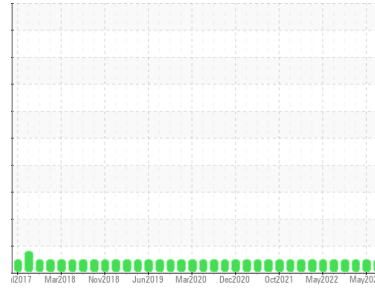


OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Area
KEMP QUARRIES / MUSKOGEE SAND
 Machine Id
WL109
 Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Changed oil and filter due too low oil pressure light coming on.)

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			PCA0087100	PCA0087182	PCA0087157
Sample Date	Client Info			09 Aug 2023	26 May 2023	17 Mar 2023
Machine Age	hrs Client Info			49450	48845	48290
Oil Age	hrs Client Info			605	555	790
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		23	15	17
Chromium	ppm ASTM D5185m	>20		0	0	<1
Nickel	ppm ASTM D5185m	>4		0	0	0
Titanium	ppm ASTM D5185m			0	0	0
Silver	ppm ASTM D5185m	>3		0	0	0
Aluminum	ppm ASTM D5185m	>20		<1	<1	1
Lead	ppm ASTM D5185m	>40		0	0	<1
Copper	ppm ASTM D5185m	>330		4	3	3
Tin	ppm ASTM D5185m	>15		<1	<1	<1
Vanadium	ppm ASTM D5185m			0	0	0
Cadmium	ppm ASTM D5185m			0	0	0

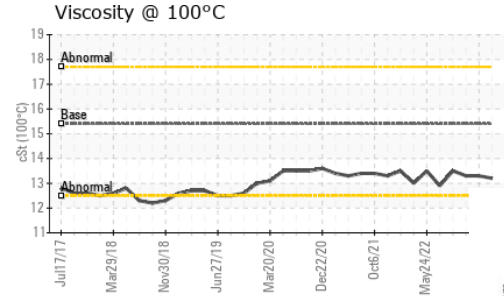
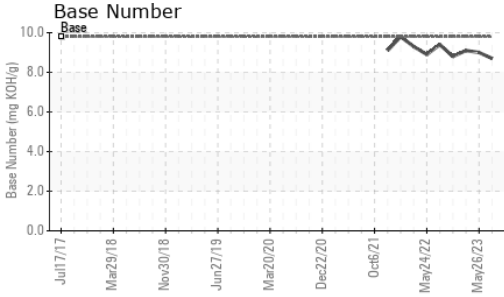
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	0		3	0	2
Barium	ppm ASTM D5185m	0		0	0	0
Molybdenum	ppm ASTM D5185m	60		60	59	60
Manganese	ppm ASTM D5185m	0		0	<1	<1
Magnesium	ppm ASTM D5185m	1010		927	916	969
Calcium	ppm ASTM D5185m	1070		1066	1095	1093
Phosphorus	ppm ASTM D5185m	1150		967	1024	1080
Zinc	ppm ASTM D5185m	1270		1201	1219	1305
Sulfur	ppm ASTM D5185m	2060		2988	3580	3694

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m	>25		3	4	5
Sodium	ppm ASTM D5185m			2	2	2
Potassium	ppm ASTM D5185m	>20		<1	0	0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	>3		0.9	0.5	0.6
Nitration	Abs/cm *ASTM D7624	>20		6.8	6.4	6.6
Sulfation	Abs/.1mm *ASTM D7415	>30		18.9	18.8	18.8

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414	>25		13.6	13.7	13.8
Base Number (BN)	mg KOH/g ASTM D2896	9.8		8.7	9.0	9.1

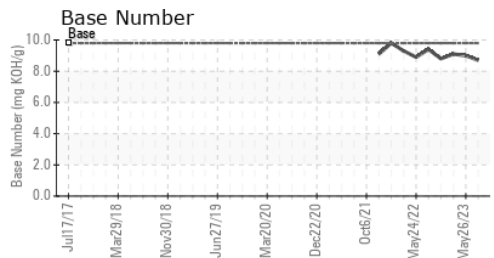
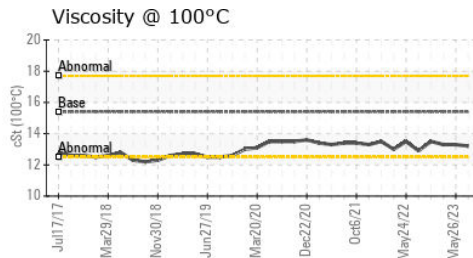
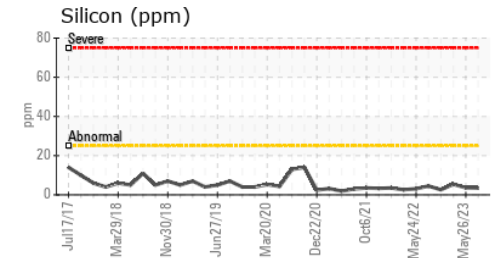
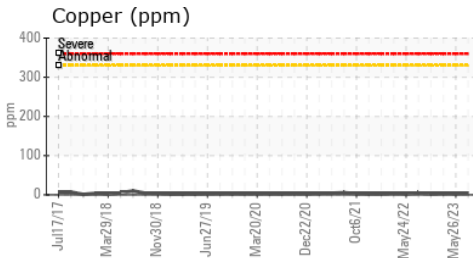
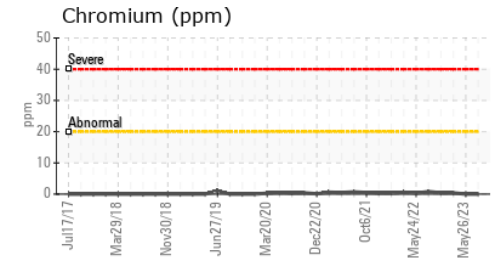
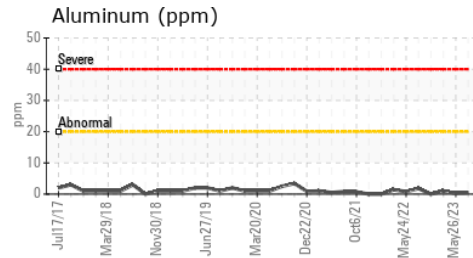
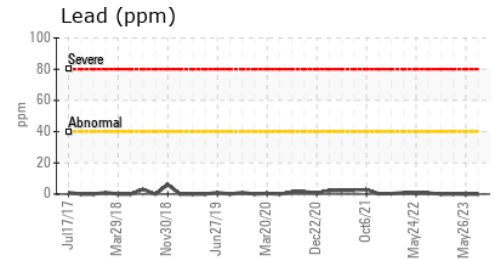
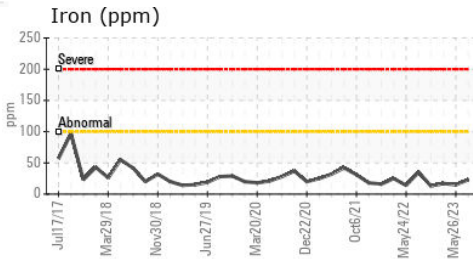
OIL ANALYSIS REPORT



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	13.2	13.3

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0087100 **Received** : 04 Oct 2023
Lab Number : **05969522** **Diagnosed** : 09 Oct 2023
Unique Number : 10676073 **Diagnostician** : Sean Felton
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

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F: