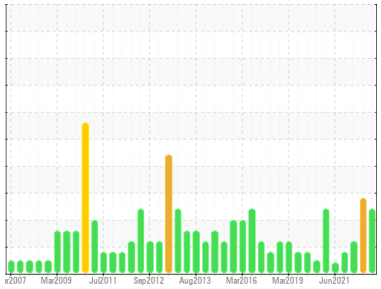
OIL ANALYSIS REPORT

Sample Rating Trend



VISCOSITY

Area
1460
Machine Id
1460-5666-4001 - HG Ni THICKENER MECH PLANETARY
Component
Reduction Gear
Fluid
PETRO CANADA ENDURATEX XL 68/220 (20 LTR)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was not specified, however, a fluid match indicates that this fluid is ISO 46 AW Hydraulic Oil. Please confirm the oil type and grade, and specify the brand of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is a light amount of silt (particulates < 14 microns in size) present in the oil.

Fluid Condition

Viscosity of sample indicates oil is within ISO 46 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0070693**	PC0070101	PC0057974
Sample Date		Client Info		**25 Feb 2024**	09 Oct 2023	26 Jun 2023
Machine Age	mths	Client Info		**0**	0	0
Oil Age	mths	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.1	**NEG**	NEG	NEG

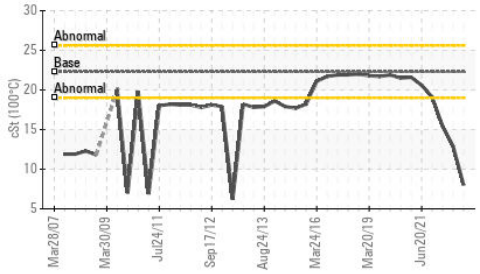
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>150	**73**	153	113
Chromium	ppm	ASTM D5185(m)	>10	**<1**	<1	<1
Nickel	ppm	ASTM D5185(m)	>10	**<1**	<1	1
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**0**	<1	<1
Aluminum	ppm	ASTM D5185(m)	>25	**<1**	<1	<1
Lead	ppm	ASTM D5185(m)	>100	**0**	0	0
Copper	ppm	ASTM D5185(m)	>50	**<1**	2	4
Tin	ppm	ASTM D5185(m)	>10	**0**	0	0
Antimony	ppm	ASTM D5185(m)	>5	**0**	0	0
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**2**	4	5
Barium	ppm	ASTM D5185(m)		**0**	<1	0
Molybdenum	ppm	ASTM D5185(m)		**0**	0	<1
Manganese	ppm	ASTM D5185(m)		**0**	<1	<1
Magnesium	ppm	ASTM D5185(m)		**0**	0	<1
Calcium	ppm	ASTM D5185(m)		**18**	6	4
Phosphorus	ppm	ASTM D5185(m)	240	**305**	293	323
Zinc	ppm	ASTM D5185(m)		**294**	157	116
Sulfur	ppm	ASTM D5185(m)	4060	**2094**	3798	4127
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

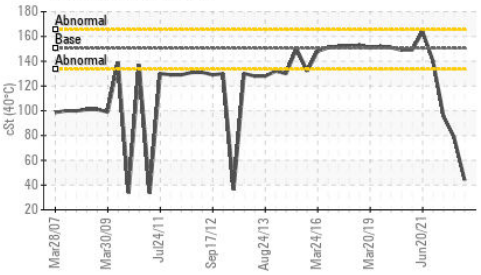
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>50	**<1**	<1	2
Sodium	ppm	ASTM D5185(m)		**<1**	1	<1
Potassium	ppm	ASTM D5185(m)	>20	**1**	0	0

OIL ANALYSIS REPORT

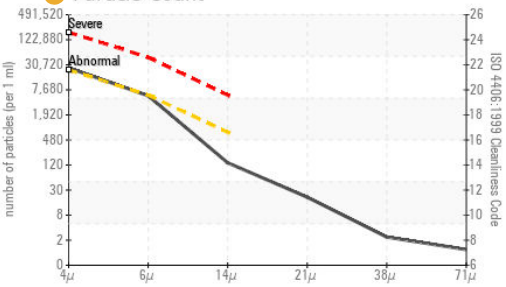
Viscosity @ 100°C



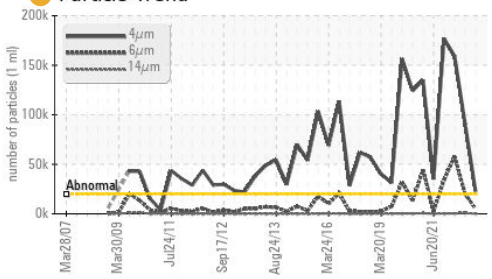
Viscosity @ 40°C



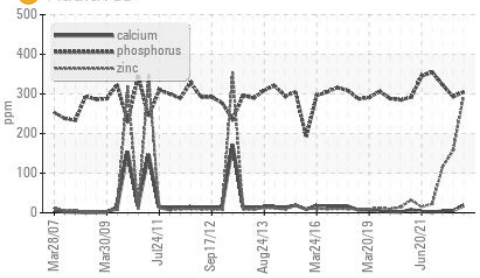
Particle Count



Particle Trend



Additives

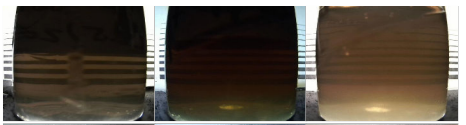


FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>20000	**22567**	90803	159099
Particles >6µm		ASTM D7647	>5000	**4843**	20321	57972
Particles >14µm		ASTM D7647	>640	**120**	813	441
Particles >21µm		ASTM D7647	>160	**18**	151	49
Particles >38µm		ASTM D7647	>40	**2**	4	5
Particles >71µm		ASTM D7647	>10	**1**	1	1
Oil Cleanliness		ISO 4406 (c)	>21/19/16	**22/19/14**	24/22/17	24/23/16

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	**0.58**	0.53	0.56

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*	>0.1	**NEG**	NEG	NEG
Free Water	scalar	Visual*		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	150.4	**44.0**	78.6	95.4
Visc @ 100°C	cSt	ASTM D7279(m)	22.28	**8.0**	12.9	15.4
Viscosity Index (VI)	Scale	ASTM D2270*	176	**155**	165	171

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0070693 **Received** : 08 Mar 2024
Lab Number : 02620945 **Tested** : 11 Mar 2024
Unique Number : 5746064 **Diagnosed** : 11 Mar 2024 - Kevin Marson
Test Package : IND 2 (Additional Tests: KV100, PQ, PrtCount, TAN Man, VI)

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.

Vale - Voisey`s Bay
Voisey's Bay Mine Site, P.O. Box 7001, Stn. C Happy Valley
Goose Bay, NL
CA A0P 1C0
Contact: Robert Feltham
robert.feltham@vale.com
T:
F: x: