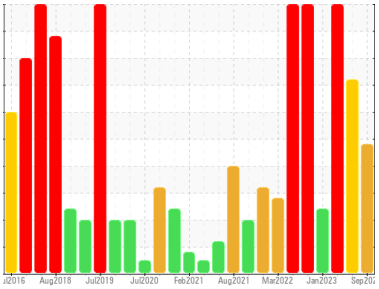
OIL ANALYSIS REPORT

Area
KEMP QUARRIES / RIVER VALLEY ARKOMA
Machine Id
WL108
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



SOOT

DIAGNOSIS

Recommendation

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value. Please note that this is a corrected copy for laboratory data updates.

Wear

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core).

Contamination

There is an abnormal amount of solids and carbon present in the oil. Light fuel dilution occurring.

Fluid Condition

The BN level is low.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0083945**	PCA0084137	PCA0070325
Sample Date		Client Info		**08 Sep 2023**	04 Aug 2023	23 Mar 2023
Machine Age	hrs	Client Info		**46766**	46129	45601
Oil Age	hrs	Client Info		**46129**	45601	45601
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	SEVERE	SEVERE

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**37**	37	43
Chromium	ppm	ASTM D5185m	>20	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	<1	1
Titanium	ppm	ASTM D5185m	>2	**<1**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>25	**1**	2	2
Lead	ppm	ASTM D5185m	>40	**5**	1	4
Copper	ppm	ASTM D5185m	>330	▲ **524**	▲ 545	● 630
Tin	ppm	ASTM D5185m	>15	**<1**	<1	<1
Vanadium	ppm	ASTM D5185m		**<1**	<1	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	**2**	0	<1
Barium	ppm	ASTM D5185m	0	**0**	1	3
Molybdenum	ppm	ASTM D5185m	60	**63**	91	168
Manganese	ppm	ASTM D5185m	0	**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	1010	**946**	905	838
Calcium	ppm	ASTM D5185m	1070	**1091**	1010	982
Phosphorus	ppm	ASTM D5185m	1150	**958**	944	963
Zinc	ppm	ASTM D5185m	1270	**1244**	1164	1150
Sulfur	ppm	ASTM D5185m	2060	**3181**	2763	2730

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**4**	5	9
Sodium	ppm	ASTM D5185m		**53**	▲ 222	▲ 881
Potassium	ppm	ASTM D5185m	>20	**17**	▲ 64	▲ 183
Fuel	%	ASTM D3524	>5	▲ **4.6**	▲ 3.9	2.4
Glycol	%	*ASTM D2982		**NEG**	NEG	● 0.10

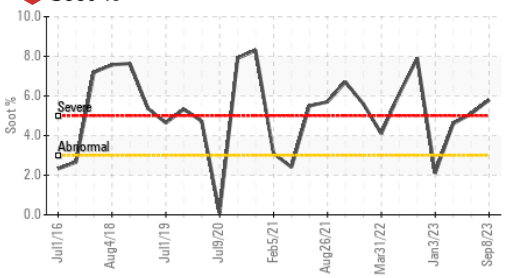
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	● **5.8**	● 5.1	▲ 4.6
Nitration	Abs/cm	*ASTM D7624	>20	**13.6**	13.6	13.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**30.6**	28.9	27.2

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**20.4**	18.8	15.0
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	▲ **0.0**	▲ 0.0	6.2

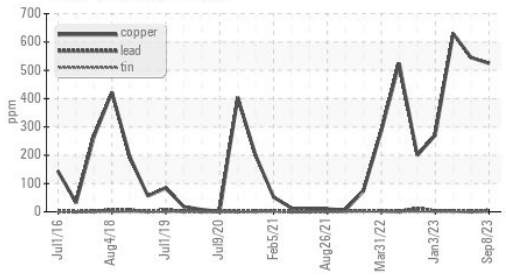
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

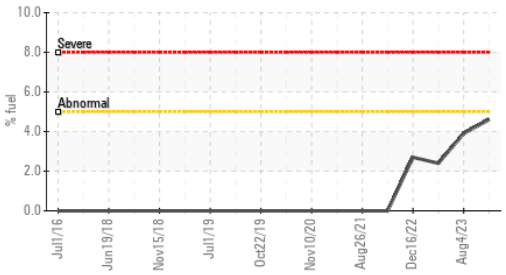
Soot %



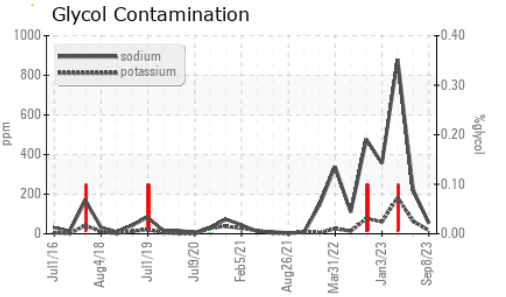
Non-ferrous Metals



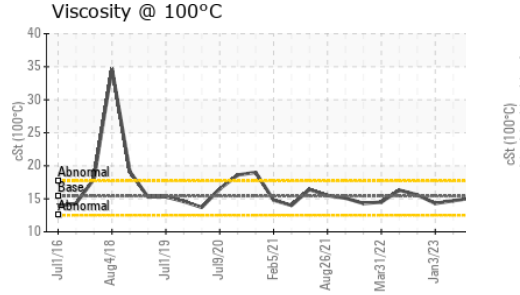
Fuel Dilution



Glycol Contamination



Viscosity @ 100°C

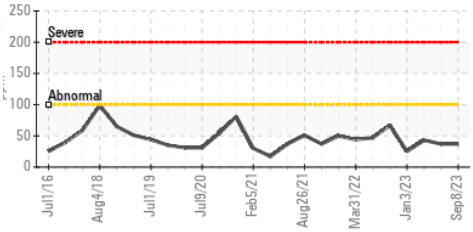


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

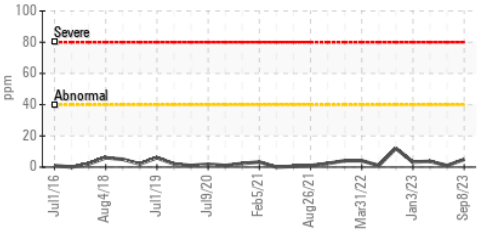
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	**15.2**	15.1	14.7

GRAPHS

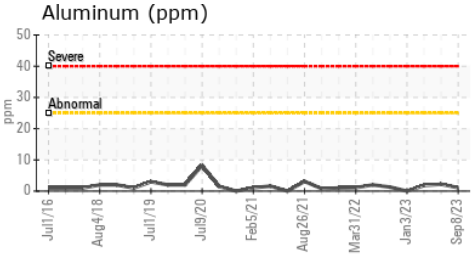
Iron (ppm)



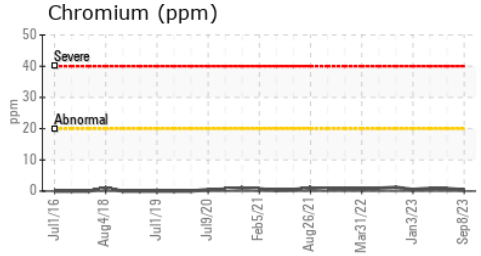
Lead (ppm)



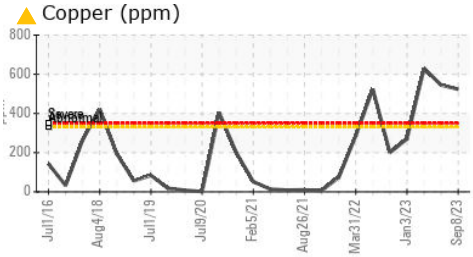
Aluminum (ppm)



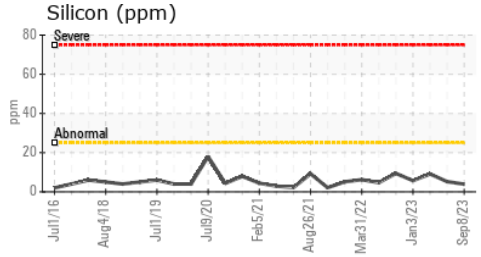
Chromium (ppm)



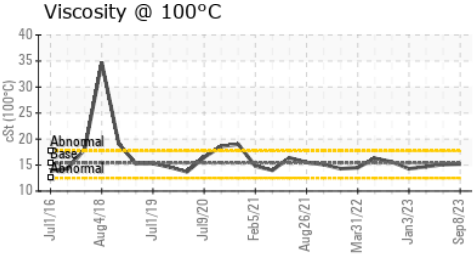
Copper (ppm)



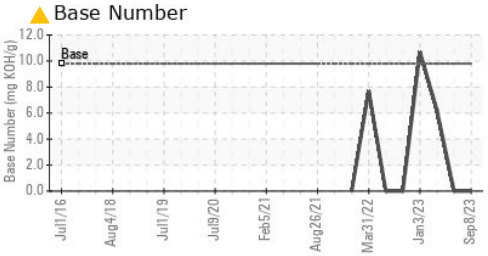
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0083945
Lab Number : 05953314
Unique Number : 10649273
Test Package : MOB 1 (Additional Tests: FUELDILUTION, Glycol, PercentFuel, TBN)

Received : 15 Sep 2023
Diagnosed : 21 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: KEMSHA [WUSCAR] 05953314 (Generated: 09/21/2023 15:04:40) Rev: 2

Submitted By: