

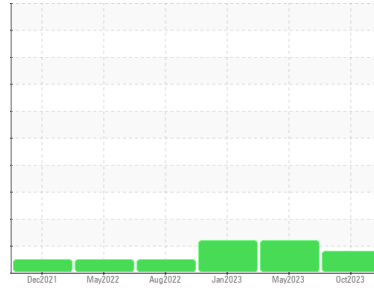


OIL ANALYSIS REPORT



Area
KEMP QUARRIES / NEOSHO [66108]
 Machine Id
WL146
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



WEAR



DIAGNOSIS

▲ Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: PM-1 changed filters and fluid . Drained cold, antifreeze suspected)

▲ Wear

The copper level is abnormal. Elemental level of copper (Cu) probably due to leaching of copper from copper components (i.e. cooling core) by the oil additives. All other 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 acceptable for the time in service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0084731	PCA0085698	PCA0086749
Sample Date	Client Info	10 Oct 2023	18 May 2023	17 Jan 2023
Machine Age	hrs	25999	23565	25143
Oil Age	hrs	25999	23565	25143
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		ABNORMAL	ATTENTION	ATTENTION

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	70	50	72
Chromium	ppm ASTM D5185m >20	1	1	1
Nickel	ppm ASTM D5185m >2	1	<1	<1
Titanium	ppm ASTM D5185m >2	0	0	0
Silver	ppm ASTM D5185m >2	0	0	0
Aluminum	ppm ASTM D5185m >25	1	<1	0
Lead	ppm ASTM D5185m >40	10	5	15
Copper	ppm ASTM D5185m >330	▲ 529	144	41
Tin	ppm ASTM D5185m >15	<1	1	2
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	2	4	7
Barium	ppm ASTM D5185m 0	0	0	0
Molybdenum	ppm ASTM D5185m 60	65	71	68
Manganese	ppm ASTM D5185m 0	<1	<1	<1
Magnesium	ppm ASTM D5185m 1010	973	970	927
Calcium	ppm ASTM D5185m 1070	1060	1127	1131
Phosphorus	ppm ASTM D5185m 1150	989	1079	1043
Zinc	ppm ASTM D5185m 1270	1248	1321	1272
Sulfur	ppm ASTM D5185m 2060	2524	3352	2748

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	6	5	8
Sodium	ppm ASTM D5185m	26	▲ 66	▲ 84
Potassium	ppm ASTM D5185m >20	4	5	7
Glycol	% *ASTM D2982	NEG	NEG	NEG

INFRA-RED

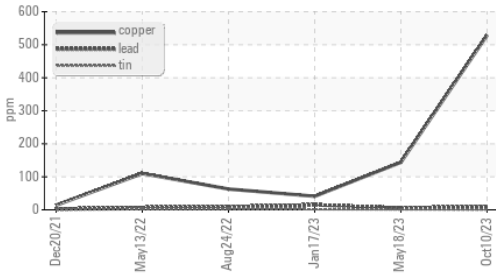
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	1.6	1	1.6
Nitration	Abs/cm *ASTM D7624 >20	11.5	9.4	12.5
Sulfation	Abs/.1mm *ASTM D7415 >30	22.5	22.0	25.2

FLUID DEGRADATION

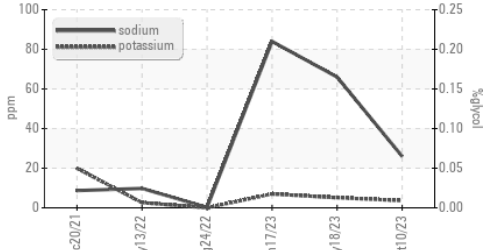
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	18.5	17.6	19.7
Base Number (BN)	mg KOH/g ASTM D2896 9.8	8.0	8.5	8.0

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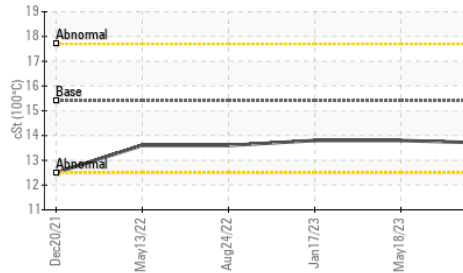
▲ Non-ferrous Metals



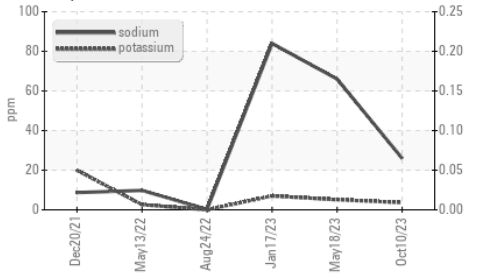
Glycol Contamination



Viscosity @ 100°C



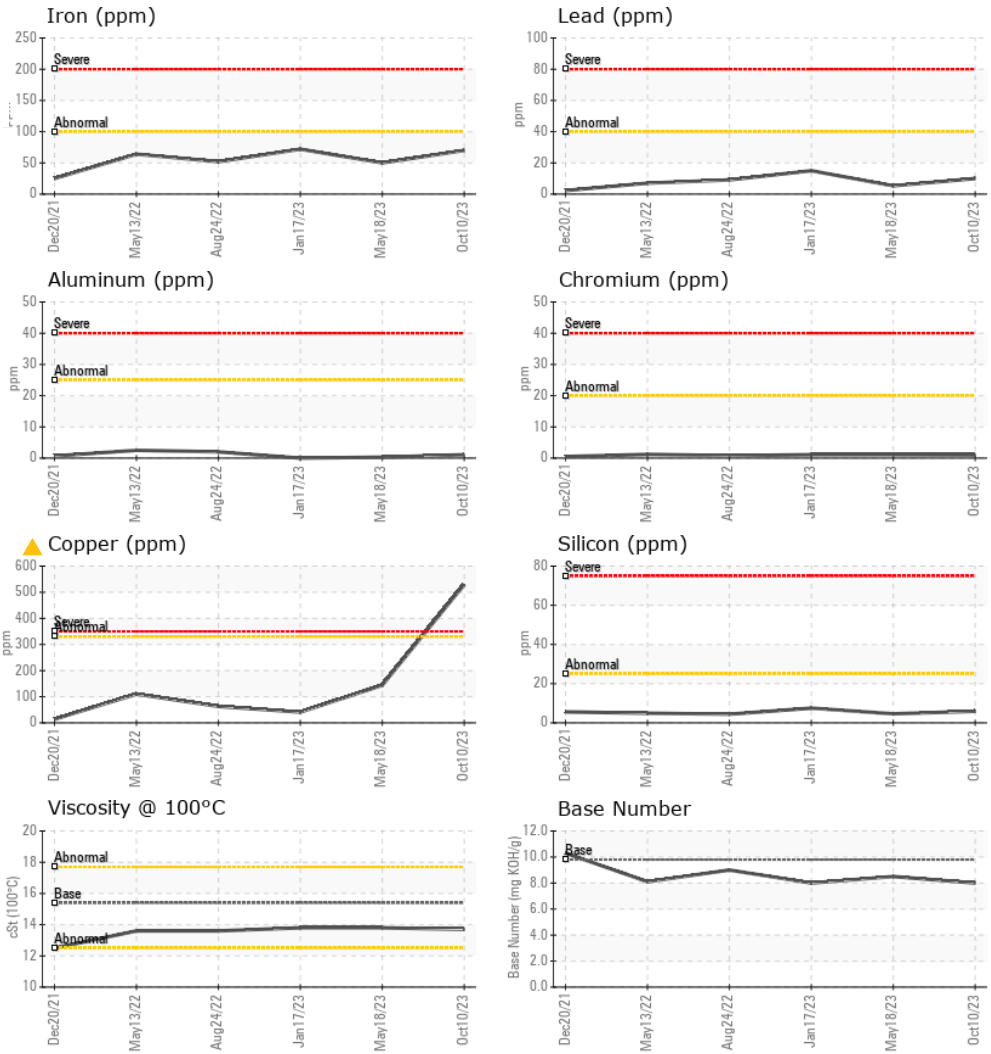
Glycol Contamination



PARAMETER	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	15.4	13.7	13.8

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0084731
Lab Number : 05987154
Unique Number : 10709816
Test Package : MOB 1 (Additional Tests: Glycol, TBN)

Kemp Quarries - Kemp Stone - Neosho
 19148 Ingersol Lane
 Neosho, MO
 US 64850
 Contact:
 neosho@kempstone.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)