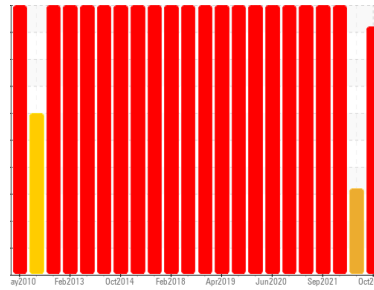


OIL ANALYSIS REPORT



Area
KEMP QUARRIES / MUSKOGEE SAND [65225]
Machine Id
WLO15
Component
Front Differential
Fluid
PETRO CANADA PRODURO TO-4 SAE 50 (--- GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation
We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. (Customer Sample Comment: PM-2 sampled fluid)

Wear
Gear wear is indicated.

Contamination
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		PCA0087060	PCA0087112	PCA0070542
Sample Date	Client Info		25 Oct 2023	03 Jun 2023	16 Feb 2023
Machine Age	hrs	Client Info	2234	1895	1210
Oil Age	hrs	Client Info	2234	685	2000
Oil Changed	Client Info		N/A	Not Changd	Changed
Sample Status			SEVERE	ABNORMAL	SEVERE

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >500	2022	1050	1287
Chromium	ppm	ASTM D5185m >3	6	3	6
Nickel	ppm	ASTM D5185m >3	3	1	2
Titanium	ppm	ASTM D5185m >2	2	<1	4
Silver	ppm	ASTM D5185m >2	0	0	0
Aluminum	ppm	ASTM D5185m >30	24	15	57
Lead	ppm	ASTM D5185m >13	2	2	6
Copper	ppm	ASTM D5185m >103	39	27	101
Tin	ppm	ASTM D5185m >5	2	0	4
Antimony	ppm	ASTM D5185m >5	---	---	---
Vanadium	ppm	ASTM D5185m	0	0	<1
Cadmium	ppm	ASTM D5185m	0	0	<1

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 2	<1	0	4
Barium	ppm	ASTM D5185m 0	19	0	0
Molybdenum	ppm	ASTM D5185m 0	2	1	3
Manganese	ppm	ASTM D5185m 0	16	8	14
Magnesium	ppm	ASTM D5185m 9	21	15	27
Calcium	ppm	ASTM D5185m 3114	2793	2754	2421
Phosphorus	ppm	ASTM D5185m 1099	925	925	974
Zinc	ppm	ASTM D5185m 1245	1071	1060	1097
Sulfur	ppm	ASTM D5185m 7086	6068	4782	7739

CONTAMINANTS

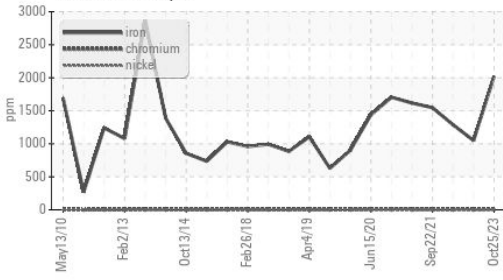
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >100	240	127	469
Sodium	ppm	ASTM D5185m	6	0	13
Potassium	ppm	ASTM D5185m >20	8	5	22

VISUAL

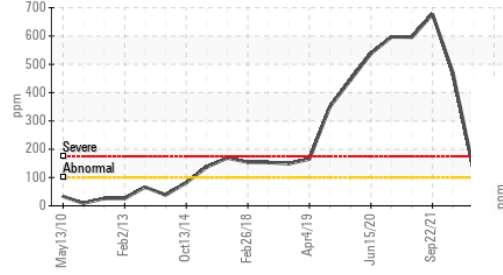
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual NONE	NONE	NONE	NONE
Silt	scalar	*Visual NONE	NONE	NONE	NONE
Debris	scalar	*Visual NONE	NONE	NONE	VLITE
Sand/Dirt	scalar	*Visual NONE	NONE	NONE	NONE
Appearance	scalar	*Visual NORML	NORML	NORML	NORML
Odor	scalar	*Visual NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual >.2	NEG	NEG	NEG
Free Water	scalar	*Visual	NEG	NEG	NEG

OIL ANALYSIS REPORT

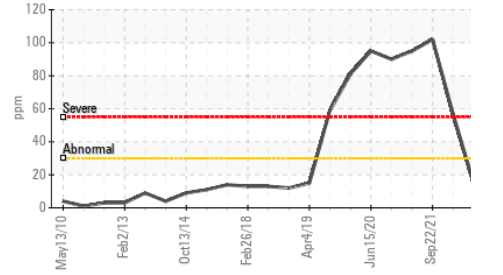
Ferrous Alloys



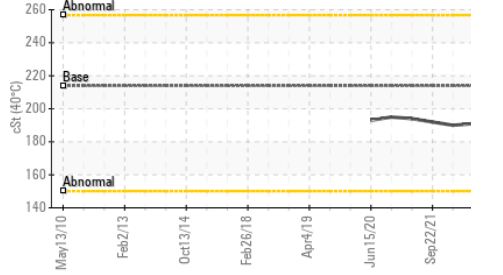
Silicon (ppm)



