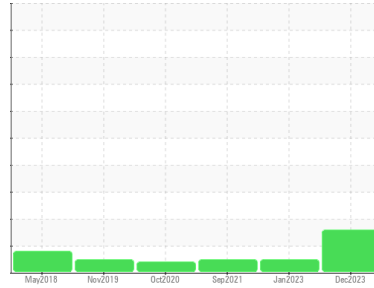




Machine Id  
**ENGEL A-2 (S/N 199739)**

Component  
**Hydraulic System**

Fluid  
**PETRO CANADA HYDREX AW 46 (--- GAL)**



## DIAGNOSIS

### Recommendation

The filter change at the time of sampling has been noted.

### Wear

All component wear rates are normal.

### Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material. The amount and size of particulates present in the system are acceptable.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>PCA0075238</b>	PCA0058242	PCA0058249
Sample Date	Client Info		<b>20 Dec 2023</b>	17 Jan 2023	20 Sep 2021
Machine Age	hrs	Client Info	<b>29913</b>	41831	1
Oil Age	hrs	Client Info	<b>0</b>	0	1
Oil Changed	Client Info		<b>Filtered</b>	N/A	Filtered
Sample Status			<b>ATTENTION</b>	NORMAL	NORMAL

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >20	<b>2</b>	1	<1
Chromium	ppm	ASTM D5185m >20	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m >20	<b>0</b>	0	0
Titanium	ppm	ASTM D5185m	<b>0</b>	0	0
Silver	ppm	ASTM D5185m	<b>0</b>	0	<1
Aluminum	ppm	ASTM D5185m >20	<b>2</b>	0	4
Lead	ppm	ASTM D5185m >20	<b>0</b>	<1	<1
Copper	ppm	ASTM D5185m >20	<b>8</b>	5	8
Tin	ppm	ASTM D5185m >20	<b>0</b>	0	<1
Antimony	ppm	ASTM D5185m	<b>---</b>	---	0
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 0	<b>0</b>	0	1
Barium	ppm	ASTM D5185m 0	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m 0	<b>0</b>	0	<1
Manganese	ppm	ASTM D5185m 0	<b>0</b>	0	0
Magnesium	ppm	ASTM D5185m 0	<b>1</b>	1	1
Calcium	ppm	ASTM D5185m 50	<b>53</b>	51	53
Phosphorus	ppm	ASTM D5185m 330	<b>347</b>	328	345
Zinc	ppm	ASTM D5185m 430	<b>434</b>	417	453
Sulfur	ppm	ASTM D5185m 760	<b>948</b>	908	900

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >15	<b>▲ 26</b>	3	0
Sodium	ppm	ASTM D5185m	<b>0</b>	0	0
Potassium	ppm	ASTM D5185m >20	<b>1</b>	<1	0
Water	%	ASTM D6304 >0.05	<b>NEG</b>	NEG	NEG

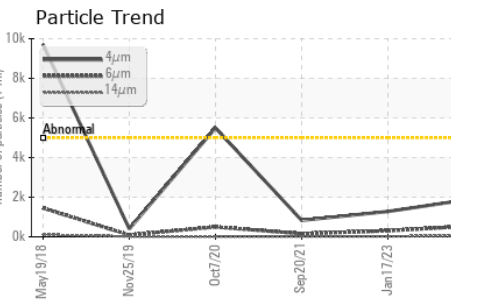
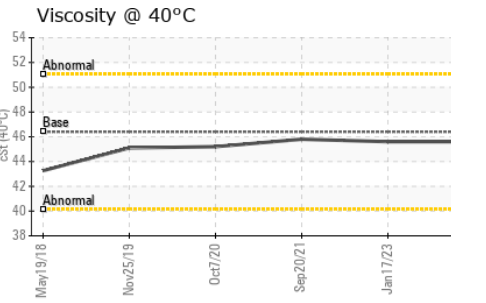
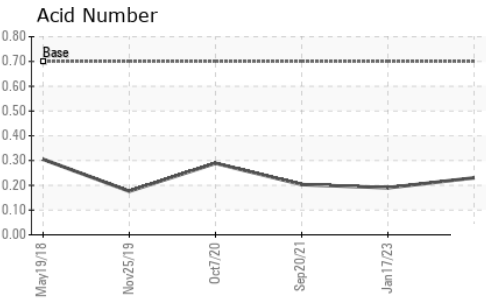
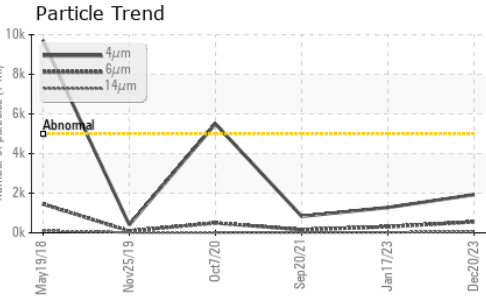
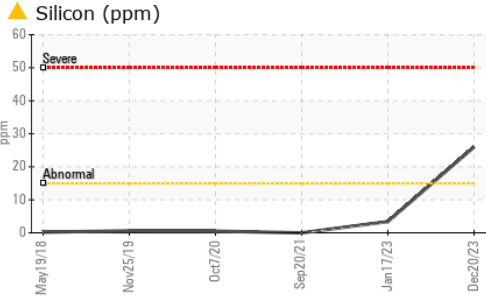
## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	<b>1923</b>	1279	832
Particles >6µm	ASTM D7647	>1300	<b>554</b>	307	158
Particles >14µm	ASTM D7647	>160	<b>54</b>	21	16
Particles >21µm	ASTM D7647	>40	<b>15</b>	6	6
Particles >38µm	ASTM D7647	>10	<b>0</b>	1	1
Particles >71µm	ASTM D7647	>3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>19/17/14	<b>18/16/13</b>	17/15/12	17/14/11

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.70	<b>0.23</b>	0.19	0.203

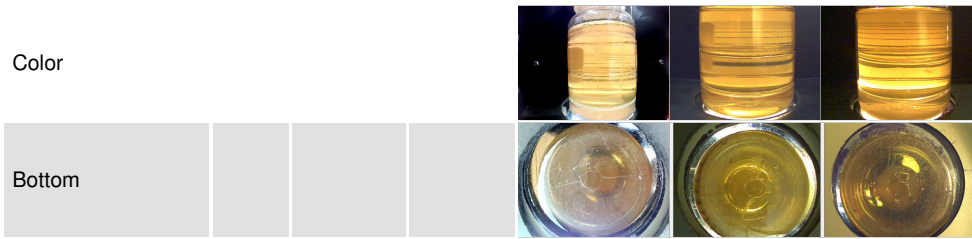
# OIL ANALYSIS REPORT



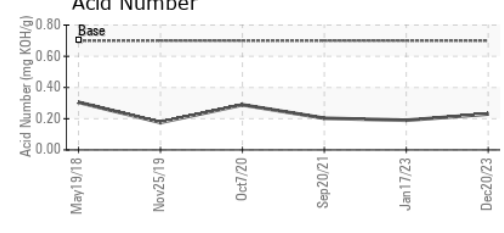
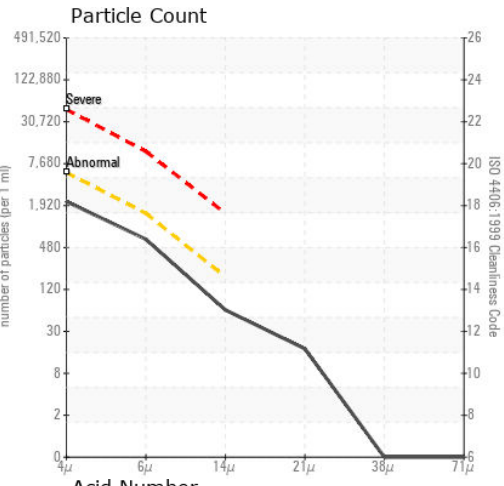
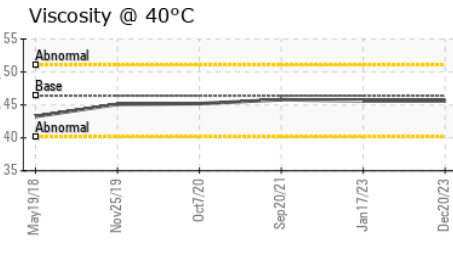
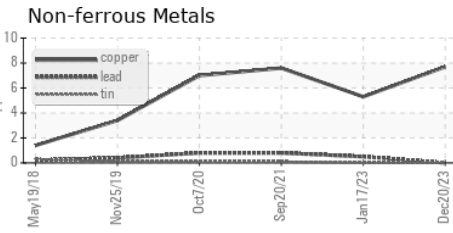
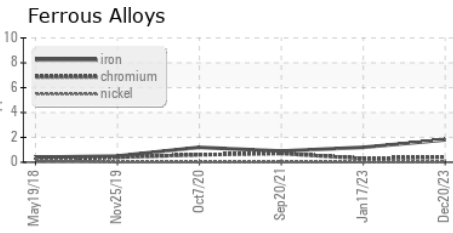
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	<b>LIGHT</b>	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	<b>NEG</b>	NEG
Free Water	scalar	*Visual		<b>NEG</b>	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46.4	<b>45.6</b>	45.6

SAMPLE IMAGES	method	limit/base	current	history1	history2
---------------	--------	------------	---------	----------	----------



## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : PCA0075238  
**Lab Number** : **06044752**  
**Unique Number** : 10805360  
**Test Package** : PLANT

**ARKAL AUTOMOTIVE**  
 2490 INNOVATION DR  
 AUBURN, AL  
 US 36832  
 Contact: ERIC DANIEL  
 ericd@arkal-automotive.com  
 T: (334)734-3591  
 F:

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)