

OIL ANALYSIS REPORT

Sample Rating Trend





136 Component Hydraulic System

Area **RONI**

PETRO CANADA HYDREX AW 46 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. 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 INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0888481	LH0261691	
Sample Date		Client Info		21 Dec 2023	10 May 2023	
Machine Age	hrs	Client Info		0	2600	
Oil Age	hrs	Client Info		0	0	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ABNORMAL	
CONTAMINATION	N	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>25	24	A 35	
Chromium	ppm	ASTM D5185(m)	>10	1	2	
Nickel	ppm	ASTM D5185(m)	>10	<1	0	
Titanium	ppm	ASTM D5185(m)		0	<1	
Silver	ppm	ASTM D5185(m)		0	0	
Aluminum	ppm	ASTM D5185(m)	>20	4	5	
Lead	ppm	ASTM D5185(m)	>20	<1	<1	
Copper	ppm	ASTM D5185(m)	>150	11	12	
Tin	ppm	ASTM D5185(m)	>10	0	0	
Antimony	ppm	ASTM D5185(m)		0	<1	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base 0	current 2	history1 2	history2
	ppm ppm	ASTM D5185(m)				
Boron		ASTM D5185(m)	0	2	2	
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0	2 0	2 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	2 0 0	2 0 <1	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0	2 0 0 0	2 0 <1 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0	2 0 0 0 24	2 0 <1 <1 24	
Boron Barium Molybdenum Manganese Magnesium Calcium	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 0 0 50	2 0 0 24 88	2 0 <1 <1 24 87	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 0 50 330	2 0 0 24 88 326	2 0 <1 24 87 327	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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) ASTM D5185(m)	0 0 0 0 0 50 330 430	2 0 0 24 88 326 395	2 0 <1 24 87 327 347	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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) ASTM D5185(m)	0 0 0 0 0 50 330 430	2 0 0 24 88 326 395 998	2 0 <1 24 87 327 347 893	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm 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) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760	2 0 0 24 88 326 395 998 <1	2 0 <1 24 87 327 347 893 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm 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) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760	2 0 0 24 88 326 395 998 <1	2 0 <1 24 87 327 347 893 <1 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm ppm 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) ASTM D5185(m) ASTM D5185(m) method ASTM D5185(m)	0 0 0 0 50 330 430 760	2 0 0 24 88 326 395 998 <1	2 0 <1 24 87 327 347 893 <1 history1 18	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 50 330 430 760 limit/base >50	2 0 0 24 88 326 395 998 <1 current 11 1	2 0 <1 24 87 327 347 893 <1 history1 18 1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 I imit/base >50	2 0 0 24 88 326 395 998 <1 current 11 1 2	2 0 <1 24 87 327 347 893 <1 <u>history1</u> 18 1 2	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 imit/base >50 20 imit/base	2 0 0 24 88 326 395 998 <1 <i>current</i> 11 1 2 <i>current</i>	2 0 <1 24 87 327 347 893 <1 history1 18 1 2 history1	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 0 50 330 430 760 760 550 550 >20 Imit/base >20 Imit/base	2 0 0 24 88 326 395 998 <1 current 11 1 2 current 9498	2 0 <1 24 87 327 347 893 <1 history1 18 1 2 history1 33597	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 50 330 430 760 760 i i i i 550 i 550 i 20 i i 20 i i i i i i i i i i	2 0 0 24 88 326 395 998 <1 current 11 1 2 current 9498 2324	2 0 <1 <1 24 87 327 347 893 <1 history1 18 1 2 history1 33597 921	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 50 330 430 760 760 b b b b b b b b b b	2 0 0 24 88 326 395 998 <1 <i>current</i> 11 1 2 <i>current</i> 9498 2324 144	2 0 <1 <1 24 87 327 347 893 <1 history1 18 1 2 history1 33597 921 23	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 50 330 430 760 50 50 imit/base >20 imit/base >20 imit/base >20 20 20 20 20 20 20 20 20 20 20 20 20 2	2 0 0 24 88 326 395 998 <1 <i>current</i> 11 1 2 <i>current</i> 9498 2324 144 29	2 0 <1 24 87 327 347 893 <1 history1 18 1 2 history1 33597 921 23 6	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Potassium Particles >4µm Particles >21µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 50 330 430 760 760 50 50 50 50 50 50 50 50 50 50 50 50 50	2 0 0 24 88 326 395 998 <1 <i>current</i> 11 1 2 <i>current</i> 9498 2324 144 29 2	2 0 <1 24 87 327 347 893 <1 history1 18 1 2 history1 33597 921 23 6 0	 history2 history2 history2



OIL ANALYSIS REPORT

Particle Trend	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
4μm <u>Abnormal</u> 6μm	Acid Number (AN)	mg KOH/g	ASTM D974*	0.70	0.41		
k	VISUAL		method	limit/base	current	history1	history
k	White Metal	scalar	Visual*	NONE	NONE	NONE	
	Yellow Metal	scalar	Visual*	NONE	NONE	NONE	
	Precipitate	scalar	Visual*	NONE	NONE	NONE	
May10/23	Silt	scalar	Visual*	NONE	NONE	NONE	
Mav/10/23 Dec21/23	Debris	scalar	Visual*	NONE	VLITE	NONE	
Acid Number	Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	
Base	Appearance	scalar	Visual*	NORML	NORML	NORML	
	Odor	scalar	Visual*	NORML	NORML	NORML	
0 - -	Emulsified Water	scalar	Visual*	>0.1	NEG	NEG	
]	Free Water		Visual*		NEG	NEG	
	FLUID PROPERT	TIES	method	limit/base	current	history1	history
	Visc @ 40°C	cSt	ASTM D7279(m)	46.4	45.0	44.8	
May10/23	SAMPLE IMAGE	S	method	limit/base	current	history1	history2
≗ dooc	Color						no image
Base Abnormal	Bottom						no image
Particle Trend	Ferrous Alloys	s		491.520 122.880 30.720 E 7,680 527.72 C E 7,680 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 480 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.920 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.9200 1.92000 1.92000 1.92000 1.920000 1.92000000000000000000000000000000000000	Abnormal	14μ 21μ	38µ 71
	(5-0-0) 45 (5-0-0) 45 40 40 40 40 40 40 40 40 40 40			0.40. 02.0 0,000 900.0 400 900.0 4000 900.0 400 900.0 4000 900.0 4000 900.0 4000 900.0 4000 900.0 4000 9000 900.0 4000 900.0 4000 900.0 4000 9000 9000 9000 9000 9000 9000 900	May 10/23		
Laboratory Sample No. Lab Number Unique Number Unique Number Test Package To discuss this sample report, Test denoted (*) outside scope	: 02607145 : 5708231 : MOBCE contact Customer Serv	Recieved Diagnose Diagnost ice at 1-8	l :08 . ed :11 . ician :Wes	Jan 2024 Jan 2024 s Davis		100 MACI V Contact:	AVATING L NTOSH BL AUGHAN, (CA L4K 4 Service Te .team@roni

Contact/Location: Service Team - RONVAU Page 2 of 2