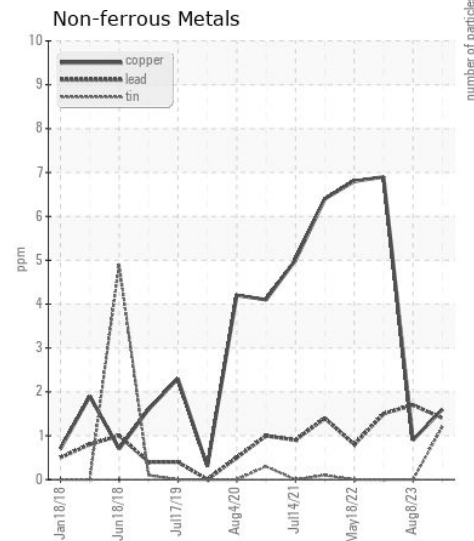
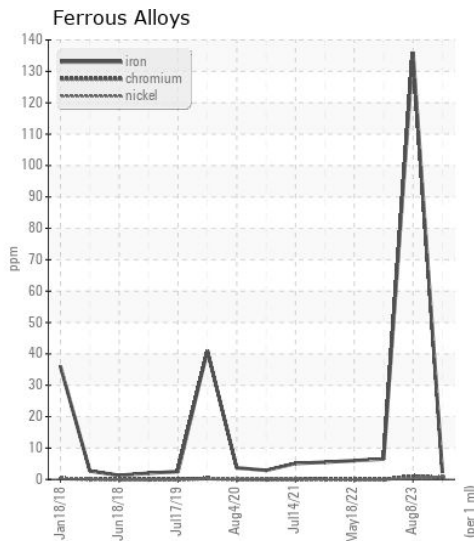
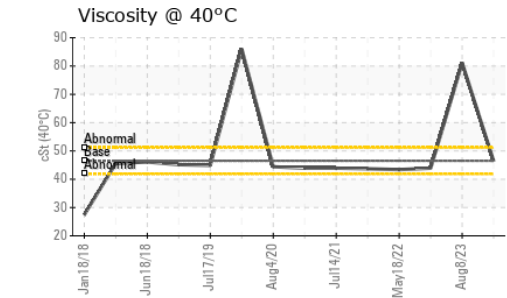
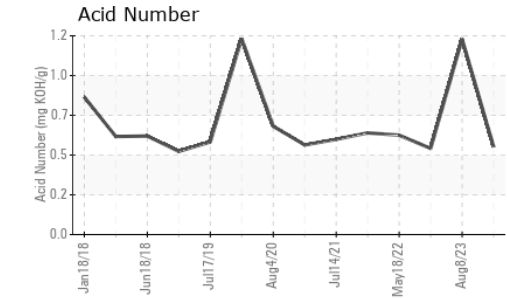
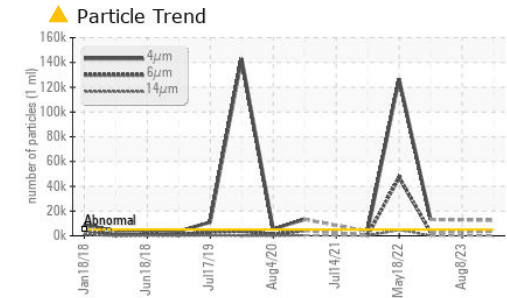
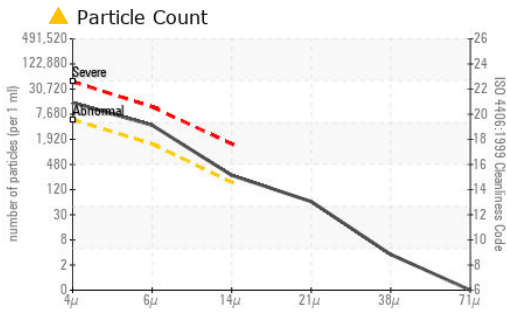
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

Silicon	ppm	ASTM D5185m	>20	1	7	2
Potassium	ppm	ASTM D5185m	>20	<1	1	0
Water		WC Method	>0.1	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>5000	▲ 12516	---	▲ 13223
Particles >6µm		ASTM D7647	>1300	▲ 3660	---	▲ 2722
Particles >14µm		ASTM D7647	>160	● 233	---	126
Particles >21µm		ASTM D7647	>40	55	---	16
Particles >38µm		ASTM D7647	>10	3	---	0
Particles >71µm		ASTM D7647	>3	0	---	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ 21/19/15	---	▲ 21/19/14
Silt	scalar	*Visual	NONE	NONE	LIGHT	NONE
Debris	scalar	*Visual	NONE	NONE	▲ MODER	LIGHT
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	▲ 0.2%	NEG

FLUID CONDITION

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sodium	ppm	ASTM D5185m		<1	0	<1
Boron	ppm	ASTM D5185m		1	4	0
Barium	ppm	ASTM D5185m		<1	2	0
Molybdenum	ppm	ASTM D5185m		4	4	<1
Manganese	ppm	ASTM D5185m		<1	1	<1
Magnesium	ppm	ASTM D5185m		73	26	13
Calcium	ppm	ASTM D5185m		300	● 3435	95
Phosphorus	ppm	ASTM D5185m		429	● 852	442
Zinc	ppm	ASTM D5185m		464	● 1076	567
Sulfur	ppm	ASTM D5185m		1448	4437	1487
Acid Number (AN)	mg KOH/g	ASTM D8045		0.53	1.18	0.52
Visc @ 40°C	cSt	ASTM D445	46.5	46.4	● 81.1	43.9



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0856127
 Lab Number : 06147272
 Unique Number : 10977350
 Test Package : CONST

Received : 12 Apr 2024
 Tested : 15 Apr 2024
 Diagnosed : 15 Apr 2024 - Wes Davis

CJ MILLER LLC
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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)