

# **OIL ANALYSIS REPORT**

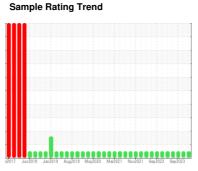


# KEMP QUARRIES / MUSKOGEE SAND [68593] WL109

Component

**Rear Left Final Drive** 

PETRO CANADA PRODURO TO-4 SAE 50 (--- GAL)





### DIAGNOSIS

### Recommendation

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

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

### **Fluid Condition**

The condition of the oil is acceptable for the time in service.

Client Info	RO TO-4 SAE 50 (-	GAL)	il2017 Jun201	8 Jan2019 Aug2019 Ma	/2020 Mar2021 Nov2021 Sep2022	Sep2023	
Client Info	SAMPLE INFORI	MATION	<b>Method</b>	limit/base	current	history1	history2
Marchine Age	Sample Number		Client Info		PCA0086512	PCA0070581	PCA008642
Dil Age	Sample Date		Client Info		05 Feb 2024	22 Nov 2023	11 Sep 2023
Cilichanged   Cilient Info   N/A   N/A   N/A   NORMAL   NORMAL	Machine Age	hrs	Client Info		50702	50215	49706
NORMAL   NORMAL   NORMAL   NORMAL   NORMAL   CONTAMINATION   method   fimit/base   current   history1   history2   history2   NEG   NEg	Oil Age	hrs	Client Info		50702	50215	49706
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ASTM D5185m         >800         160         28         98           Chromium         ppm         ASTM D5185m         >10         0         0         <1           Chromium         ppm         ASTM D5185m         >10         0         0         <1           Silver         ppm         ASTM D5185m         >15         <1         <1         <1         <1           Alluminum         ppm         ASTM D5185m         >2         0         0         <1         <1           Alluminum         ppm         ASTM D5185m         >10         0         0         0         <1           Lead         ppm         ASTM D5185m         >75         1         1         2         <1         0         0           Copper         ppm         ASTM D5185m         0         0         0         0         0           Cadramium	Oil Changed		Client Info		N/A	N/A	Changed
Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >800         160         28         98           Chromium         ppm         ASTM D5185m         >50         0         0         <1           Nickel         ppm         ASTM D5185m         >55         0         0         <1           Nickel         ppm         ASTM D5185m         >55         0         0         <1           Silver         ppm         ASTM D5185m         >20         0         <1         <1           Aluminum         ppm         ASTM D5185m         >20         0         0         <1           Lead         ppm         ASTM D5185m         >75         1         1         2         2           Aluminum         ppm         ASTM D5185m         >8         <1         0         0         0           Alead         ppm         ASTM D5185m         >8         <1         0         0         0           Copper         ppm         ASTM D5185m         0	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
Chromium	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>800	160	28	98
Titanium	Chromium	ppm	ASTM D5185m	>10	0	0	<1
Silver	Nickel	ppm	ASTM D5185m	>5	0	0	<1
Aluminum	Titanium	ppm	ASTM D5185m	>15	<1	<1	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper	Aluminum	ppm	ASTM D5185m	>75	3	1	3
Tin	Lead	ppm	ASTM D5185m	>10	0	0	0
Name	Copper		ASTM D5185m	>75	1	1	2
Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         <1         0         2           Barium         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         1         0         <1           Magnesium         ppm         ASTM D5185m         0         1         0         <1           Magnesium         ppm         ASTM D5185m         9         14         13         14           Calcium         ppm         ASTM D5185m         9         14         13         14         2870           Phosphorus         ppm         ASTM D5185m         1099         1111         1135         920           Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         <	Tin	ppm	ASTM D5185m	>8	<1	0	0
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         <1	Vanadium		ASTM D5185m		0	0	0
Boron	Cadmium						0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0         1           Manganese         ppm         ASTM D5185m         0         1         0         <1	Boron	ppm	ASTM D5185m	2	<1	0	2
Manganese         ppm         ASTM D5185m         0         1         0         <1           Magnesium         ppm         ASTM D5185m         9         14         13         14           Calcium         ppm         ASTM D5185m         3114         3108         3361         2870           Phosphorus         ppm         ASTM D5185m         1099         1111         1135         920           Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         9         14         13         14           Calcium         ppm         ASTM D5185m         3114         3108         3361         2870           Phosphorus         ppm         ASTM D5185m         1099         1111         1135         920           Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m	0	0	0	1
Calcium         ppm         ASTM D5185m         3114         3108         3361         2870           Phosphorus         ppm         ASTM D5185m         1099         1111         1135         920           Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Solium         ppm         ASTM D5185m         >400         29         17         15           Solium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	1	0	<1
Phosphorus         ppm         ASTM D5185m         1099         1111         1135         920           Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         2         0         <1	Magnesium	ppm	ASTM D5185m	9	14	13	14
Zinc         ppm         ASTM D5185m         1245         1320         1310         1124           Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         2         0         <1	Calcium	ppm	ASTM D5185m	3114	3108	3361	2870
Sulfur         ppm         ASTM D5185m         7086         5227         5248         4404           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         20         2         0         <1           Potassium         ppm         ASTM D5185m         >20         <1         3         2           VISUAL         method         limit/base         current         history1         history2           VISUAL         method         limit/base         current         history1         history2           VISUAL         method         limit/base         current         history1         history2           White Metal         scalar         *Visual         NONE         NONE         NONE         NONE           Yellow Metal         scalar         *Visual         NONE	Phosphorus	ppm	ASTM D5185m	1099	1111	1135	920
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >400 29 17 15 Sodium ppm ASTM D5185m 2 0 <1 Potassium ppm ASTM D5185m >20 <1 3 2  VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NONE NONE NONE NONE NONE	Zinc	ppm	ASTM D5185m	1245	1320	1310	1124
Silicon         ppm         ASTM D5185m         >400         29         17         15           Sodium         ppm         ASTM D5185m         2         0         <1           Potassium         ppm         ASTM D5185m         >20         <1         3         2           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         NONE           Appearance         scalar         *Visual         NORML         NORML         NORML         NORML	Sulfur	ppm	ASTM D5185m	7086	5227	5248	4404
Sodium         ppm         ASTM D5185m         2         0         <1           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 3 2  VISUAL method limit/base current history1 history2  White Metal scalar *Visual NONE 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 NONE  Sand/Dirt scalar *Visual NONE NONE NONE NONE  Appearance scalar *Visual NONE NONE NONE NONE  NONE NONE NONE NON	Silicon	ppm	ASTM D5185m	>400	29	17	15
Potassium ppm ASTM D5185m >20 <1 3 2  VISUAL method limit/base current history1 history2  White Metal scalar *Visual NONE 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 NONE  Sand/Dirt scalar *Visual NONE NONE NONE NONE  Appearance scalar *Visual NONE NONE NONE NONE  NONE NONE NONE NON	Sodium						
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 NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML	Potassium		ASTM D5185m	>20		3	2
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORML	VISUAL		method	limit/base	current	history1	history2
Precipitate scalar *Visual NONE NONE NONE NONE NONE 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	White Metal	scalar					
Siltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORML	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Debrisscalar*VisualNONENONENONENONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORML	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE NORML NORML NORML NORML NORML	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance scalar *Visual NORML NORML NORML NORML NORML	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Odor scalar *Visual NORML NORML NORML NORML	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Odor	scalar	*Visual	NORML	NORML	NORML	NORML

NEG

**NEG** 

>0.2

NEG

NEG

**Emulsified Water** 

Free Water

scalar \*Visual

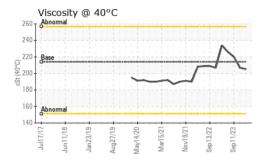
scalar \*Visual

NEG

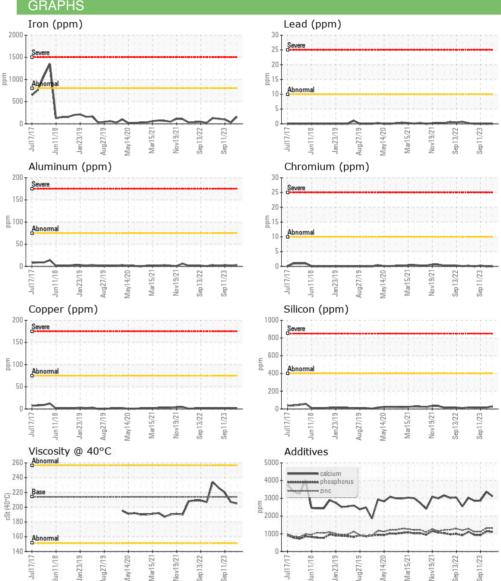
NEG



## **OIL ANALYSIS REPORT**









Certificate L2367

Laboratory Sample No.

Lab Number : 06088385 Unique Number : 10875830 Test Package : MOB 1

: PCA0086512

Received **Tested** Diagnosed

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 13 Feb 2024 : 14 Feb 2024

: 15 Feb 2024 - Sean Felton

Kemp Quarries - Muskogee Sand 3395 W 50th St N

Porter, OK US 74454

Contact: muskogee@muskogeesand.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)

T:

F: