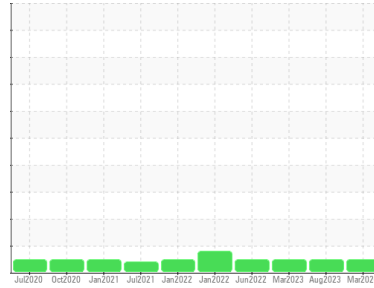




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area
DIGGER DERRICK
 Machine Id
FREIGHTLINER V033

Component
Diesel Engine
 Fluid
HIGH PERFORMANCE LUBRICANTS HDMO 15W40 (12 QTS)

DIAGNOSIS

Recommendation
 Resample at the next service interval to monitor.

Wear
 All component wear rates are normal.

Contamination
 There is no indication of any contamination in the oil.

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			HPL0002277	HPL0001783	HPL0000642
Sample Date	Client Info			15 Mar 2024	02 Aug 2023	29 Mar 2023
Machine Age	hrs	Client Info		7956	7449	7215
Oil Age	hrs	Client Info		750	243	865
Oil Changed	Client Info			Not Chngd	Not Chngd	Changed
Sample Status				NORMAL	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel	WC Method	>5		<1.0	<1.0	<1.0
Water	WC Method	>0.2		NEG	NEG	NEG
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	80	37	75
Chromium	ppm	ASTM D5185m	>5	<1	<1	1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	6	4	5
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	2	2	2
Tin	ppm	ASTM D5185m	>5	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	200	125	180	153
Barium	ppm	ASTM D5185m		<1	2	0
Molybdenum	ppm	ASTM D5185m	85	730	702	754
Manganese	ppm	ASTM D5185m		<1	<1	1
Magnesium	ppm	ASTM D5185m	525	527	468	472
Calcium	ppm	ASTM D5185m	4300	4418	3901	4123
Phosphorus	ppm	ASTM D5185m	1000	958	821	867
Zinc	ppm	ASTM D5185m	1100	1162	1037	1033
Sulfur	ppm	ASTM D5185m	20200	21291	18913	21675

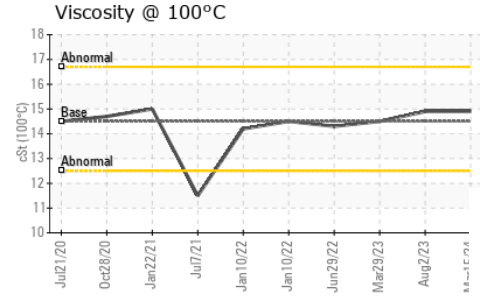
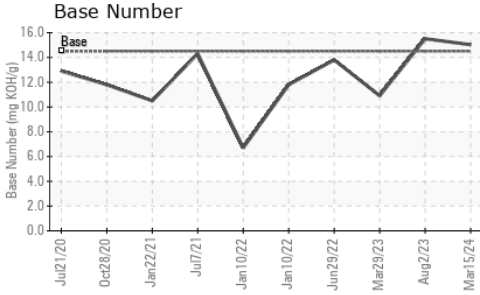
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	13	12	11
Sodium	ppm	ASTM D5185m		2	5	3
Potassium	ppm	ASTM D5185m	>20	3	4	8

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	1.3	0.7	1.2
Nitration	Abs/cm	*ASTM D7624	>20	14.1	10.5	14.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	36.1	29.2	36.7

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	25.7	19.2	25.1
Base Number (BN)	mg KOH/g	ASTM D2896	14.5	15.03	15.51	10.91



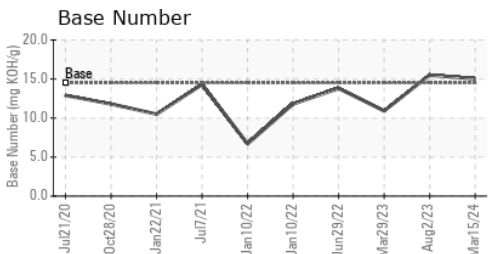
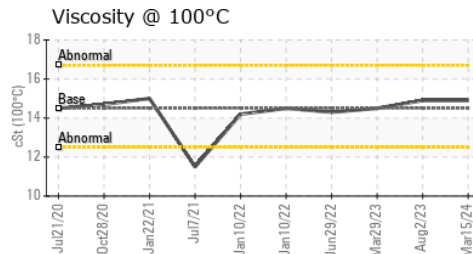
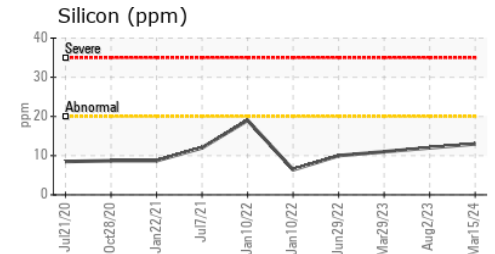
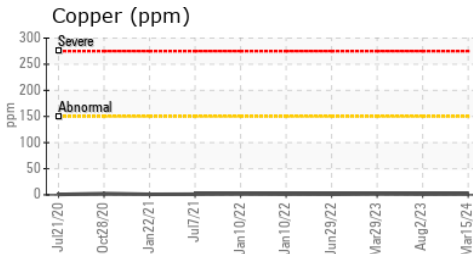
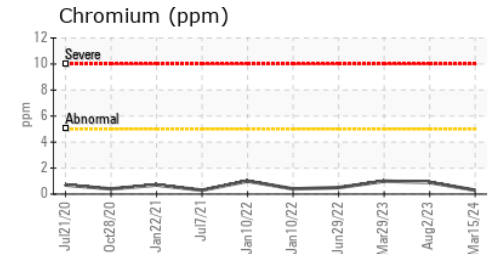
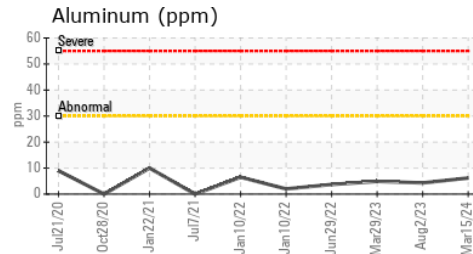
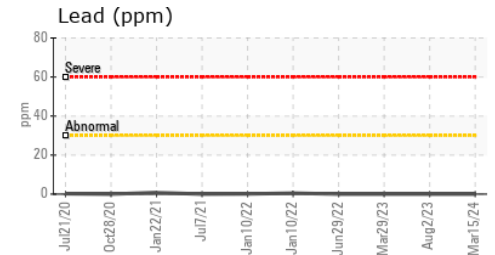
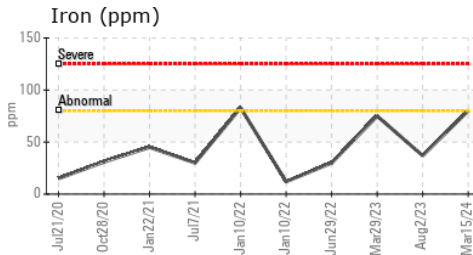
OIL ANALYSIS REPORT



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	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.5	14.9	14.5

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HPL0002277
Lab Number : 06123884
Unique Number : 10938035
Test Package : MOB 2
Received : 20 Mar 2024
Tested : 21 Mar 2024
Diagnosed : 22 Mar 2024 - Don Baldrige

MUSCATINE POWER AND WATER
 3205 CEDAR STREET
 MUSCATINE, IA
 US 52761
 Contact: JUSTIN CONKLIN
 justin.conklin@mpw.org
 T: (563)262-3351
 F:

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)