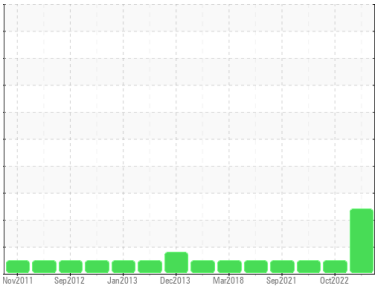
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Area
KEMP QUARRIES / MUSKOGEE SAND [65023]
Machine Id
TTH015
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. (Customer Sample Comment: PM-2 changed fluid and filters)

Wear

Cylinder, crank, or cam shaft wear is indicated. Bearing and/or bushing wear is indicated.

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 acceptable for the time in service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0037706**	PCA0062258	PCA0034595
Sample Date		Client Info		**06 Sep 2023**	14 Oct 2022	15 Mar 2022
Machine Age	hrs	Client Info		**18526**	17730	17595
Oil Age	hrs	Client Info		**18526**	135	200
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>2.1	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>51	▲ **77**	29	18
Chromium	ppm	ASTM D5185m	>11	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>5	**<1**	<1	<1
Titanium	ppm	ASTM D5185m		**<1**	0	0
Silver	ppm	ASTM D5185m	>3	**0**	0	0
Aluminum	ppm	ASTM D5185m	>31	**4**	<1	<1
Lead	ppm	ASTM D5185m	>26	▲ **20**	3	2
Copper	ppm	ASTM D5185m	>26	▲ **69**	4	3
Tin	ppm	ASTM D5185m	>4	**2**	<1	1
Antimony	ppm	ASTM D5185m		**---**	---	---
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	0	**0**	1	3
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	60	**68**	56	60
Manganese	ppm	ASTM D5185m	0	**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	1010	**1067**	842	995
Calcium	ppm	ASTM D5185m	1070	**1227**	980	1180
Phosphorus	ppm	ASTM D5185m	1150	**1083**	910	1048
Zinc	ppm	ASTM D5185m	1270	**1352**	1114	1249
Sulfur	ppm	ASTM D5185m	2060	**3129**	2748	2682

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>22	**8**	5	4
Sodium	ppm	ASTM D5185m	>31	**4**	2	2
Potassium	ppm	ASTM D5185m	>20	**0**	<1	0

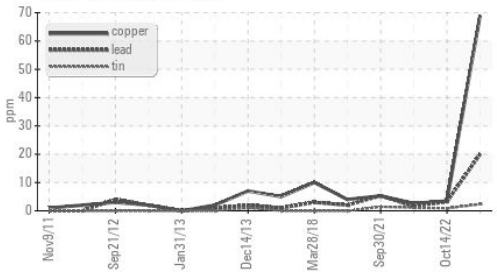
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.7**	0.5	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**10.2**	7.8	8.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	**21.1**	19.2	20.4

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**17.7**	14.7	16.0
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	**7.3**	7.8	10.0

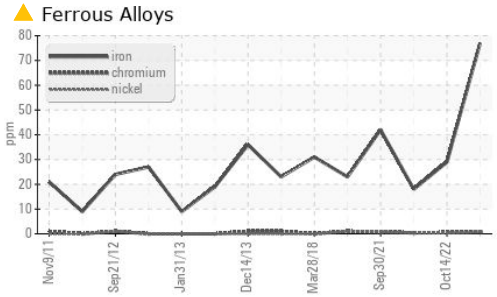
OIL DIAGNOSTICS

OIL ANALYSIS REPORT

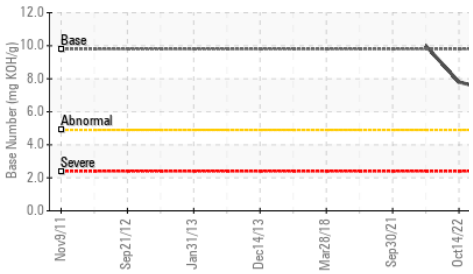
Non-ferrous Metals



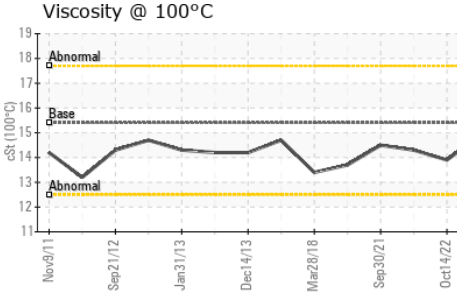
Ferrous Alloys



Base Number



Viscosity @ 100°C

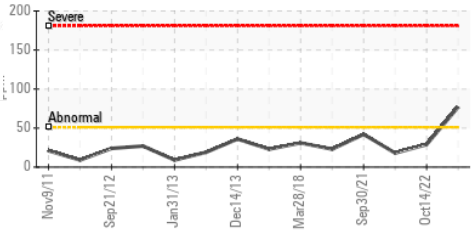


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.21	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

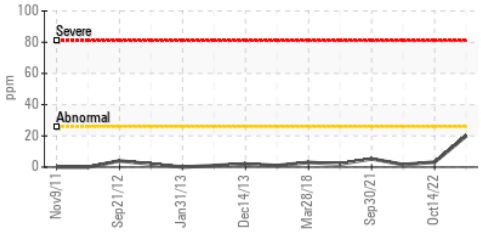
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**14.9**	13.9	14.3

GRAPHS

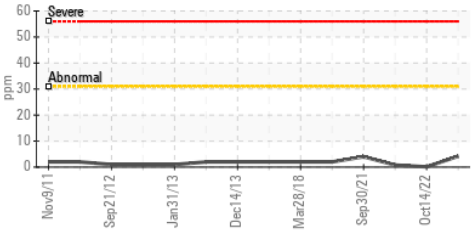
Iron (ppm)



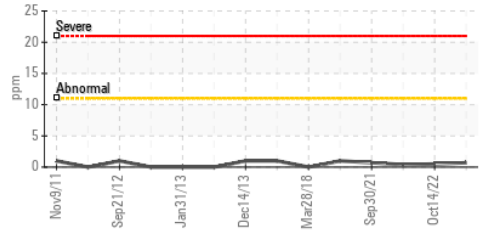
Lead (ppm)



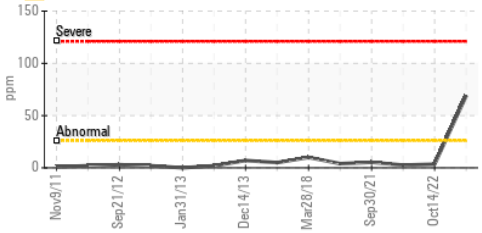
Aluminum (ppm)



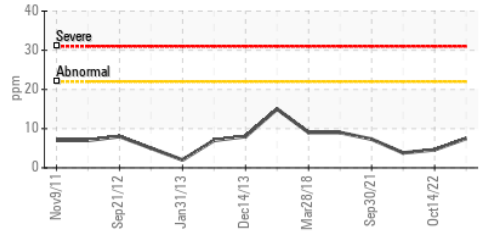
Chromium (ppm)



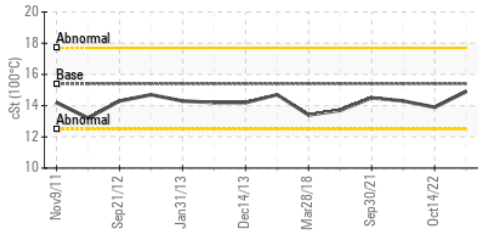
Copper (ppm)



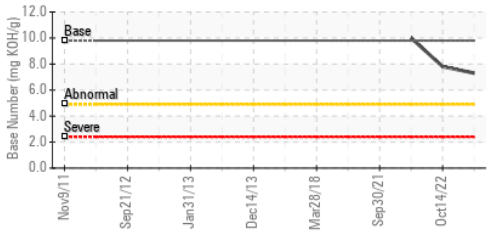
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0037706
Lab Number : 05952073
Unique Number : 10648032
Test Package : MOB 1 (Additional Tests: TBN)

Received : 14 Sep 2023
Diagnosed : 19 Sep 2023
Diagnostician : Jonathan Hester

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: KEMPOR [WUSCAR] 05952073 (Generated: 09/20/2023 06:36:28) Rev: 1

Submitted By: