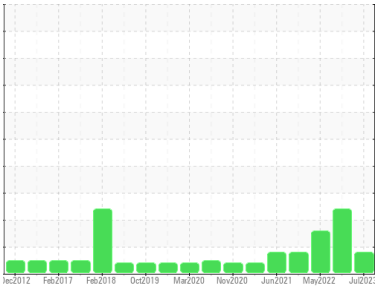
PROBLEM SUMMARY

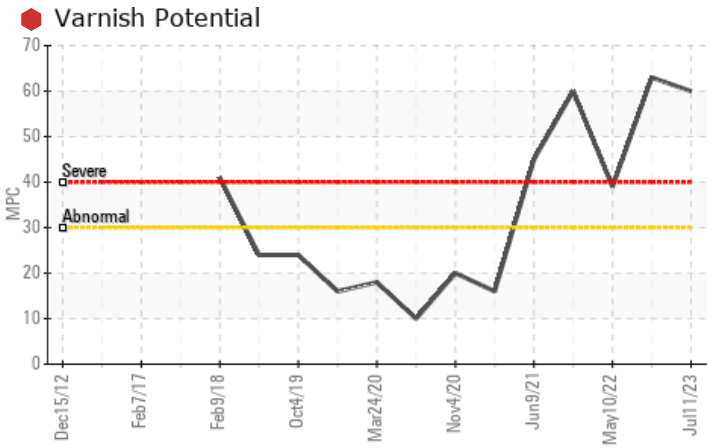
Sample Rating Trend



INSOLUBLES

Machine Id
IMM #10 (S/N 3790346)
Component
Hydraulic System
Fluid
PETRO CANADA HYDREX AW 46 (1500 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

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 IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

PROBLEMATIC TEST RESULTS

Sample Status				**SEVERE**	SEVERE	ABNORMAL
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	**60**	63	39

Customer Id: ROPOAK
Sample No.: PC0076960
Lab Number: 02571237
Test Package: IND 2

To manage this report scan the QR code

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
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 IND 3 test kits,
Filter Fluid	---	---	?	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.

HISTORICAL DIAGNOSIS

INSOLUBLES

21 Sep 2022 Diag: Kevin Marson

The filter change at the time of sampling has been noted. 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.All component wear rates are normal. MPC Varnish Potential contamination levels are severely high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Oil Cleanliness are abnormally high. Particles >14µm are notably high. MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

INSOLUBLES

10 May 2022 Diag: Kevin Marson

We recommend you service the filters on this component. 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.All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a moderate concentration of varnish present. The AN level is acceptable for this fluid. NOTE: The color of the oil is darker then previous samples.

view report

INSOLUBLES

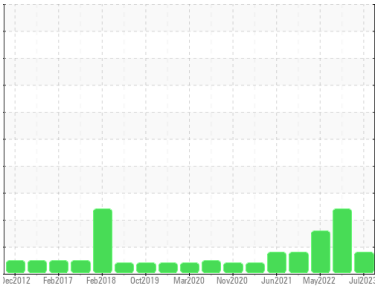
28 Oct 2021 Diag: Kevin Marson

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.All component wear rates are normal. 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.

view report

OIL ANALYSIS REPORT

Sample Rating Trend



INSOLUBLES

Machine Id
IMM #10 (S/N 3790346)
Component
Hydraulic System
Fluid
PETRO CANADA HYDREX AW 46 (1500 LTR)

DIAGNOSIS

Recommendation

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 IND 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

MPC (Membrane Patch Colorimetry) test indicates a high concentration of varnish present. The system cleanliness is acceptable for your target ISO 4406 cleanliness code.

Fluid Condition

The AN level is acceptable for this fluid.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PC0076960**	PC0062453	PC0052950
Sample Date		Client Info		**11 Jul 2023**	21 Sep 2022	10 May 2022
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	60	0
Oil Changed		Client Info		**N/A**	Changed	N/A
Sample Status				**SEVERE**	SEVERE	ABNORMAL

WEAR METALS		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	**<1**	0	0
Lead	ppm	ASTM D5185(m)	>10	**0**	0	0
Copper	ppm	ASTM D5185(m)	>60	**<1**	<1	<1
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

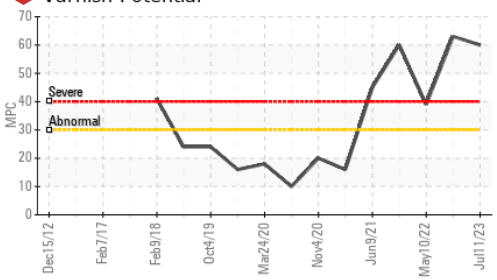
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	0	**<1**	<1	0
Barium	ppm	ASTM D5185(m)	0	**0**	0	0
Molybdenum	ppm	ASTM D5185(m)	0	**0**	0	0
Manganese	ppm	ASTM D5185(m)	0	**0**	0	0
Magnesium	ppm	ASTM D5185(m)	0	**1**	0	0
Calcium	ppm	ASTM D5185(m)	50	**37**	32	34
Phosphorus	ppm	ASTM D5185(m)	330	**356**	338	347
Zinc	ppm	ASTM D5185(m)	430	**371**	335	363
Sulfur	ppm	ASTM D5185(m)	760	**721**	705	712
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

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

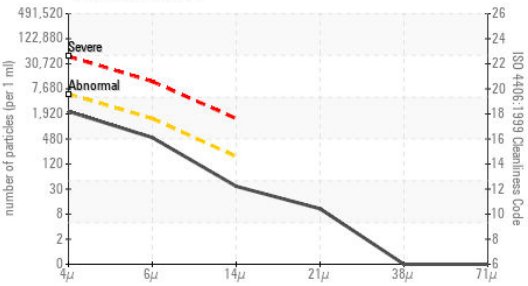
FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	**1922**	▲ 11116	▲ 7732
Particles >6µm		ASTM D7647	>1300	**456**	▲ 2917	▲ 1543
Particles >14µm		ASTM D7647	>160	**31**	▲ 192	85
Particles >21µm		ASTM D7647	>40	**9**	44	19
Particles >38µm		ASTM D7647	>10	**0**	1	0
Particles >71µm		ASTM D7647	>3	**0**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	**18/16/12**	▲ 21/19/15	▲ 20/18/14

OIL ANALYSIS REPORT

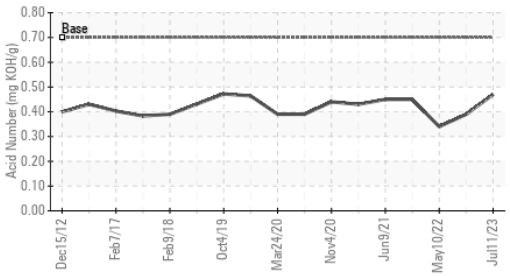
Varnish Potential



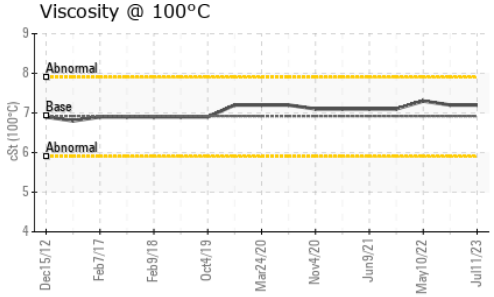
Particle Count



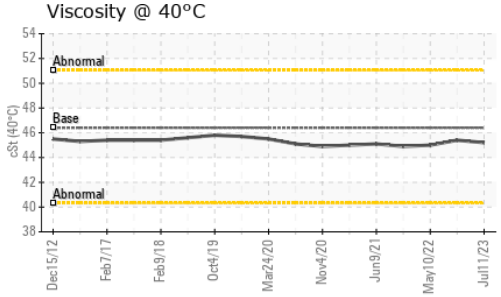
Acid Number



Viscosity @ 100°C



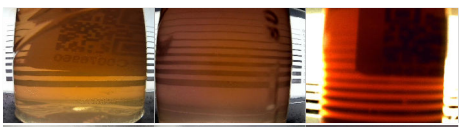
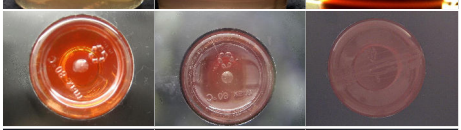
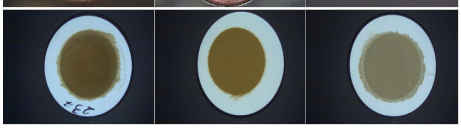
Viscosity @ 40°C



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.70	**0.47**	0.39	0.34
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	**60**	63	39

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**	VLITE	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*	>0.05	**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	**45.2**	45.4	45.0
Visc @ 100°C	cSt	ASTM D7279(m)	6.92	**7.2**	7.2	7.3
Viscosity Index (VI)	Scale	ASTM D2270*	104	**119**	119	124

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					
MPC					

CALA
ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076960 **Received** : 20 Jul 2023
Lab Number : 02571237 **Diagnosed** : 21 Jul 2023
Unique Number : 5616288 **Diagnostician** : Kevin Marson
Test Package : IND 2 (Additional Tests: KV100, MPC, 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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CA L6L 6M1
Contact: Frank Maio
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F:

MPC (Varnish Test)

Sample Color & Clarity

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