

Area
KEMP QUARRIES / MUSKOGEE SAND
Machine Id
ENG045
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		PCA0085604	PCA0085642	PCA0085648
Sample Date		Client Info		20 May 2024	12 Dec 2023	14 Oct 2023
Machine Age	hrs	Client Info		13790	13335	13070
Oil Age	hrs	Client Info		0	265	13070
Filter Age	hrs	Client Info		0	265	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>51	27	12	43
Chromium	ppm	ASTM D5185m	>11	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>31	2	3	2
Lead	ppm	ASTM D5185m	>26	12	4	6
Copper	ppm	ASTM D5185m	>26	<1	0	<1
Tin	ppm	ASTM D5185m	>4	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

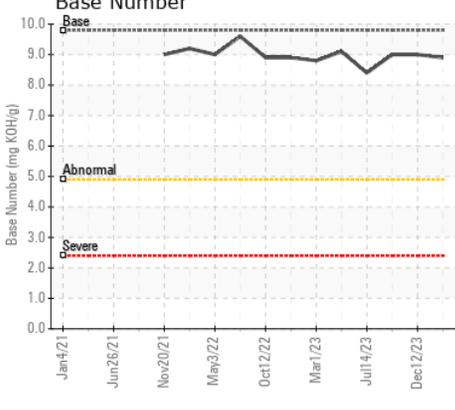
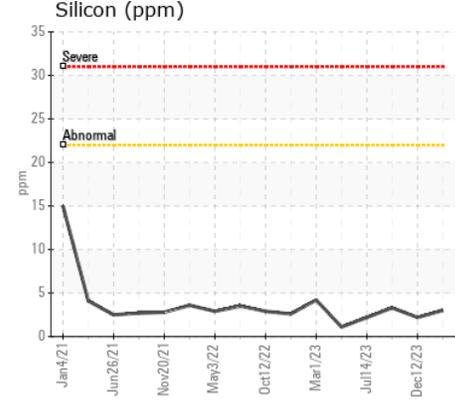
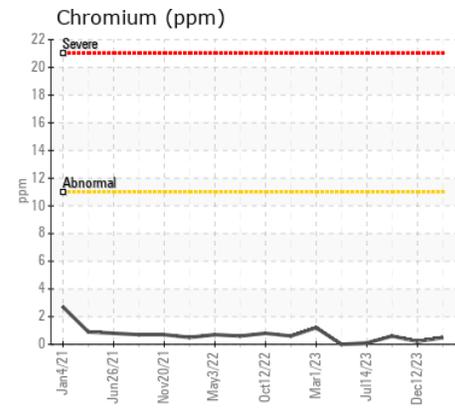
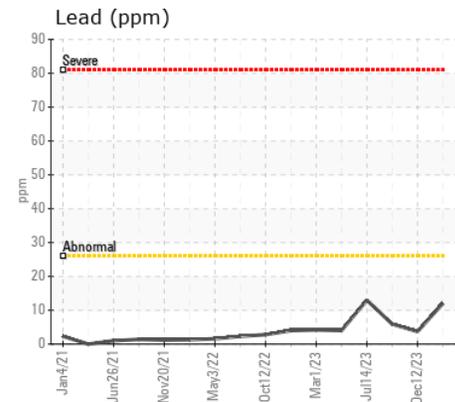
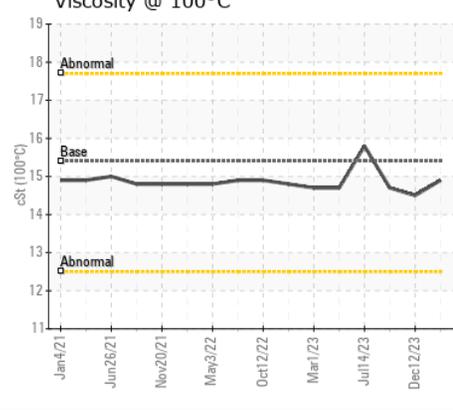
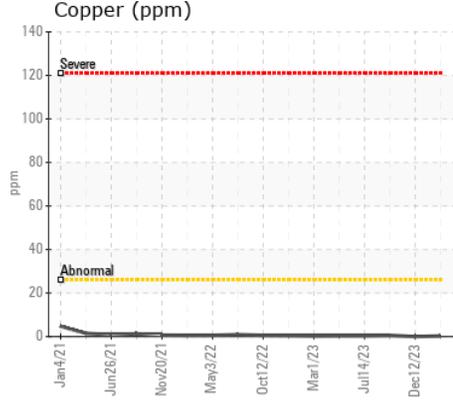
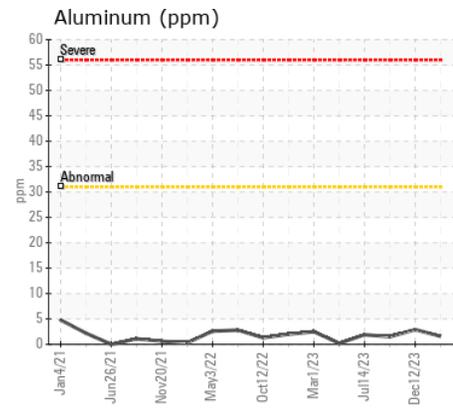
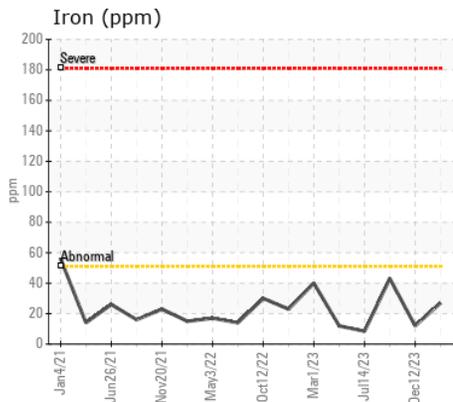
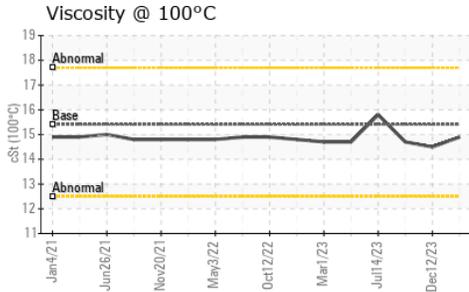
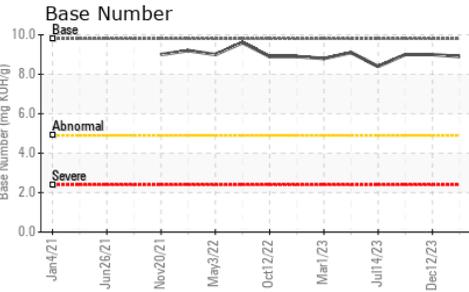
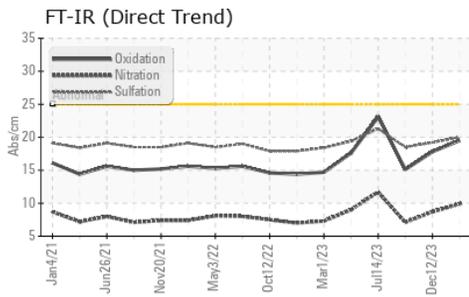
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>22	3	2	3
Potassium	ppm	ASTM D5185m	>20	<1	<1	0
Fuel		WC Method	>2.1	<1.0	<1.0	<1.0
Water		WC Method	>0.21	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.2	0.1	0.2
Nitration	Abs/cm	*ASTM D7624	>20	9.9	8.7	7.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.0	19.2	18.5
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.21	NEG	NEG	NEG

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.

Sodium	ppm	ASTM D5185m	>31	3	1	2
Boron	ppm	ASTM D5185m	0	0	2	0
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	60	67	58	62
Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Magnesium	ppm	ASTM D5185m	1010	1143	937	986
Calcium	ppm	ASTM D5185m	1070	1292	987	1094
Phosphorus	ppm	ASTM D5185m	1150	1223	1011	1041
Zinc	ppm	ASTM D5185m	1270	1547	1244	1269
Sulfur	ppm	ASTM D5185m	2060	4086	2956	3035
Oxidation	Abs/.1mm	*ASTM D7414	>25	19.5	17.8	15.1
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.9	9.0	9.0
Visc @ 100°C	cSt	ASTM D445	15.4	14.9	14.5	14.7



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0085604
Lab Number : 06193293
Unique Number : 11050045
Test Package : MOB 1 (Additional Tests: TBN)

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

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)

Contact: MUSCOGEE NOTIFICATIONS
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