



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
61-31-000-184

Component
Gearbox

Fluid
PETRO CANADA ENDURATEX EP 220 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0884669	WC0671221	WC0671202
Sample Date		Client Info		20 Mar 2024	14 Jun 2022	19 May 2022
Machine Age	days	Client Info		0	0	0
Oil Age	days	Client Info		0	0	0
Filter Age	days	Client Info		0	0	0
Oil Changed		Client Info		N/A	Not Changd	Not Changd
Filter Changed		Client Info		N/A	Not Changd	Not Changd
Sample Status				NORMAL	ABNORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185(m)	>200	9	15	3
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	0
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>25	0	0	0
Lead	ppm	ASTM D5185(m)	>50	0	0	0
Copper	ppm	ASTM D5185(m)	>200	<1	0	0
Tin	ppm	ASTM D5185(m)	>10	0	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	VLITE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE

CONTAMINATION

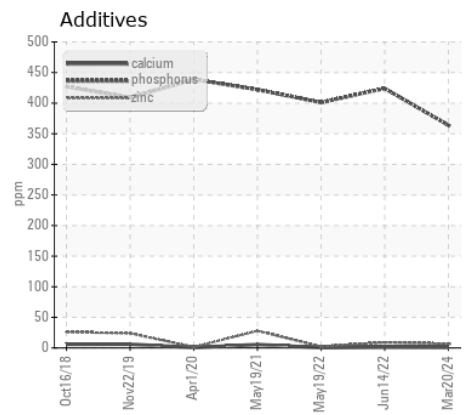
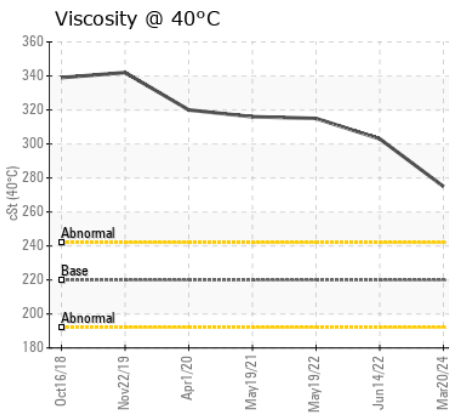
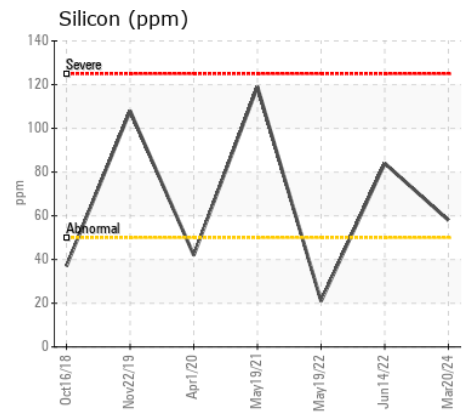
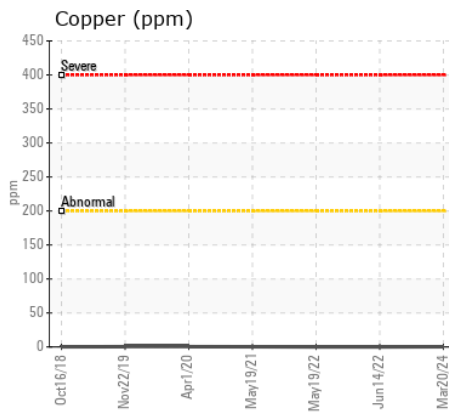
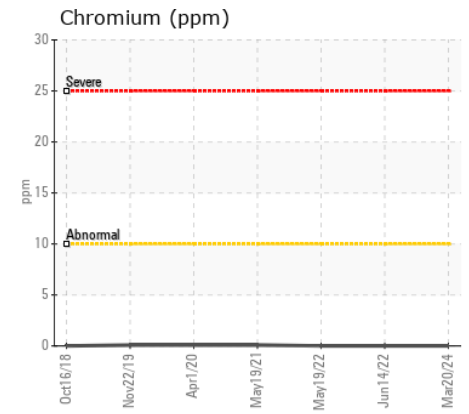
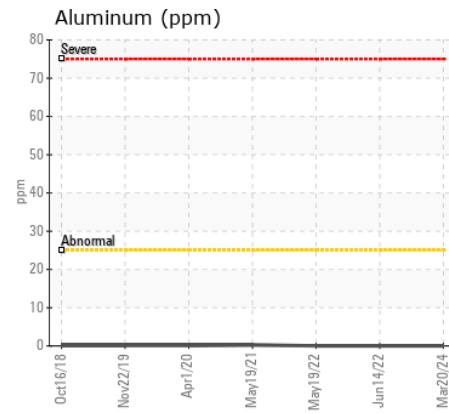
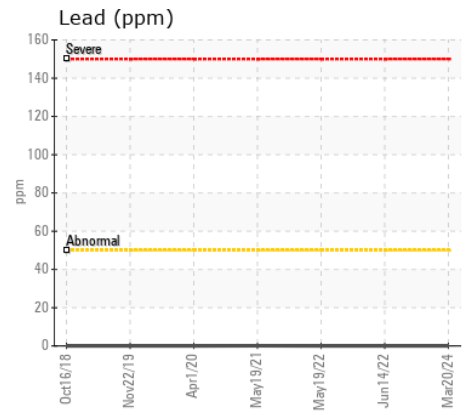
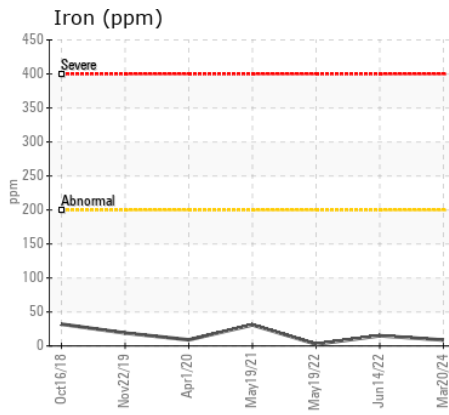
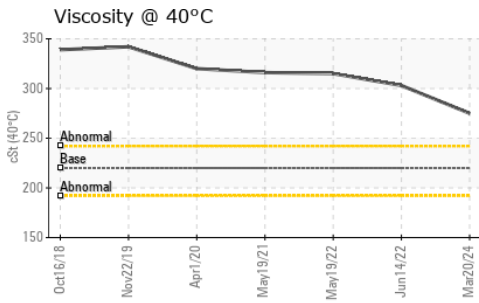
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185(m)	>50	58	▲ 84	21
Potassium	ppm	ASTM D5185(m)	>20	<1	<1	<1
Water		WC Method	>0.2	NEG	NEG	NEG
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

FLUID CONDITION

Viscosity of sample indicates oil is within ISO 320 range, advise investigate. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185(m)		<1	<1	<1
Boron	ppm	ASTM D5185(m)	60	13	12	9
Barium	ppm	ASTM D5185(m)	0	0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)	0	0	<1	0
Magnesium	ppm	ASTM D5185(m)	0	<1	<1	0
Calcium	ppm	ASTM D5185(m)	0	<1	1	<1
Phosphorus	ppm	ASTM D5185(m)	270	364	424	401
Zinc	ppm	ASTM D5185(m)	0	7	9	2
Sulfur	ppm	ASTM D5185(m)	11200	3780	5240	4891
Visc @ 40°C	cSt	ASTM D7279(m)	220	275	303	315



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0884669
Lab Number : 02625371
Unique Number : 5750490
Test Package : MOB 1
Received : 28 Mar 2024
Tested : 28 Mar 2024
Diagnosed : 28 Mar 2024 - Kevin Marson

Vale - Copper Cliff Smelter
 COPPER CLIFF SMELTER WAREHOUSE, 155 BALSAM ST.
 COPPER CLIFF, ON
 CA P0M 1N0
 Contact: Andy Kozachanko
 andrew.kozachanko@vale.com
 T: (705)682-6687
 F: (705)682-6939

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.