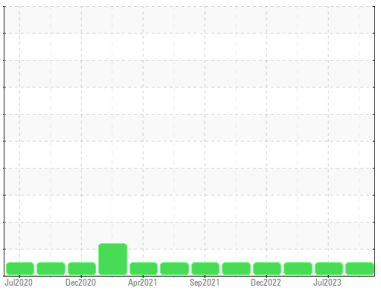
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
DIGGER DERRICK
Machine Id
KENWORTH V032
Component
Diesel Engine
Fluid
HIGH PERFORMANCE LUBRICANTS HDMO 15W40 (16 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		**HPL0002276**	HPL0001780	HPL0000637
Sample Date		Client Info		**02 Apr 2024**	05 Jul 2023	01 Mar 2023
Machine Age	hrs	Client Info		**9407**	8790	7852
Oil Age	hrs	Client Info		**413**	721	486
Oil Changed		Client Info		**Not Changd**	N/A	Not Changd
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	>100	**17**	33	20
Chromium	ppm	ASTM D5185m	>20	**<1**	1	1
Nickel	ppm	ASTM D5185m	>4	**0**	<1	<1
Titanium	ppm	ASTM D5185m		**0**	<1	<1
Silver	ppm	ASTM D5185m	>3	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**8**	3	3
Lead	ppm	ASTM D5185m	>40	**0**	0	2
Copper	ppm	ASTM D5185m	>330	**6**	8	2
Tin	ppm	ASTM D5185m	>15	**0**	<1	<1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	200	**37**	152	156
Barium	ppm	ASTM D5185m		**0**	3	0
Molybdenum	ppm	ASTM D5185m	85	**589**	739	685
Manganese	ppm	ASTM D5185m		**<1**	<1	2
Magnesium	ppm	ASTM D5185m	525	**883**	403	438
Calcium	ppm	ASTM D5185m	4300	**2784**	3912	3795
Phosphorus	ppm	ASTM D5185m	1000	**1070**	803	786
Zinc	ppm	ASTM D5185m	1100	**1242**	970	1005
Sulfur	ppm	ASTM D5185m	20200	**10687**	18115	21875

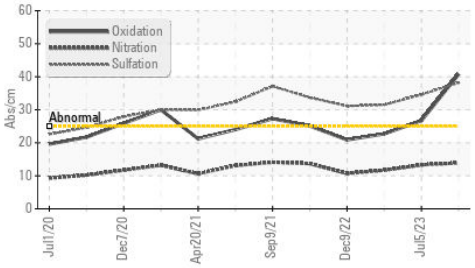
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**10**	14	12
Sodium	ppm	ASTM D5185m		**2**	0	7
Potassium	ppm	ASTM D5185m	>20	**2**	6	4

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.4**	0.6	0.4
Nitration	Abs/cm	*ASTM D7624	>20	**13.9**	13.3	11.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	**38.2**	34.6	31.5

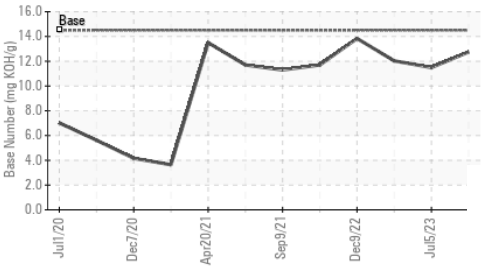
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**40.8**	26.7	22.7
Base Number (BN)	mg KOH/g	ASTM D2896	14.5	**12.75**	11.49	12.03

OIL ANALYSIS REPORT

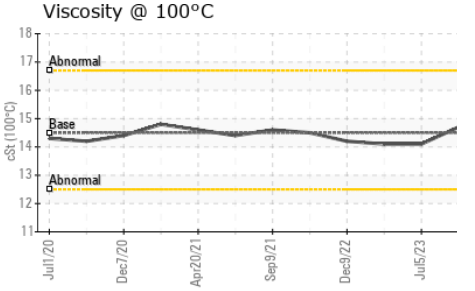
FT-IR (Direct Trend)



Base Number



Viscosity @ 100°C

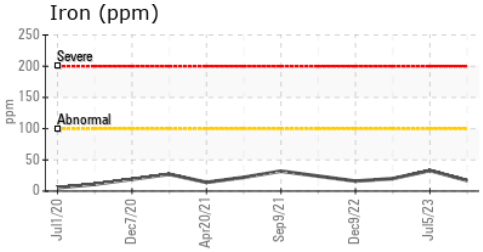


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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
Free Water	scalar	*Visual		**NEG**	NEG	NEG

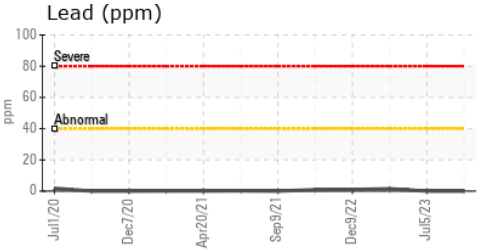
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.5	**14.7**	14.1	14.1

GRAPHS

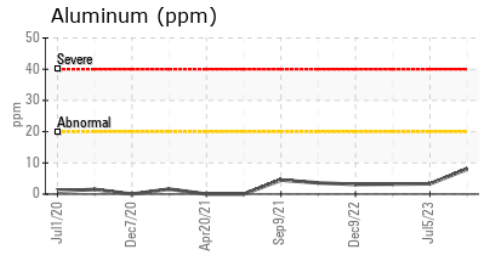
Iron (ppm)



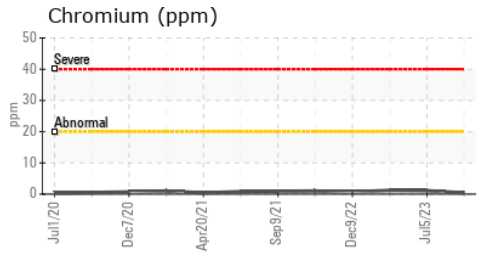
Lead (ppm)



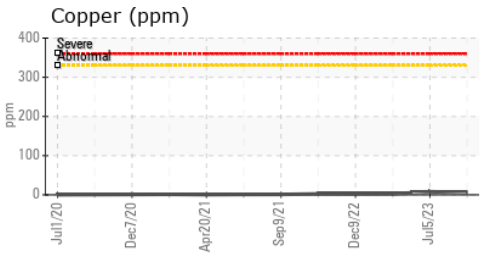
Aluminum (ppm)



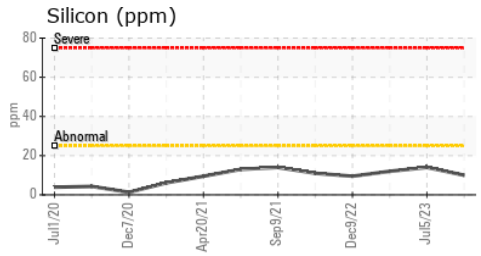
Chromium (ppm)



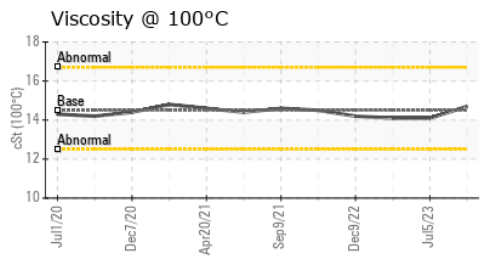
Copper (ppm)



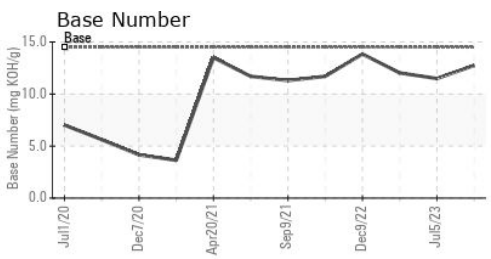
Silicon (ppm)



Viscosity @ 100°C



Base Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HPL0002276
Lab Number : 06141543
Unique Number : 10966351
Test Package : MOB 2

Received : 08 Apr 2024
Tested : 09 Apr 2024
Diagnosed : 10 Apr 2024 - Sean Felton

Certificate L2367

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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Report Id: MUSMUSIA [WUSCAR] 06141543 (Generated: 04/10/2024 14:56:35) Rev: 1

Submitted By: JONATHAN KLEIN