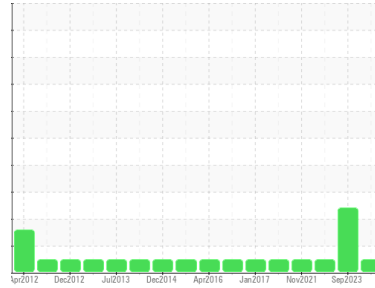


# OIL ANALYSIS REPORT

## Sample Rating Trend

**NORMAL**



Area  
**KEMP QUARRIES / MUSKOGEE SAND [67431]**  
Machine Id  
**WL001**  
Component  
**Diesel Engine**  
Fluid  
**PETRO CANADA DURON SHP 15W40 (--- GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: PM-2 changed fluid and filters )

### 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		<b>PCA0086545</b>	PCA0037711	PCA0070485
Sample Date	Client Info		<b>29 Feb 2024</b>	06 Sep 2023	08 Jul 2022
Machine Age	hrs	Client Info	<b>3895</b>	3441	2975
Oil Age	hrs	Client Info	<b>3895</b>	0	140
Oil Changed	Client Info		<b>Changed</b>	N/A	Changed
Sample Status			<b>NORMAL</b>	ABNORMAL	NORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water	WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol	WC Method		<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	<b>36</b>	64	13
Chromium	ppm	ASTM D5185m >20	<b>2</b>	6	<1
Nickel	ppm	ASTM D5185m >2	<b>&lt;1</b>	3	0
Titanium	ppm	ASTM D5185m >2	<b>0</b>	1	0
Silver	ppm	ASTM D5185m >2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m >25	<b>3</b>	13	2
Lead	ppm	ASTM D5185m >40	<b>10</b>	20	3
Copper	ppm	ASTM D5185m >330	<b>6</b>	21	3
Tin	ppm	ASTM D5185m >15	<b>&lt;1</b>	5	<1
Antimony	ppm	ASTM D5185m	<b>---</b>	---	---
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	<1	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 0	<b>2</b>	2	6
Barium	ppm	ASTM D5185m 0	<b>0</b>	45	0
Molybdenum	ppm	ASTM D5185m 60	<b>66</b>	64	63
Manganese	ppm	ASTM D5185m 0	<b>&lt;1</b>	2	<1
Magnesium	ppm	ASTM D5185m 1010	<b>1048</b>	915	965
Calcium	ppm	ASTM D5185m 1070	<b>1174</b>	1011	1129
Phosphorus	ppm	ASTM D5185m 1150	<b>1007</b>	915	1068
Zinc	ppm	ASTM D5185m 1270	<b>1253</b>	1160	1290
Sulfur	ppm	ASTM D5185m 2060	<b>3254</b>	3010	3147

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	<b>8</b>	25	4
Sodium	ppm	ASTM D5185m	<b>56</b>	4	0
Potassium	ppm	ASTM D5185m >20	<b>2</b>	5	<1

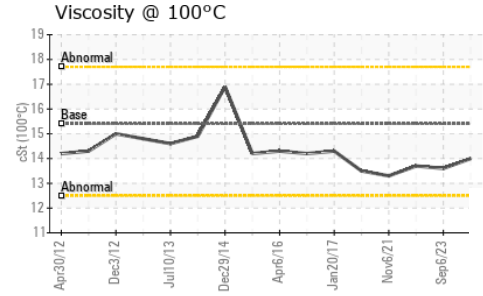
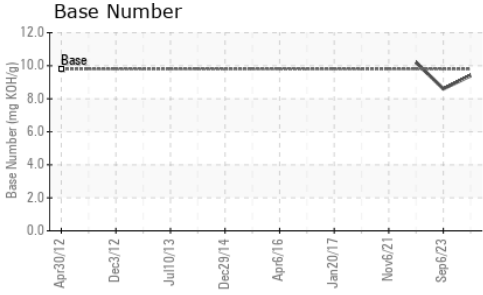
## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	<b>0.4</b>	0.3	0.2
Nitration	Abs/cm	*ASTM D7624 >20	<b>8.1</b>	7.1	7.4
Sulfation	Abs/.1mm	*ASTM D7415 >30	<b>19.6</b>	18.7	19.4

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	<b>16.3</b>	14.5	15.7
Base Number (BN)	mg KOH/g	ASTM D2896 9.8	<b>9.4</b>	8.6	10.2

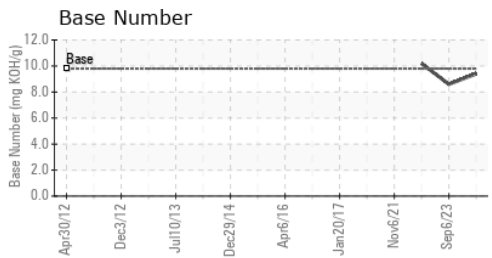
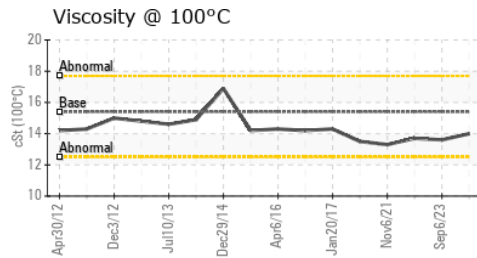
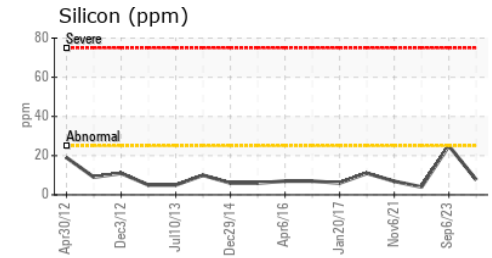
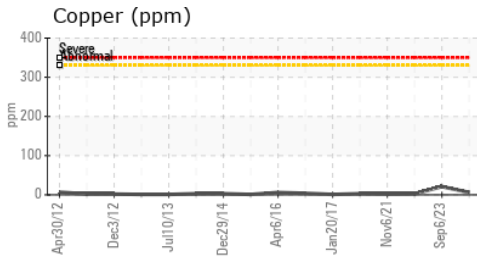
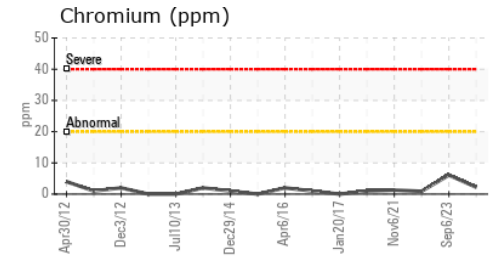
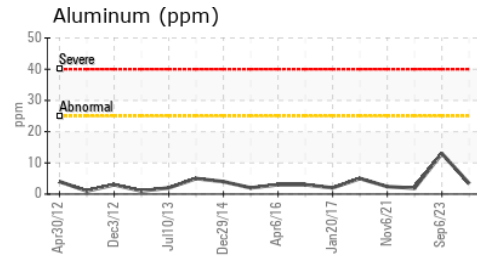
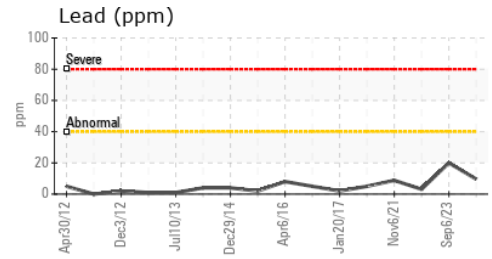
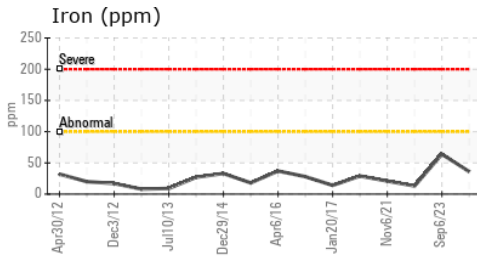
# OIL ANALYSIS REPORT



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	<b>14.0</b>	13.6	13.7

## GRAPHS



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : PCA0086545  
**Lab Number** : 06114794  
**Unique Number** : 10923627  
**Test Package** : MOB 1 ( Additional Tests: TBN )

**Received** : 11 Mar 2024  
**Tested** : 12 Mar 2024  
**Diagnosed** : 13 Mar 2024 - Jonathan Hester

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

Contact: MUSCOGEE NOTIFICATIONS  
 muskogee@muskogeessand.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)

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