Aluminum (ppm)



Viscosity @ 40°C



FLUID PROPERTIES

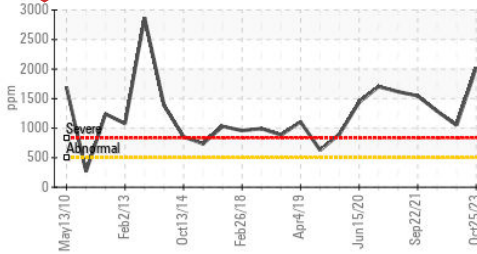
method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D445	213.9	192	191

SAMPLE IMAGES

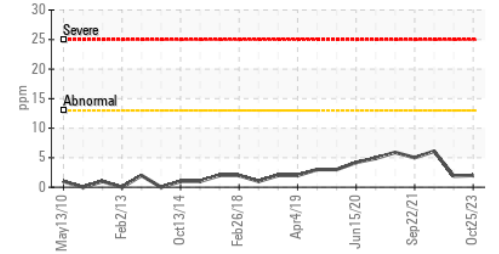
method	limit/base	current	history1	history2
Color			no image	no image
Bottom			no image	no image

GRAPHS

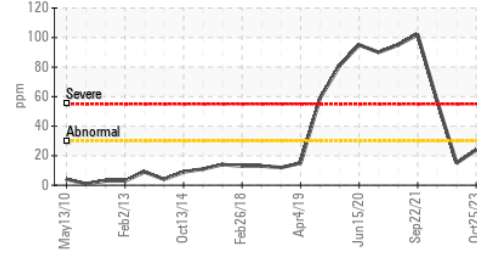
Iron (ppm)



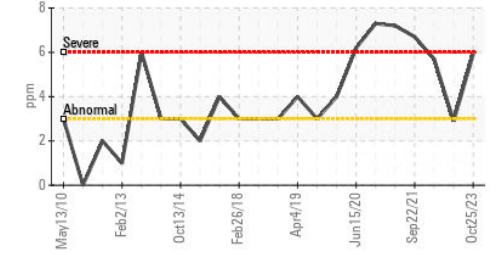
Lead (ppm)



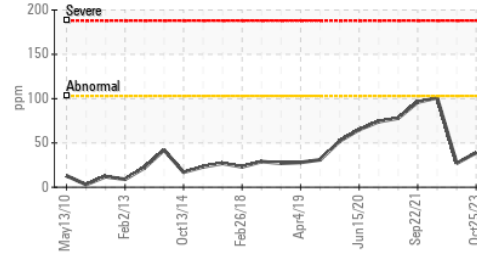
Aluminum (ppm)



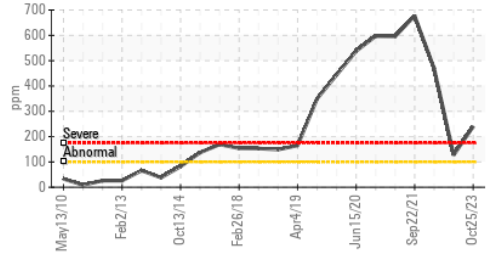
Chromium (ppm)



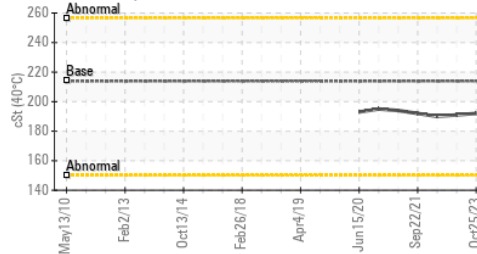
Copper (ppm)



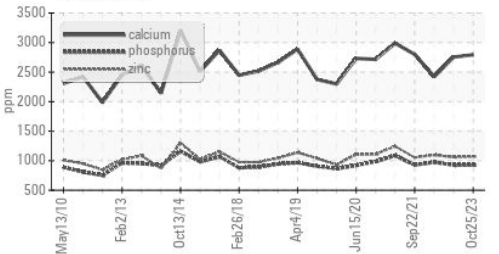
Silicon (ppm)



Viscosity @ 40°C



Additives



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0087060
Lab Number : 05993860
Unique Number : 10722220
Test Package : MOB 1

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)

muskegee@muskogeessand.com

T:

F: