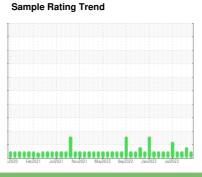


OIL ANALYSIS REPORT

Area HPP **VESSEL 1 PUMP 1 (S/N B44049)**

Hydraulic System

PETRO CANADA PURITY FG AW HYDRAULIC 46 (90 GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

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.

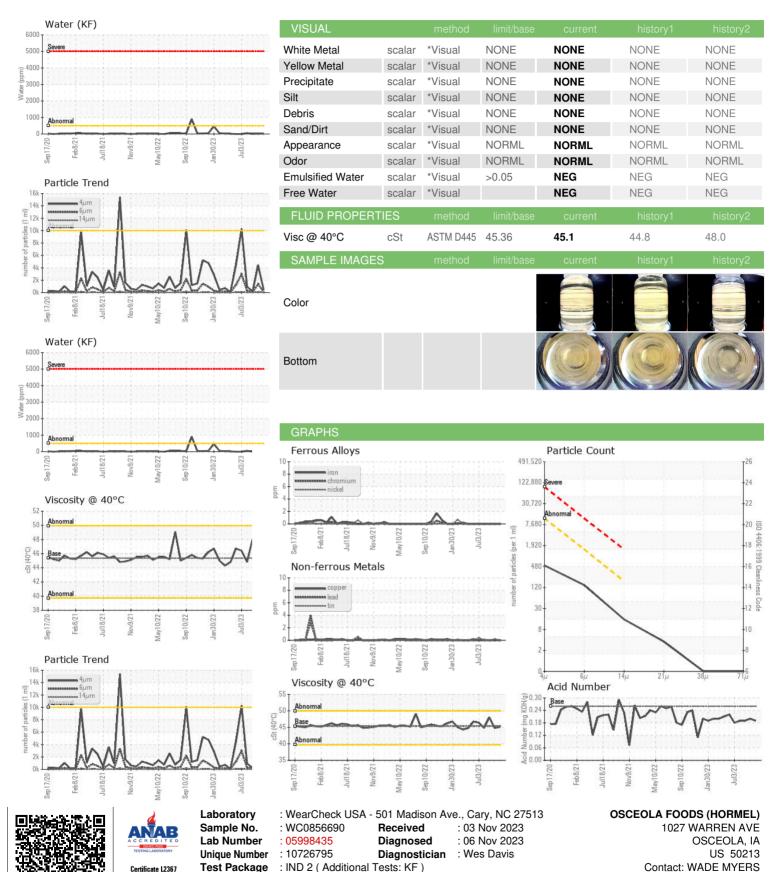
Fluid Condition

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

SAMPLE INFORMATION method limit/base current history1 wC0856793 Sample Date Client Info 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LIO 40 (30 GAL)		12020 Feb 20	21 Jul2021 Nov2021	May2022 Sep2022 Jan2023	Jul2023	
Sample Date	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
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 ATTENTION NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >40 0 0 0 Chromium ppm ASTM D5185m >40 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >40 0 <1	Sample Number		Client Info		WC0856690	WC0857743	WC0852793
Oil Age Oil Changed hrs Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A N/A WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >40 0 0 0 Chromium ppm ASTM D5185m >40 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >4 0 0 0 Copper ppm ASTM D5185m >40 0 <1	Sample Date		Client Info		30 Oct 2023	05 Oct 2023	31 Aug 2023
Oil Changed Sample Status Client Info N/A P/A P/A	Machine Age	hrs	Client Info		0	0	0
Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >40 0 0 0 Chromitim ppm ASTM D5185m >40 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >10 0 0 -1 Lead ppm ASTM D5185m >50 0 <1 0 Copper ppm ASTM D5185m >50 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0<	Oil Age	hrs	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >40 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Lead ppm ASTM D5185m >660 0 <1 0 Copper ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0	Oil Changed		Client Info		N/A	N/A	N/A
Iron	Sample Status				NORMAL	ATTENTION	NORMAL
Chromium ppm ASTM D5185m >4 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 0 0 -1 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >4 0 -1 0 Copper ppm ASTM D5185m >4 0 -1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >4 0 0 -1 Lead ppm ASTM D5185m >60 0 -1 0 Copper ppm ASTM D5185m >60 0 -1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Barium	Iron	ppm	ASTM D5185m	>40	0	0	0
Titanium	Chromium	ppm	ASTM D5185m	>4	0	0	0
Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >4 0 0 <1 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >60 0 <1 0 Tin ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 <1 0 0	Nickel	ppm	ASTM D5185m	>20	0	0	0
Aluminum ppm ASTM D5185m >4 0 0 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >60 0 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >60 0 <1	Aluminum	ppm	ASTM D5185m	>4	0	0	<1
Tin ppm ASTM D5185m >4 0 <1	Lead	ppm	ASTM D5185m	>10	0	0	0
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 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>60	0	<1	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 -1 0 Magnesium ppm ASTM D5185m 0 -1 0 Magnesium ppm ASTM D5185m 0 -1 0 Calcium ppm ASTM D5185m 0 3 0 Phosphorus ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 0 0 0 Silicon ppm ASTM D5185m 20 2 2 2 Sodium ppm ASTM D5185m 0 -1 -1 Potass	Tin	ppm	ASTM D5185m	>4	0	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 0 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 0 <1		ppm	ASTM D5185m		0	<1	0
Phosphorus ppm ASTM D5185m 400 423 461 Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 499 518 556 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 2 2 Sodium ppm ASTM D5185m >20 0 <1 <1 Potassium ppm ASTM D5185m >20 0 0 <1 <1 Vater % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 <1 Water % ASTM D630	-	ppm	ASTM D5185m		0	<1	0
Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 499 518 556 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 2 2 Sodium ppm ASTM D5185m >20 0 0 <1	Calcium	ppm	ASTM D5185m		0	3	0
Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 499 518 556 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 2 2 Sodium ppm ASTM D5185m >20 0 0 <1 Potassium ppm ASTM D5185m >20 0 0 <1 Water % ASTM D6304 >0.05 0.002 0.002 0.001 Water % ASTM D6304 >500 16.6 16.3 7.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >1300 124 4408 204 Particles >21μm ASTM D7647 >160 13 111 15 Particles >38μm ASTM D7647 >3 0 0 0	Phosphorus	ppm	ASTM D5185m		400	423	461
Sulfur ppm ASTM D5185m 499 518 556 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 2 2 Sodium ppm ASTM D5185m >20 0 0 <1 <1 Potassium ppm ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D5185m >20 0 0 <1 <1 Water % ASTM D6304 >0.05 0.002 0.002 0.001 Particles >4µm ASTM D7647 >10000 454 4408 204 Particles >4µm ASTM D7647 >160 13 111 15 Particles >38µm<			ASTM D5185m		0	0	0
Silicon ppm ASTM D5185m >20 2 2 2 Sodium ppm ASTM D5185m O <1	Sulfur		ASTM D5185m		499	518	556
Sodium ppm ASTM D5185m 0 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 0 <1	Silicon	maa	ASTM D5185m	>20	2	2	2
Potassium ppm ASTM D5185m >20 0 0 <1							
Water % ASTM D6304 >0.05 0.002 0.002 0.001 ppm Water ppm ASTM D6304 >500 16.6 16.3 7.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >10000 454 4408 204 Particles >6μm ASTM D7647 >1300 124 1346 85 Particles >14μm ASTM D7647 >160 13 111 15 Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2				>20			
ppm Water ppm ASTM D6304 >500 16.6 16.3 7.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >10000 454 4408 204 Particles >6μm ASTM D7647 >1300 124 1346 85 Particles >14μm ASTM D7647 >160 13 111 15 Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2							
Particles >4μm ASTM D7647 >10000 454 4408 204 Particles >6μm ASTM D7647 >1300 124 1346 85 Particles >14μm ASTM D7647 >160 13 111 15 Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2							
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Particles >6μm ASTM D7647 >1300 124 Δ 1346 85 Particles >14μm ASTM D7647 >160 13 111 15 Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 Δ 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm		ASTM D7647	>10000	454	4408	204
Particles >14μm ASTM D7647 >160 13 111 15 Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2				>1300	124	▲ 1346	85
Particles >21μm ASTM D7647 >40 3 32 5 Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm						
Particles >38μm ASTM D7647 >10 0 2 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 ▲ 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2	'						
Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 ▲ 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2	·						
Oil Cleanliness ISO 4406 (c) >20/17/14 16/14/11 ▲ 19/18/14 15/14/11 FLUID DEGRADATION method limit/base current history1 history2	•						
	·						
Acid Number (AN) mg KOH/g ASTM D8045 0.26 0.19 0.20 0.19	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	0.26	0.19	0.20	0.19



OIL ANALYSIS REPORT



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)

Certificate L2367

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