

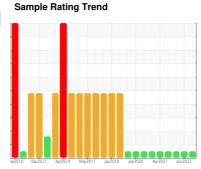
## **OIL ANALYSIS REPORT**



# KEMP QUARRIES / MUSKOGEE SAND [65225] **WL015**

Component **Rear Right 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

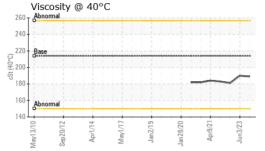
#### **Fluid Condition**

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

SAMPLE INFO	RMATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0087057	PCA0087117	PCA0087173
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				NORMAL	NORMAL	NORMAL
WEAR META	ALS	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>800	87	50	132
Chromium	ppm	ASTM D5185m	>10	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Titanium	ppm	ASTM D5185m	>15	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>75	2	2	5
Lead	ppm	ASTM D5185m	>10	<1	<1	2
Copper	ppm	ASTM D5185m	>75	12	7	12
Tin	ppm	ASTM D5185m	>8	2	0	<1
Antimony	ppm	ASTM D5185m	>50			
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	2	1	0	14
Barium	ppm	ASTM D5185m	0	19	0	0
Molybdenum	ppm	ASTM D5185m	0	2	<1	4
Manganese	ppm	ASTM D5185m	0	1	<1	2
Magnesium	ppm	ASTM D5185m	9	22	15	50
Calcium	ppm	ASTM D5185m	3114	3494	2953	2780
Phosphorus	ppm	ASTM D5185m	1099	1107	880	984
Zinc	ppm	ASTM D5185m	1245	1296	1053	1153
Sulfur	ppm	ASTM D5185m	7086	9312	5436	14468
CONTAMINA	NTS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>400	20	14	26
Sodium	ppm	ASTM D5185m		<1	0	4
Potassium	ppm	ASTM D5185m	>20	<1	<1	1
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
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	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG



## **OIL ANALYSIS REPORT**



FLUID PROF	ERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	213.9	189	190	181
SAMPLE IMA	GES	method	limit/base	current	history1	history2
Color				no image	no image	no image
Bottom				no image	no image	no image
GRAPHS						

Lead (ppm)  Severe  Abnormal  Abnormal  Chromium (ppm)  Severe  Abnormal  Additives  Additives  Additives  Additives  Abnormal  Abnormal  Additives  Abnormal  Additives  Additives  Additives								
Abnormal								
Abnormal	Iron (ppn	n)						Lead (ppm)
Abnormal    OUE   Am   OUE   OUE	Severe							25 - Severe
10   Abnormal   10   Abnorma	Abnormal							
1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000	Abnormal	Λ						
			-	1				
Abnormal  Abnorm	12 12	4		- E	\	12/	¥ 52	22 20 13 13 13 13 13 13 13 13 13 13 13 13 13
Aluminum (ppm)  Chromium (ppm)  Severe  Silicon (ppm)  Severe  Severe  Severe  Silicon (ppm)  Severe  Severe  Severe  Silicon (ppm)  Severe  Severe  Additives  Additives  Additives  Severe  Severe  Severe  Severe  Severe  Severe  Severe  Severe  Silicon (ppm)  Severe  Severe  Severe  Additives  Additives  Severe  Severe  Severe  Severe  Silicon (ppm)  Severe  Seve	May13/ Sep20/	Apr1/	May1)	Jan2/	Jan28/	Apr9,	Jun3/	May13/ Sep20/ May1/ Jan2/ Jan28/ Jan28/
### Approximal    Approximal		n (ppn	n)					Chromium (ppm)
### Approximal    Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximal   Approximate   Appro	Severe							e-i
Document								20
Copper (ppm)   Severe   Copper (ppm)   Severe   Copper (ppm)   C	Abnormal							
Abnormal   Copper (ppm)   Severe   Copper (ppm)   Se								10 + 0
Silicon (ppm)   Silicon (ppm)   Silicon (ppm)   Silicon (ppm)   Source   Silicon (ppm)   Source   So	2	-	7		-	1 1		
Silicon (ppm)   Silicon (ppm)   Silicon (ppm)   Silicon (ppm)   Sowere   Sowere   Silicon (ppm)   Silicon (ppm)   Sowere	lay13/1	Apr1/1	May1/1	Jan2/1	an 28/2	Apr9/2	Jun3/2	iay13/1/ ep20/1/ May1/1/ Jan2/1/ an28/2/ Apr9/2/
Abnormal  OUR NAME AND ABNORMAL  A		ppm)			7			2 00
Abnormal  OUVE   Abnorm								Severe
Abnormal	.   -   -   -							800
Viscosity @ 40°C  Abnormal  Approximate	Ahnormal							E About
OVEC Appropriate Control of the Cont	1							
Viscosity @ 40°C Abnomal  Base  Additives  Additives  Additives  Additives  Additives				$\frown$	_	_		
Viscosity @ 40°C Abnomal  Base  Additives  Additives  Additives  Additives  Additives	y13/10	pr1/14	ay1/17	an2/19	128/20	\pr9/21	ın3/23	v13/10 220/12 av1/17 av1/17 av2/19 nu3/23
Abnormal 4000   3500   3500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500   2500				_	Ja		7	≥ ∅
Abnomal 3000 2000 2000 2000 2000 2000 2000 200	Abnormal	w 40						4000
Abnormal	<b>D</b>							2000
Abnomal 1000 500	- base							2110
500						-	_	1500
Sep20/12 - Apr1/17 - Jan2/19 - Jan2/	Abnormal							1000
Sep 2 Sep 2 April 1 Am 2 April	3/10	1/14	1/17	2/19	8/20	r9/21	3/23	3/10 + 1/1/17 - 1/1/19 - 18/20 - 18/21 -
	May1 Sep2	Apı	Мау	Jan	Jan2	Ap	Jun	May 1 April May Jan 2 April April April April April





Laboratory Sample No. Lab Number Unique Number : 10722219

: 05993859

: PCA0087057 Test Package : MOB 1

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 30 Oct 2023 Received Diagnosed : 01 Nov 2023

Diagnostician : Sean Felton

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.

T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Kemp Quarries - Muskogee Sand

3395 W 50th St N

Porter, OK

US 74454