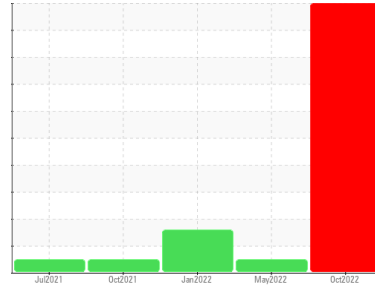


Area
KEMP QUARRIES / PRYOR STONE [60948]
Machine Id
WL140
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)



DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. (Customer Sample Comment: Pm1 performed. All oil samples taken, and all filters changed.)

Wear

Piston, ring and cylinder wear is indicated.

Contamination

Sodium and/or potassium levels are high. Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0049019	PCA0037620	PCA0048471
Sample Date	Client Info	25 Oct 2022	04 May 2022	04 Jan 2022
Machine Age	hrs	2330	2013	2013
Oil Age	hrs	202	2013	159
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		SEVERE	NORMAL	ABNORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Fuel	WC Method >5	<1.0	<1.0	<1.0

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >100	777	24	26
Chromium	ppm ASTM D5185m >20	22	<1	<1
Nickel	ppm ASTM D5185m >4	2	0	0
Titanium	ppm ASTM D5185m	9	<1	<1
Silver	ppm ASTM D5185m >3	0	0	0
Aluminum	ppm ASTM D5185m >20	213	11	11
Lead	ppm ASTM D5185m >40	0	0	0
Copper	ppm ASTM D5185m >330	10	<1	<1
Tin	ppm ASTM D5185m >15	2	<1	<1
Antimony	ppm ASTM D5185m	---	---	0
Vanadium	ppm ASTM D5185m	<1	0	0
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 0	3	4	4
Barium	ppm ASTM D5185m 0	0	0	0
Molybdenum	ppm ASTM D5185m 60	65	60	58
Manganese	ppm ASTM D5185m 0	7	<1	<1
Magnesium	ppm ASTM D5185m 1010	1018	958	951
Calcium	ppm ASTM D5185m 1070	2120	1146	1163
Phosphorus	ppm ASTM D5185m 1150	1051	1051	1034
Zinc	ppm ASTM D5185m 1270	1262	1284	1212
Sulfur	ppm ASTM D5185m 2060	3908	3334	2838

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	626	22	26
Sodium	ppm ASTM D5185m	18	2	0
Potassium	ppm ASTM D5185m >20	44	2	2
Glycol	% *ASTM D2982	NEG	NEG	NEG

INFRA-RED

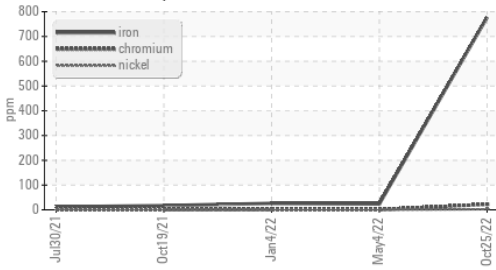
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.3	0.1	0.1
Nitration	Abs/cm *ASTM D7624 >20	6.8	5.4	5.5
Sulfation	Abs/.1mm *ASTM D7415 >30	21.9	17.1	18

FLUID DEGRADATION

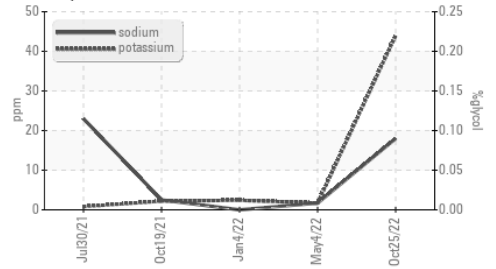
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	15.3	13.1	13.8
Base Number (BN)	mg KOH/g ASTM D2896 9.8	12.2	9.4	9.6

OIL ANALYSIS REPORT

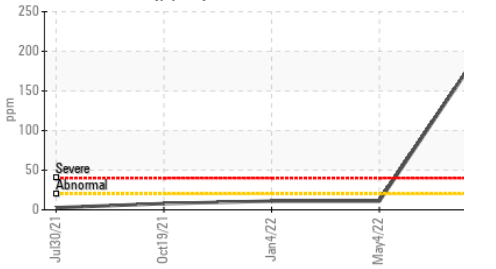
Ferrous Alloys



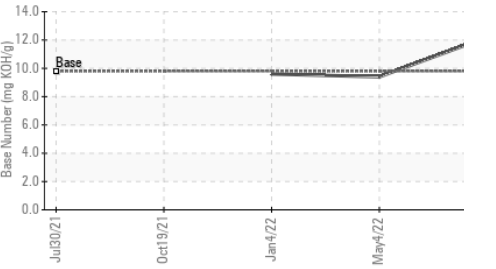
Glycol Contamination



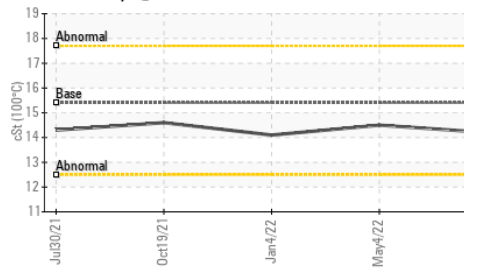
Aluminum (ppm)



