

OIL ANALYSIS REPORT

Area Water Injection [9000517747] Machine Io Pump See Water Injection /P) Lube System (S/N Semple Teg D/

Pump Sea Water Injection (B) - Lube System (S/N Sample Tag PA-29002B-S1)

Pump

Fluid PETRO CANADA TURBOFLO 46 (1264 LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

Wear

Component wear rates appear to be normal (unconfirmed).

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



Sample Rating Trend

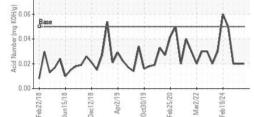
	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0052479	PC	PC
Sample Date		Client Info		25 May 2024	28 Apr 2024	09 Apr 2024
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL
WEAR METAL	S	method	limit/base	current	history1	history2
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>75	0	0	<1
Chromium	ppm	ASTM D5185(m)	>5	0	0	0
Nickel	ppm	ASTM D5185(m)		<1	0	0
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>5	<1	0	0
Lead	ppm	ASTM D5185(m)	>10	0	0	0
Copper	ppm	ASTM D5185(m)	>15	<1	<1	<1
Tin	ppm	ASTM D5185(m)		0	0	0
Antimony	ppm	ASTM D5185(m)		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)	0	<1	<1	0
Barium	ppm	ASTM D5185(m)	0	0	0	0
Maluda da un una			-	•		0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m)		0	0	0
Manganese Magnesium		ASTM D5185(m) ASTM D5185(m)	0 0	0 0	0 <1	0
Manganese Magnesium Calcium	ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	0 0 0	0 <1 0	0 2 2
Manganese Magnesium Calcium Phosphorus	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110	0 0 0 164	0 <1	0 2 2 174
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110	0 0 0 164 <1	0 <1 0 171 <1	0 2 2 174 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110	0 0 164 <1 317	0 <1 0 171 <1 413	0 2 2 174 3 332
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110	0 0 0 164 <1	0 <1 0 171 <1	0 2 2 174 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110	0 0 164 <1 317	0 <1 0 171 <1 413	0 2 2 174 3 332
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110 0.0 limit/base	0 0 164 <1 317 <1	0 <1 0 171 <1 413 <1	0 2 2 174 3 332 <1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method	0 0 0 110 0.0 limit/base	0 0 164 <1 317 <1 current	0 <1 0 171 <1 413 <1 history1	0 2 2 174 3 332 <1 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) MSTM D5185(m) Method ASTM D5185(m)	0 0 0 110 0.0 limit/base	0 0 164 <1 317 <1 current <1	0 <1 0 171 <1 413 <1 history1 <1	0 2 2 174 3 332 <1 history2 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 110 0.0 limit/base >20	0 0 164 <1 317 <1 current <1 0	0 <1 0 171 <1 413 <1 history1 <1 0	0 2 2 174 3 332 <1 history2 3 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 110 0.0 ////////////////////////////	0 0 164 <1 317 <1 current <1 0 0	0 <1 0 171 <1 413 <1 history1 <1 0 <1	0 2 2 174 3 332 <1 history2 3 0 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304*	0 0 0 110 0.0 limit/base >20 >20 >.1	0 0 164 <1 317 <1 current <1 0 0 0 0 0.013	0 <1 0 171 <1 413 <1 history1 <1 0 <1 	0 2 2 174 3 332 <1 <u>history2</u> 3 0 0 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304*	0 0 110 0.0 ////////////////////////////	0 0 164 <1 317 <1 current <1 0 0 0 0.013 135	0 <1 0 171 <1 413 <1 history1 <1 0 <1 	0 2 2 174 3 332 <1 history2 3 0 0 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water FLUID CLEANI	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304* ASTM D6304*	0 0 0 110 0.0 //////////////////////////	0 0 164 <1 317 <1 current <1 0 0 0 0.013 135 current	0 <1 0 171 <1 413 <1 history1 <1 0 <1 history1	0 2 2 174 3 332 <1 <u>history2</u> 3 0 0 0 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water Potassium Water Pm Water FLUID CLEANU Particles >4µm	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D63047	0 0 0 110 0.0 //////////////////////////	0 0 164 <1 317 <1 <1 current <1 0 0 0 0.013 135 current 2030	0 <1 0 171 <1 413 <1 history1 <1 0 <1 history1 3708	0 2 2 174 3 332 <1 <u>history2</u> 3 0 0 0 <u>history2</u> 15740
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water FLUID CLEANI Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647	0 0 110 0.0 ////////////////////////////	0 0 164 <1 317 <1 current <1 0 0 0 0.013 135 current 2030 353	0 <1 0 171 <1 413 <1 history1 <1 0 <1 history1 3708 1021	0 2 2 174 3 332 <1 history2 3 0 0 0 0 0 0 0 0 1 5740 15740
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water FLUID CLEANU Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647 ASTM D7647	0 0 110 0.0 ////////////////////////////	0 0 164 <1 317 <1 current <1 0 0 0 0.013 135 current 2030 353 17	0 <1 0 171 <1 413 <1 history1 <1 0 <1 history1 3708 1021 64	0 2 2 174 3 332 <1 history2 3 0 0 0 0 history2 15740 ▲ 4524 ▲ 361
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Water ppm Water FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 110 0.0	0 0 164 <1 317 <1 current <1 0 0 0 0.013 135 current 2030 353 17 3	0 <1 0 171 <1 413 <1 history1 <1 0 <1 history1 3708 1021 64 14	0 2 2 174 3 332 <1 history2 3 0 0 0 history2 15740 ▲ 4524 ▲ 361 ▲ 104

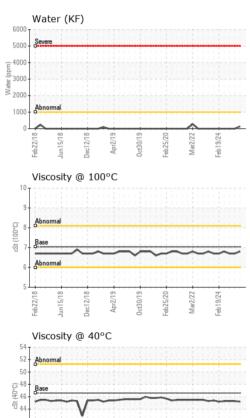
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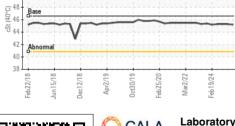


OIL ANALYSIS REPORT

				T ²⁶
2,880				+24
0,720				-22
7,680 -	·			-20
1,920				-18
480				-16
120-				-14
30-				-22 -20 -18 -16 -14 -12 -10
8 Sizrese mal		-		-10
2				-8
0 4µ 6µ				71µ
4μ 6μ	ι 14μ	21µ	38µ	TIμ







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: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Sample No. : PC0052479 Received : 24 Jun 2024 Lab Number : 02643726 Tested : 26 Jun 2024 Accredited Laboratory Unique Number : 5801265 Diagnosed : 26 Jun 2024 - Kevin Marson Test Package : MAR 2 (Additional Tests: KF, KV100, PQ, 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.

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Suncor - Terra Nova Projects

Laboratory CALA ISO 17025:2017

Contact/Location: Josh Hynes	s - TERHAM
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FLUID DEGRAD	ATION	method				history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.05	0.02	0.02	0.02
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	VLITE	🔺 LIGHT
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*	>.1	1%	NEG	.5%
Free Water	scalar	Visual*		NEG	NEG	▲ 1%
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	46.6	45.2	45.3	45.3
Visc @ 100°C	cSt	ASTM D7279(m)	7.04	6.8	6.7	6.7
Viscosity Index (VI)	Scale	ASTM D2270*	107	104	100	100
SAMPLE IMAG	ES	method	limit/base	current	history1	history2
				and the second second	120186 2	

Color

Bottom