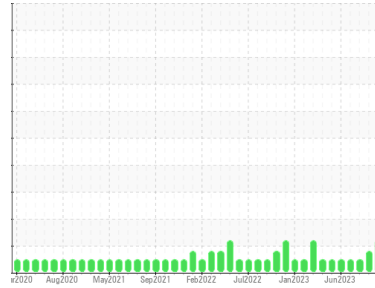




PROBLEM SUMMARY

Sample Rating Trend



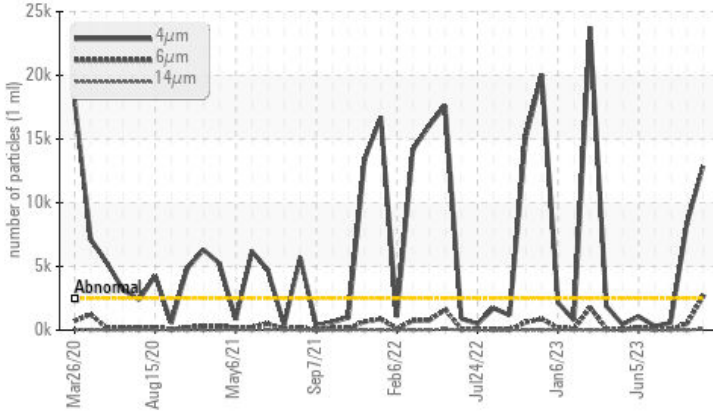
ISO



Area
IRIG [6076666]
 Machine Id
IRIG-PRM-HPU-0301 IRIG-PRM-HPU-0301 HPU MUD MODULE
 Component
Hydraulic System
 Fluid
MOBIL DTE 10 EXCEL 32 (--- GAL)

COMPONENT CONDITION SUMMARY

▲ Particle Trend



RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	ABNORMAL	NORMAL
Particles >4µm	ASTM D7647	>2500	▲ 12862	▲ 8337	562
Particles >6µm	ASTM D7647	>640	▲ 2669	504	82
Oil Cleanliness	ISO 4406 (c)	>18/16/14	▲ 21/19/14	▲ 20/16/10	16/14/11

Customer Id: BPEMPU
 Sample No.: HLC0002790
 Lab Number: 05964180
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Wes Davis +1 905-569-8600 x223
wesd@wearcheck.ca

To change component or sample information:
 Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Information Required	---	---	?	NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

HISTORICAL DIAGNOSIS

08 Sep 2023 Diag: Wes Davis

ISO



We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report



29 Jul 2023 Diag: Jonathan Hester

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



30 Jun 2023 Diag: Doug Bogart

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

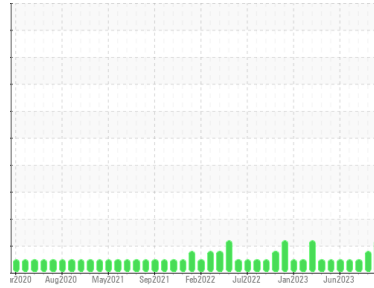
view report





OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area
IRIG [6076666]
 Machine Id
IRIG-PRM-HPU-0301 IRIG-PRM-HPU-0301 HPU MUD MODULE
 Component
Hydraulic System
 Fluid
MOBIL DTE 10 EXCEL 32 (--- GAL)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

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.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	HLC0002790	HLC0002828	HLC0002716
Sample Date	Client Info	17 Sep 2023	08 Sep 2023	29 Jul 2023
Machine Age	hrs	1018	1018	1002
Oil Age	hrs	0	0	0
Oil Changed	Client Info	N/A	Filtered	N/A
Sample Status		ABNORMAL	ABNORMAL	NORMAL

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m >20	1	2	1
Chromium	ppm	ASTM D5185m >20	0	0	0
Nickel	ppm	ASTM D5185m >20	0	0	<1
Titanium	ppm	ASTM D5185m	0	<1	0
Silver	ppm	ASTM D5185m	0	0	0
Aluminum	ppm	ASTM D5185m >20	0	<1	0
Lead	ppm	ASTM D5185m >20	0	0	0
Copper	ppm	ASTM D5185m >20	6	7	6
Tin	ppm	ASTM D5185m >20	0	0	0
Vanadium	ppm	ASTM D5185m	0	<1	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2	
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	<1	<1	0
Magnesium	ppm	ASTM D5185m	0	0	0
Calcium	ppm	ASTM D5185m 120	104	114	100
Phosphorus	ppm	ASTM D5185m 475	450	471	417
Zinc	ppm	ASTM D5185m	37	15	47
Sulfur	ppm	ASTM D5185m 1275	1396	1704	1544

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >15	<1	<1	<1
Sodium	ppm	ASTM D5185m	3	3	0
Potassium	ppm	ASTM D5185m >20	2	1	1

FLUID CLEANLINESS

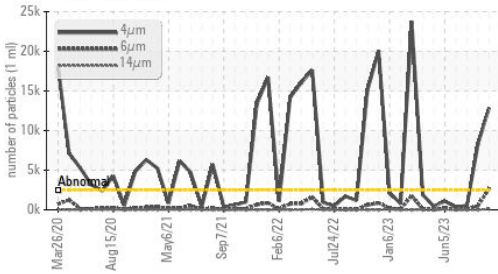
method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >2500	▲ 12862	▲ 8337	562
Particles >6µm	ASTM D7647 >640	▲ 2669	504	82
Particles >14µm	ASTM D7647 >160	98	6	11
Particles >21µm	ASTM D7647 >40	17	1	4
Particles >38µm	ASTM D7647 >10	0	0	0
Particles >71µm	ASTM D7647 >3	0	0	0
Oil Cleanliness	ISO 4406 (c) >18/16/14	▲ 21/19/14	▲ 20/16/10	16/14/11

FLUID DEGRADATION

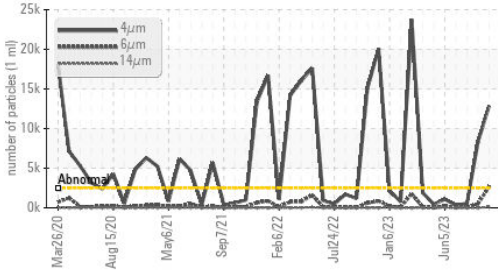
method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	0.233	0.087	0.125

OIL ANALYSIS REPORT

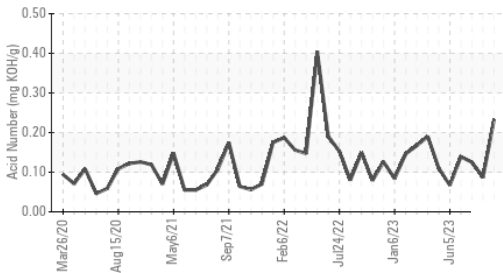
▲ Particle Trend



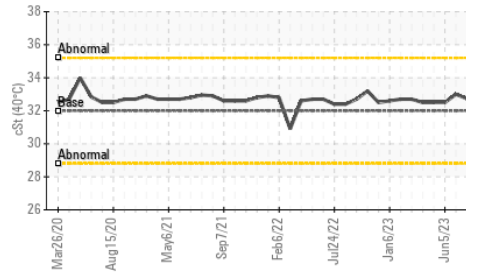
▲ Particle Trend



Acid Number



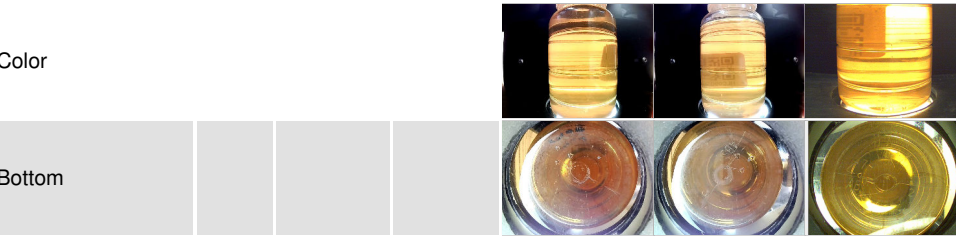
Viscosity @ 40°C



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

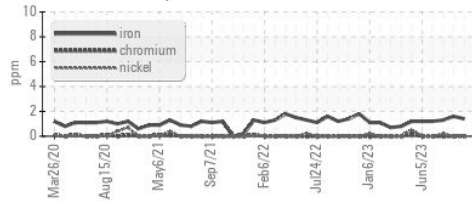
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	31.6	32.6

SAMPLE IMAGES	method	limit/base	current	history1	history2
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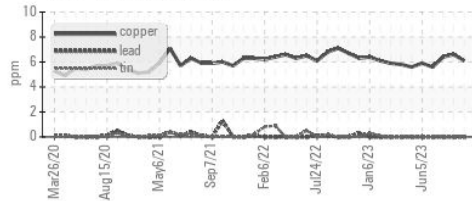


GRAPHS

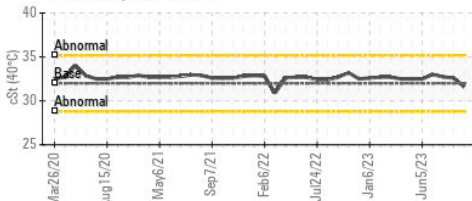
Ferrous Alloys



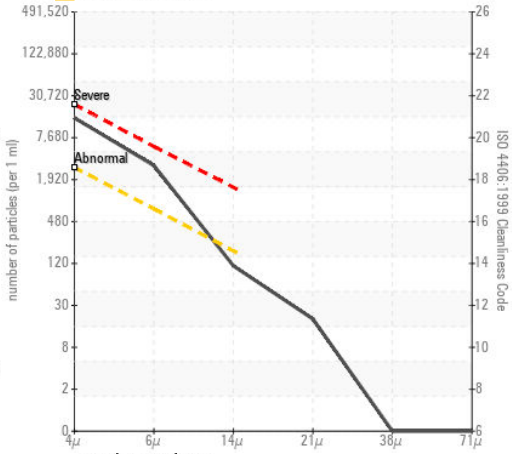
Non-ferrous Metals



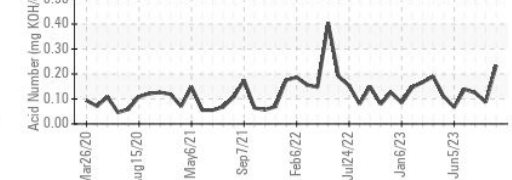
Viscosity @ 40°C



▲ Particle Count



Acid Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HLC0002790 **Received** : 28 Sep 2023
Lab Number : 05964180 **Diagnosed** : 29 Sep 2023
Unique Number : 10670731 **Diagnostician** : Wes Davis
Test Package : IND 2

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 US 99734
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 evan.reilly@hilcorp.com
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 F: x:

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)