

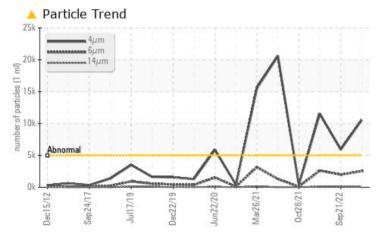
# **PROBLEM SUMMARY**

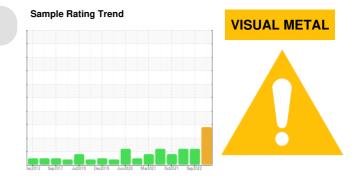
### Machine Id IMM #13 (S/N 2118314) Component

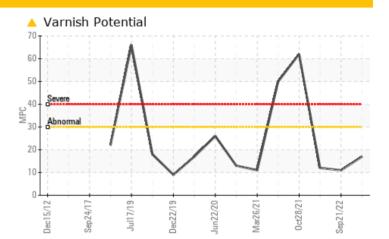
Hydraulic System

PETRO CANADA HYDREX AW 46 (3000 GAL)

## COMPONENT CONDITION SUMMARY







no image

no image

## RECOMMENDATION

We advise that you check for visible metal particles in the oil. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.

## **PROBLEMATIC TEST RESULTS**

THODELINATIC		TILOULI	0			
Sample Status				ABNORMAL	ATTENTION	ABNORMAL
Particles >4µm		ASTM D7647	>5000	<u> </u>	<b>5906</b>	<b>11546</b>
Particles >6µm		ASTM D7647	>1300	🔺 2527	🔺 1985	<u> </u>
Oil Cleanliness		ISO 4406 (c)	>19/17/14	<u> </u>	🔺 20/18/14	<b>A</b> 21/19/14
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	<u> </u>	11	12
White Metal	scalar	Visual*	NONE	🔺 light	NONE	NONE

PrtFilter

Customer Id: ROPOAK Sample No.: PC0076915 Lab Number: 02571204 Test Package: IND 2



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*To discuss the diagnosis or test data:* Kevin Marson +1 (289)291-4644 x4644 Kevin.Marson@wearcheck.com

To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS							
Action	Status	Date	Done By	Description			
Change Filter			?	We recommend you service the filters on this component.			
Resample			?	We recommend an early resample to monitor this condition.			
Contact Required			?	Please contact your representative for information regarding the proper sampling kits for your service.			
Alert			?	NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.			
Check For Visual Metal			?	We advise that you check for visible metal particles in the oil.			

### **HISTORICAL DIAGNOSIS**

#### 21 Sep 2022 Diag: Wes Davis



The filter change at the time of sampling has been noted. 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 Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service (unconfirmed).





#### 10 May 2022 Diag: Wes Davis

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.All component wear rates are normal. Oil Cleanliness are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. MPC (Membrane Patch Colorimetry) test indicates acceptable levels of varnish present. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service (unconfirmed). The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.





### 28 Oct 2021 Diag: Kevin Marson

We recommend that you use electrostatic filtration to remove insolubles from the oil and to reduce the levels of varnish in the system. Alternatively draining a percentage of the oil and topping up with fresh oil (sweetening the oil) may provide a reduction in the varnish potential level. We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.Component wear rates appear to be normal (unconfirmed). MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service (unconfirmed).



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# **OIL ANALYSIS REPORT**

## Machine Id IMM #13 (S/N 2118314)

Hydraulic System Fluid PETRO CANADA HYDREX AW 46 (3000 GAL)

### DIAGNOSIS

### A Recommendation

We advise that you check for visible metal particles in the oil. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using Advanced Oil Monitoring (AOM) kits for this system. The AOM test package includes advanced level testing to determine the suitability of turbine and large industrial compressor oils for continued use.

### 🔺 Wear

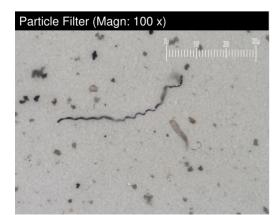
Light concentration of visible metal present.

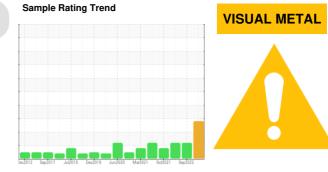
#### Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service (unconfirmed). The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



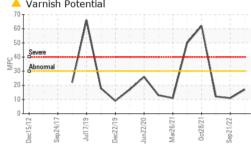


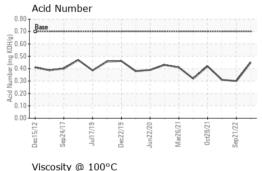
SAMPLE INFOR		method	limit/base	current	history1	history2
Sample Number		Client Info		PC0076915	PC0062451	PC0052953
Sample Date		Client Info		11 Jul 2023	21 Sep 2022	10 May 2022
Machine Age	mths	Client Info		0	0	0
Oil Age	mths	Client Info		0	4	0
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				ABNORMAL	ATTENTION	ABNORMAL
WEAR METAI	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>40	<1	<1	1
Chromium	ppm	ASTM D5185(m)	>4	0	0	0
Nickel	ppm	ASTM D5185(m)	>20	<1	0	0
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>4	0	0	0
Lead	ppm	ASTM D5185(m)	>10	0	<1	<1
Copper	ppm	ASTM D5185(m)	>60	1	2	2
Tin	ppm	ASTM D5185(m)	>4	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	<1
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	0	0
Magnesium	ppm	ASTM D5185(m)	0	2	0	0
Calcium	ppm	ASTM D5185(m)	50	31	32	28
	ppm	A0110 D0100(11)				
Phosphorus	ppm	ASTM D5185(m)	330	365	351	339
Phosphorus Zinc				365 365	351 354	339 342
	ppm	ASTM D5185(m)	330			
Zinc	ppm ppm	ASTM D5185(m) ASTM D5185(m)	330 430	365	354	342
Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	330 430	365 744	354 768	342 740
Zinc Sulfur Lithium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	330 430 760 limit/base	365 744 <1	354 768 <1	342 740 <1
Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method	330 430 760 limit/base >20	365 744 <1 current	354 768 <1 history1	342 740 <1 history2
Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) <b>method</b> ASTM D5185(m)	330 430 760 limit/base >20	365 744 <1 current <1	354 768 <1 history1 <1	342 740 <1 history2
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm VTS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	330 430 760 limit/base >20	365 744 <1 <u>current</u> <1 <1	354 768 <1 <u>history1</u> <1 0	342 740 <1 history2 <1 0
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm VTS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	330 430 760 limit/base >20 >20	365 744 <1 current <1 <1 <1 <1	354 768 <1 <u>history1</u> <1 0 0	342 740 <1 history2 <1 0 <1
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEAN	ppm ppm ppm ppm ppm VTS 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)	330 430 760 limit/base >20 >20 limit/base >5000	365 744 <1 current <1 <1 <1 <1 <1 current	354 768 <1 history1 <1 0 0 0 history1	342 740 <1 history2 <1 0 <1 history2
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEAN Particles >4µm	ppm ppm ppm ppm ppm VTS 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)	330 430 760 limit/base >20 >20 limit/base >5000 >1300	365 744 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	354 768 <1 history1 <1 0 0 0 0 history1 ▲ 5906	342 740 <1 history2 <1 0 <1 history2 <1 1 11546
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEAN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm VTS 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 D7647 ASTM D7647	330 430 760 limit/base >20 >20 limit/base >20 limit/base >20 >20 20 limit/base >20 >20	365 744 <1 <1 <1 <1 <1 <1 <1 <1 <1 Urrent 10537 ▲ 10537	354 768 <1 <1 <1 <1 0 0 0 history1 history1 ▲ 5906 ▲ 1985	342 740 <1 history2 <1 0 <1 history2 ▲ 11546 ▲ 2614
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEAN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm VTS 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 D7647 ASTM D7647 ASTM D7647	330 430 760 Iimit/base >20 >20 >20 Iimit/base >20 >300 >1300 >160 >40	365 744 <1 <1 <1 <1 <1 <1 <1 <1 <1 0 urrent 10537 ▲ 10537 ▲ 2527 76	354 768 <1 history1 <1 0 0 history1 ▲ 5906 ▲ 1985 109	342 740 <1 history2 <1 0 <1 history2 ▲ 11546 ▲ 2614 110
Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEAN Particles >4µm Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm VTS 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 D7647 ASTM D7647 ASTM D7647 ASTM D7647	330 430 760 <b>limit/base</b> >20 <b>limit/base</b> >20 <b>limit/base</b> >5000 >1300 >160 >40 >10	365 744 <1 <1 <1 <1 <1 <1 <1 <1 0 urrent 10537 ▲ 2527 76 21	354 768 <1 history1 <1 0 0 history1 ↓ 5906 ↓ 1985 109 31	342 740 <1 history2 <1 0 <1 history2 ▲ 11546 ▲ 2614 110 19

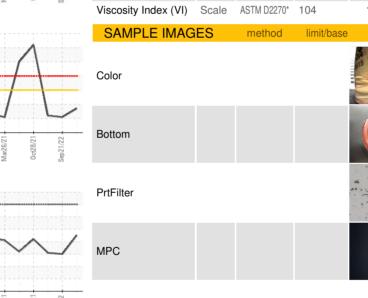


# **OIL ANALYSIS REPORT**

▲ Part	icle Cou	nt				FI
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	6µ	14µ	21µ	38µ	Πμ	Deb
A Part	icle Tren	d				San
	4μm					Арр
E 20k -	14μm			Λ		Odd
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0k	C.	ດ ດ			12	Viso
Dec15/12	Sep24/1	Jul17/19 Dec22/19	Jun22/20	0ct28/21	Sep21/22	Viso
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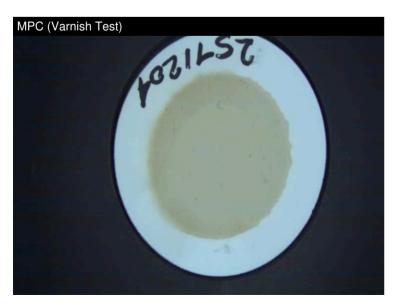


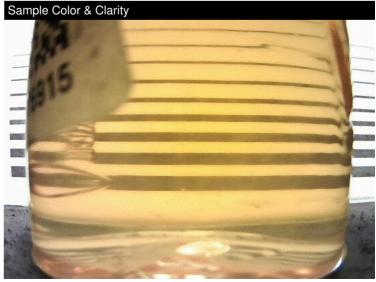


FLUID DEGRADATION method limit/base history1 history2 current 0.45 Acid Number (AN) mg KOH/g ASTM D974\* 0.70 0.30 0.31 MPC Varnish Potential Scale ASTM D7843(m)\* >15 17 11 12 VISUAL method limit/base current history<sup>-</sup> history2 Nhite Metal NONE LIGHT NONE NONE scalar Visual\* Yellow Metal scalar Visual\* NONE NONE NONE NONE Precipitate scalar Visual\* NONE NONE NONE NONE scalar Visual\* NONE NONE NONE NONE Debris NONE VLITE NONE NONE scalar Visual\* NONE Sand/Dirt scalar Visual\* NONE NONE NONE Visual\* NORML NORML Appearance scalar NORML NORML Odor scalar Visual\* NORML NORML NORML NORML Emulsified Water scalar Visual\* >0.05 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) 46.4 45.1 45.4 46.0 visc @ 100°C cSt ASTM D7279(m) 6.92 7.2 7.2 7.3 120 119 120

current historv1 history2 no image no image

Viscosity @ 100°C 00°C) Ba Abnorm ŝ Jul17/19 Sen 21/22 Sep24/17 Aar76/7 ct28/7 Dec22/1 **ROPAK PACKAGING CANADA** Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 CALA Received : 20 Jul 2023 2240 WYECROFT RD Sample No. : PC0076915 OAKVILLE, ON Lab Number : 02571204 Diagnosed : 21 Jul 2023 ISO 17025:2017 Accredited Unique Number : 5616255 Diagnostician : Kevin Marson CA L6L 6M1 Laboratory Test Package : IND 2 (Additional Tests: Bottom, BottomAnalysis, FilterPatch, KV100, MPC, PrtFilter, TAN Man, VI) Contact: Frank Maio To discuss this sample report, contact Customer Service at 1-800-268-2131. Frank.Maio@mauserpackaging.com T: (905)465-9019 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. F:





Report Id: ROPOAK [WCAMIS] 02571204 (Generated: 07/21/2023 13:50:13) Rev: 1

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