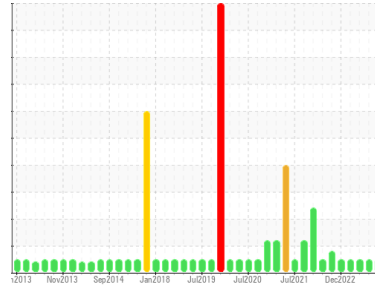


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
KEMP QUARRIES / MUSKOGEE SAND [66638]
 Machine Id
WL056
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: PM-3 changed filters and fluid)

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	PCA0084738	PCA0087098	PCA0087164
Sample Date	Client Info	03 Oct 2023	10 Aug 2023	06 Jun 2023
Machine Age	hrs	34177	33775	33310
Oil Age	hrs	34177	665	725
Oil Changed	Client Info	Changed	Changed	Changed
Sample Status		NORMAL	NORMAL	NORMAL

CONTAMINATION

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

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >100	24	35	34
Chromium	ppm ASTM D5185m >20	<1	<1	<1
Nickel	ppm ASTM D5185m >4	<1	<1	<1
Titanium	ppm ASTM D5185m	<1	0	0
Silver	ppm ASTM D5185m >3	0	0	0
Aluminum	ppm ASTM D5185m >20	1	<1	2
Lead	ppm ASTM D5185m >40	1	1	4
Copper	ppm ASTM D5185m >330	4	6	11
Tin	ppm ASTM D5185m >15	<1	2	2
Vanadium	ppm ASTM D5185m	0	0	<1
Cadmium	ppm ASTM D5185m	<1	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m 0	0	0	5
Barium	ppm ASTM D5185m 0	3	0	0
Molybdenum	ppm ASTM D5185m 60	58	62	61
Manganese	ppm ASTM D5185m 0	<1	0	1
Magnesium	ppm ASTM D5185m 1010	875	982	1004
Calcium	ppm ASTM D5185m 1070	985	1112	1172
Phosphorus	ppm ASTM D5185m 1150	952	1001	1087
Zinc	ppm ASTM D5185m 1270	1119	1272	1401
Sulfur	ppm ASTM D5185m 2060	2715	3034	3931

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	3	4	4
Sodium	ppm ASTM D5185m	4	3	2
Potassium	ppm ASTM D5185m >20	<1	<1	2

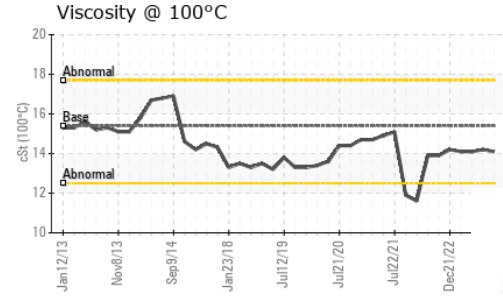
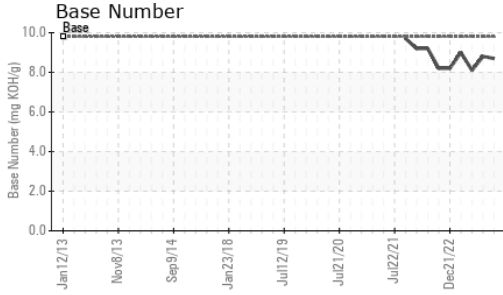
INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.3	0.5	0.4
Nitration	Abs/cm *ASTM D7624 >20	7.4	8.8	9.1
Sulfation	Abs/.1mm *ASTM D7415 >30	18.9	20.0	21.4

FLUID DEGRADATION

method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	15.4	16.8	19.5
Base Number (BN)	mg KOH/g ASTM D2896 9.8	8.7	8.8	8.1

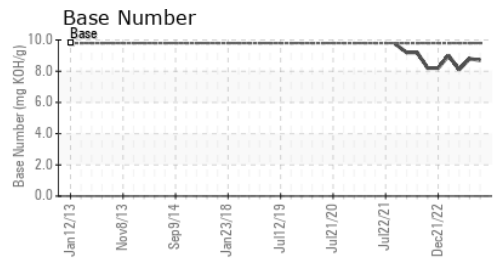
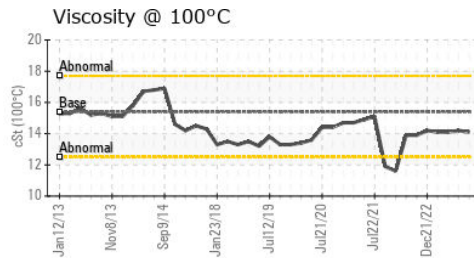
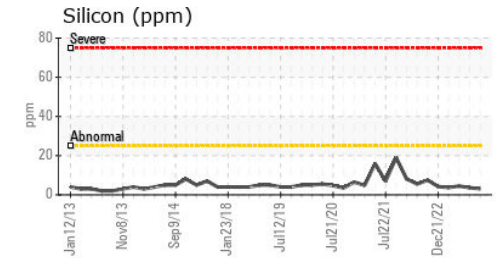
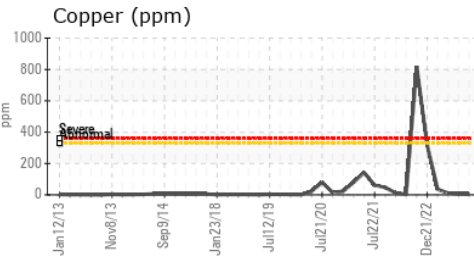
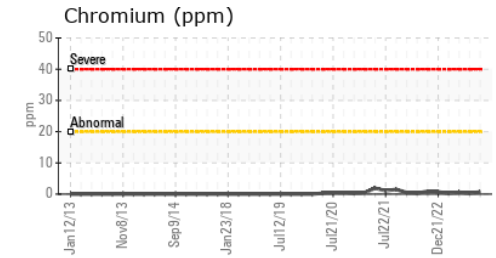
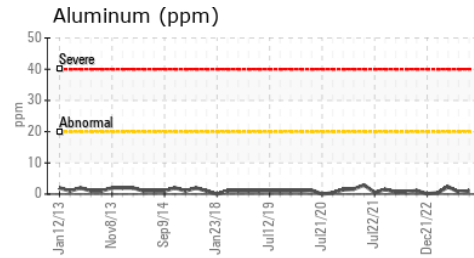
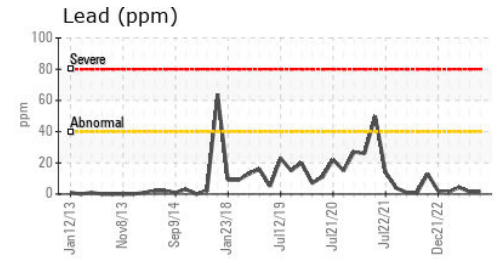
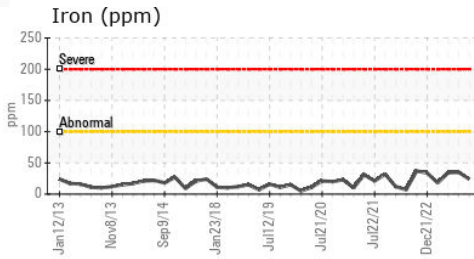
OIL ANALYSIS REPORT



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

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.2	14.1

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0084738 **Received** : 16 Oct 2023
Lab Number : **05980164** **Diagnosed** : 18 Oct 2023
Unique Number : 10697459 **Diagnostician** : Don Baldrige
Test Package : MOB 1 (Additional Tests: TBN)

Kemp Quarries - Muskogee Sand
 3395 W 50th St N
 Porter, OK
 US 74454
 Contact:

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)

muskogee@muskogeessand.com

T:

F: