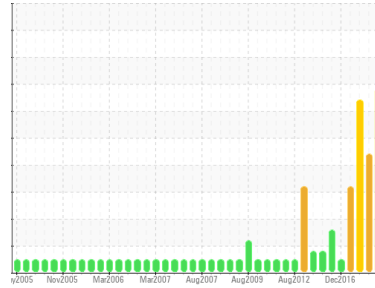
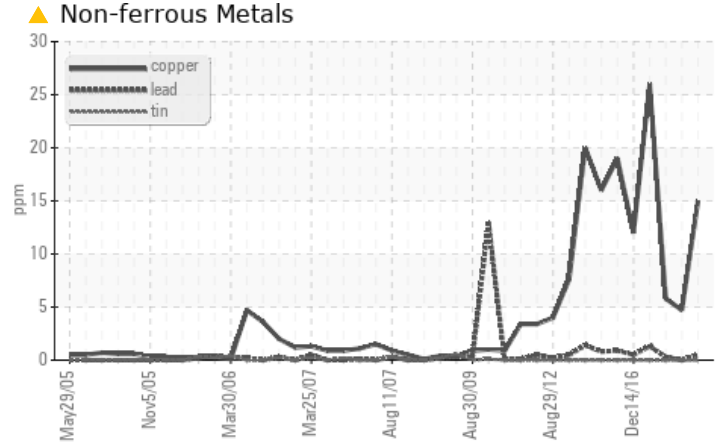
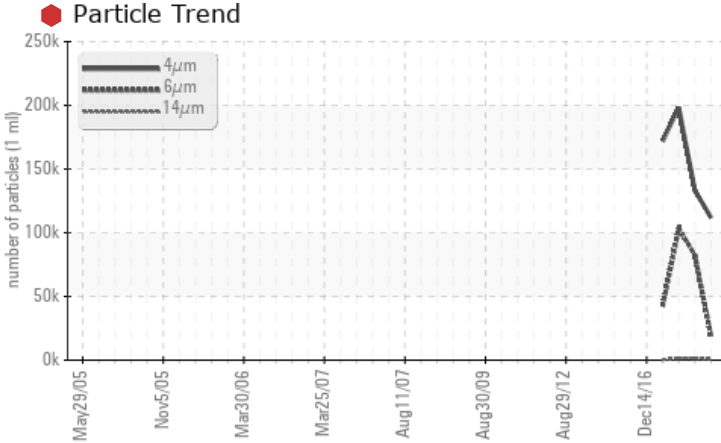


Area  
**Gas Compression [450248644]**  
Machine Id  
**Pump Crude Oil (B) - Lube System (S/N Sample Tag PA-21001B-S1)**  
Component  
**Pump**  
Fluid  
**PETRO CANADA HYDREX MV 36 (10 LTR)**



**COMPONENT CONDITION SUMMARY**



**RECOMMENDATION**

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. Resample in 30-45 days to monitor this situation.

**PROBLEMATIC TEST RESULTS**

Sample Status			SEVERE	SEVERE	SEVERE
Particles >6µm	ASTM D7647	>1300	18961	82303	103408
Particles >14µm	ASTM D7647	>160	638	1301	1339
Particles >21µm	ASTM D7647	>40	114	139	196
Oil Cleanliness	ISO 4406 (c)	>--/17/14	24/21/16	24/24/18	25/24/18
Appearance	scalar Visual*	NORML	WGOIL	NORML	NORML
Free Water	scalar Visual*		>10%	NEG	NEG

Customer Id: TERHAM  
Sample No.: PC0076405  
Lab Number: 02609358  
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](mailto:Kevin.Marson@wearcheck.com)

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

## RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Water Drain-off	---	---	?	We advise that you follow the water drain-off procedure for this component.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

## HISTORICAL DIAGNOSIS

### 18 Dec 2019 Diag: Kevin Marson

ISO



We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. All component wear rates are normal. Particles >14µm are severely high. Particles >6µm are severely high. Particles >21µm are abnormally high. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



### 04 Sep 2018 Diag: Kevin Marson

ISO



We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. We recommend that you drain the oil from the component if this has not already been done. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation. Iron ppm levels are abnormal. Light concentration of visible metal present. Particles >14µm are severely high. Particles >6µm are severely high. Particles >21µm are abnormally high. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

view report



### 09 Oct 2017 Diag: Kevin Marson

ISO

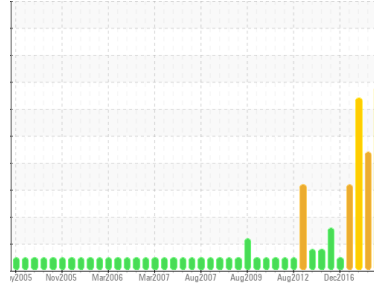


Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. Copper ppm levels are noted. All other component wear rates are normal. Particles >6µm are severely high. Particles >14µm are notably high. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report



Area  
**Gas Compression [450248644]**  
Machine Id  
**Pump Crude Oil (B) - Lube System (S/N Sample Tag PA-21001B-S1)**  
Component  
**Pump**  
Fluid  
**PETRO CANADA HYDREX MV 36 (10 LTR)**



**DIAGNOSIS**

**Recommendation**  
Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you follow the water drain-off procedure for this component. Resample in 30-45 days to monitor this situation.

**Wear**  
Copper ppm levels are noted. All other component wear rates are normal.

**Contamination**  
There is a high amount of particulates (2 to 100 microns in size) present in the oil. Excessive free water present. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

**Fluid Condition**  
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

**SAMPLE INFORMATION**

method	limit/base	current	history1	history2
Sample Number	Client Info	<b>PC0076405</b>	PC	PC
Sample Date	Client Info	<b>03 Jan 2024</b>	18 Dec 2019	04 Sep 2018
Machine Age	hrs	<b>0</b>	0	0
Oil Age	hrs	<b>0</b>	0	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>SEVERE</b>	SEVERE	SEVERE

**CONTAMINATION**

method	limit/base	current	history1	history2
Water	WC Method >.1	<b>NEG</b>	NEG	NEG

**WEAR METALS**

method	limit/base	current	history1	history2
PQ	ASTM D8184*	<b>0</b>	25	56
Iron	ppm ASTM D5185(m) >75	<b>10</b>	34	▲ 86
Chromium	ppm ASTM D5185(m) >5	<b>0</b>	<1	1
Nickel	ppm ASTM D5185(m)	<b>0</b>	<1	0
Titanium	ppm ASTM D5185(m)	<b>0</b>	<1	0
Silver	ppm ASTM D5185(m)	<b>0</b>	0	0
Aluminum	ppm ASTM D5185(m) >5	<b>&lt;1</b>	<1	<1
Lead	ppm ASTM D5185(m) >10	<b>&lt;1</b>	0	<1
Copper	ppm ASTM D5185(m) >15	▲ <b>15</b>	5	6
Tin	ppm ASTM D5185(m)	<b>0</b>	0	0
Antimony	ppm ASTM D5185(m)	<b>0</b>	<1	0
Vanadium	ppm ASTM D5185(m)	<b>0</b>	0	0
Beryllium	ppm ASTM D5185(m)	<b>0</b>	0	0
Cadmium	ppm ASTM D5185(m)	<b>0</b>	0	0

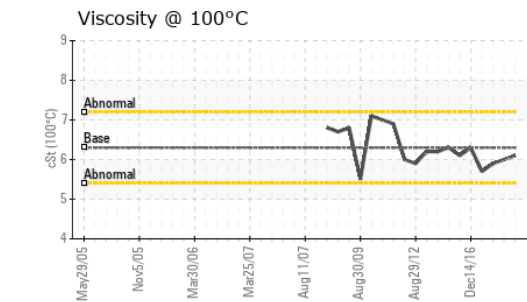
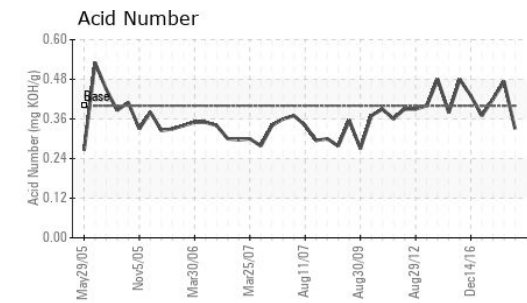
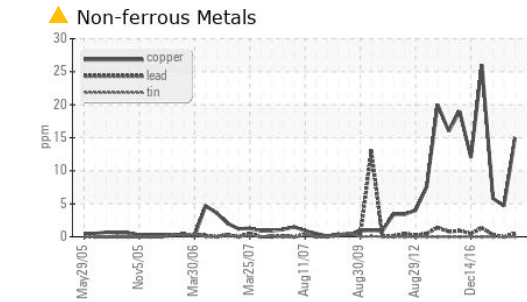
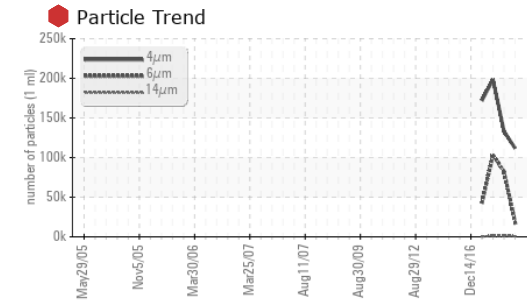
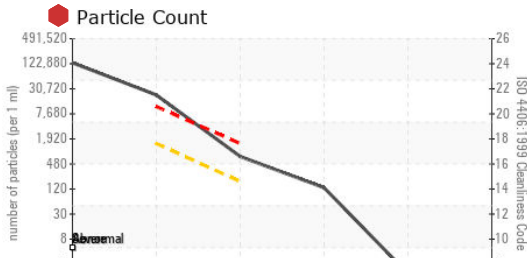
**ADDITIVES**

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185(m) 0	<b>&lt;1</b>	<1	0
Barium	ppm ASTM D5185(m) 0	<b>0</b>	0	0
Molybdenum	ppm ASTM D5185(m) 0	<b>0</b>	0	0
Manganese	ppm ASTM D5185(m) 1	<b>0</b>	<1	<1
Magnesium	ppm ASTM D5185(m) 0	<b>&lt;1</b>	<1	<1
Calcium	ppm ASTM D5185(m) 135	<b>29</b>	53	57
Phosphorus	ppm ASTM D5185(m) 236	<b>299</b>	327	308
Zinc	ppm ASTM D5185(m) 317	<b>361</b>	416	408
Sulfur	ppm ASTM D5185(m) 561	<b>712</b>	738	726
Lithium	ppm ASTM D5185(m)	<b>&lt;1</b>	<1	0

**CONTAMINANTS**

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185(m) >20	<b>&lt;1</b>	<1	2
Sodium	ppm ASTM D5185(m)	<b>0</b>	0	<1
Potassium	ppm ASTM D5185(m) >20	<b>1</b>	<1	0

# OIL ANALYSIS REPORT



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC0076405 **Received** : 17 Jan 2024  
**Lab Number** : 02609358 **Diagnosed** : 18 Jan 2024  
**Unique Number** : 5710444 **Diagnostician** : Kevin Marson  
**Test Package** : IND 2 ( Additional Tests: KV100, PQ, PrtCount, 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.

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647			<b>111838</b>	133116	198265
Particles >6µm	ASTM D7647	>1300		<b>18961</b>	82303	103408
Particles >14µm	ASTM D7647	>160		<b>638</b>	1301	1339
Particles >21µm	ASTM D7647	>40		<b>114</b>	139	196
Particles >38µm	ASTM D7647	>10		<b>1</b>	2	0
Particles >71µm	ASTM D7647	>3		<b>1</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>--/17/14		<b>24/21/16</b>	24/24/18	25/24/18

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.40	<b>0.33</b>	0.473	0.42

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	<b>NONE</b>	VLITE	▲ LIGHT
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	Visual*	NONE	<b>NONE</b>	VLITE	LIGHT
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	▲ <b>WGOIL</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>.1	<b>.2%</b>	NEG	NEG
Free Water	scalar	Visual*		▲ <b>&gt;10%</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	32.25	<b>31.5</b>	31.7	30.5
Visc @ 100°C	cSt	ASTM D7279(m)	6.3	<b>6.1</b>	6.0	5.9
Viscosity Index (VI)	Scale	ASTM D2270*	148	<b>144</b>	137	141

SAMPLE IMAGES		method	limit/base	current	history1	history2
Color						
Bottom						
PrtFilter					no image	no image

**Suncor - Terra Nova Projects**  
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 St. John's, NL  
 CA A1C 1B6  
 Contact: Josh Hynes  
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 T: (709)778-3575  
 F: (709)724-2835