Base Number



Viscosity @ 100°C



VISUAL

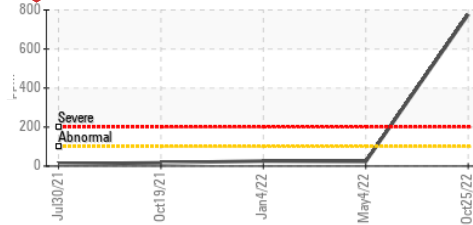
method	limit/base	current	history1	history2
White Metal	scalar *Visual	NONE	NONE	NONE
Yellow Metal	scalar *Visual	NONE	NONE	NONE
Precipitate	scalar *Visual	NONE	NONE	NONE
Silt	scalar *Visual	NONE	NONE	NONE
Debris	scalar *Visual	NONE	NONE	NONE
Sand/Dirt	scalar *Visual	NONE	NONE	NONE
Appearance	scalar *Visual	NORML	NORML	NORML
Odor	scalar *Visual	NORML	NORML	NORML
Emulsified Water	scalar *Visual	>0.2	NEG	NEG
Free Water	scalar *Visual	NEG	NEG	NEG

FLUID PROPERTIES

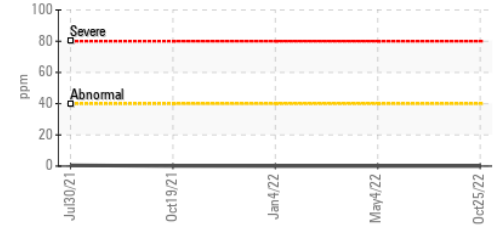
method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	15.4	14.2	14.5

GRAPHS

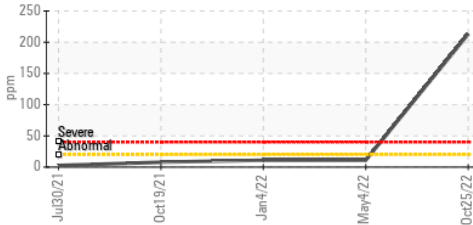
Iron (ppm)



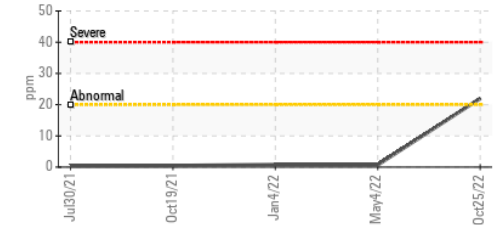
Lead (ppm)



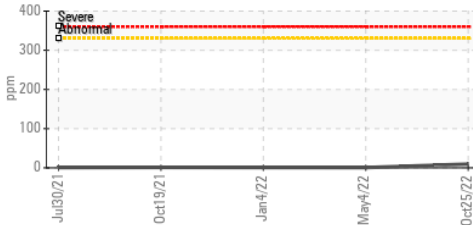
Aluminum (ppm)



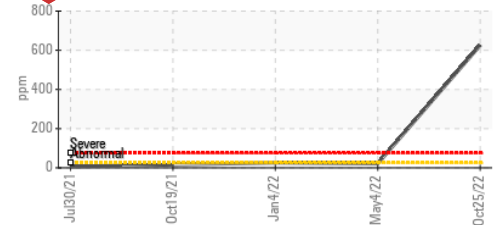
Chromium (ppm)



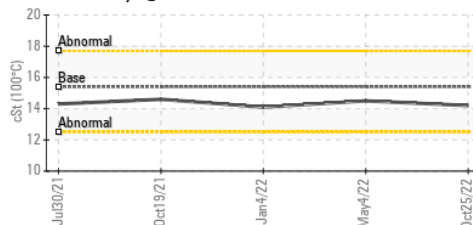
Copper (ppm)



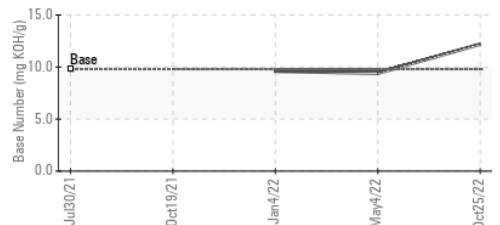
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0049019 **Received** : 21 Nov 2022
Lab Number : 05698626 **Diagnosed** : 23 Nov 2022
Unique Number : 10228200 **Diagnostician** : Jonathan Hester
Test Package : MOB 1 (Additional Tests: Glycol, TBN)

Kemp Quarries - Pryor Stone - Pryor
 1050 E 520 Rd
 Pryor, OK
 US 74361
 Contact:
 pryor@pryorstone.com

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)

T:
F: