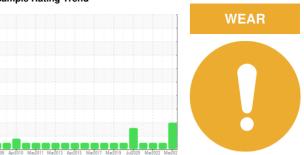


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

17A02D02 - Anchor Windlass Power Pack

Hydraulic System

PETRO CANADA HYDREX MV 32 (260 LTR)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

Wear

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

Contamination

There is a light amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible.

Fluid Condition

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

Sample Number Client Info WC0747563 WC0747567 WC080 Sample Date Client Info 29 Mar 2024 01 Apr 2023 27 Mar Machine Age hrs Client Info 0			pr2008 Apr20	10 May2011 Mar2013 Apr2	015 Mar2017 Mar2019 Jul2020 M	ar2022 Mar202	
Client Info Chromium NorMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL Chromium	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 1469 1428	Sample Number		Client Info		WC0747563	WC0747567	WC060284
Dil Age	Sample Date		Client Info		29 Mar 2024	01 Apr 2023	27 Mar 202
Dil Changed Client Info Not Changed Not Changed Not Changed Not Changed NormAL	Machine Age	hrs	Client Info		0	1469	1428
NORMAL N	Dil Age	hrs	Client Info		0	76	0
NORMAL N	Oil Changed		Client Info		Not Changd	Not Changd	Not Change
Con	-						NORMAL
Description	WEAR METALS		method	limit/base	current	history1	history
Action	ron	ppm	ASTM D5185(m)	>20	<1	<1	0
Description	Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Description	Nickel	ppm	ASTM D5185(m)	>10	0	<1	<1
Silver	itanium		ASTM D5185(m)		0	0	0
Astmorphy	Silver		, ,		0		<1
ASTM D5185(m) >20			. ,	>10			
Description			. ,				
Tin							
Antimony ppm ASTM D5185(m) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			,				
Aranadium 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 his Boron ppm ASTM D5185(m) 0 0 0 < 1 Barium ppm ASTM D5185(m) 0 0 0 0 Alagnesium ppm ASTM D5185(m) 0 0 0 0 Alagnesium ppm ASTM D5185(m) 0 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1 < 1			. ,	Z 1 U			
Decyllium	•		()				
ADDITIVES method limit/base current history1			. ,				
ADDITIVES	-		. ,				
Soron ppm ASTM D5185(m) 0 0 0 0 0 0 0 0 0		ppm	. ,				
Barium						•	history:
Molybdenum ppm ASTM D5185(m) 0 0 0 0 Manganese ppm ASTM D5185(m) 1 0 0 0 Magnesium ppm ASTM D5185(m) 0 <1			. ,				
Manganese ppm ASTM D5185(m) 1 0 0 0 Magnesium ppm ASTM D5185(m) 0 <1			,				
Magnesium ppm ASTM D5185(m) 0 <1 <1 <1 Calcium ppm ASTM D5185(m) 50 30 53 50 Phosphorus ppm ASTM D5185(m) 330 294 328 307 Zinc ppm ASTM D5185(m) 430 359 376 380 Sulfur ppm ASTM D5185(m) 760 733 792 730 Lithium ppm ASTM D5185(m) <1	Nolybdenum		. ,				
Calcium ppm ASTM D5185(m) 50 30 53 50 Phosphorus ppm ASTM D5185(m) 330 294 328 307 Zinc ppm ASTM D5185(m) 430 359 376 380 Sulfur ppm ASTM D5185(m) 760 733 792 730 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 his Solicon ppm ASTM D5185(m) >15 0 <1 <1 Contassium ppm ASTM D5185(m) >20 0 0 <1 Vater % ASTM D6308* >500 <t< td=""><td>•</td><td>ppm</td><td>, ,</td><td>1</td><td>0</td><td>0</td><td>0</td></t<>	•	ppm	, ,	1	0	0	0
Phosphorus ppm ASTM D5185(m) 330 294 328 307 Zinc ppm ASTM D5185(m) 430 359 376 380 Sulfur ppm ASTM D5185(m) 760 733 792 730 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 his Column ppm ASTM D5185(m) >15 0 0 <1 -1 Avater % ASTM D5185(m) >10 0 0 <1 -1 Particles > 4µm ASTM D6304*	Magnesium	ppm	ASTM D5185(m)	0	<1	<1	<1
Solifur Sol	Calcium	ppm	ASTM D5185(m)	50	30	53	50
Sulfur ppm ASTM D5185(m) 760 733 792 730 CONTAMINANTS method limit/base current history1 his Solicon ppm ASTM D5185(m) >15 0 <1 <1 Sodium ppm ASTM D5185(m) >15 0 <1 <1 0 Potassium ppm ASTM D5185(m) >20 0 0 <1 <1 0 Vater % ASTM D5185(m) >20 0 0 <1 <1 0 Vater % ASTM D5185(m) >20 0 0 <1 <1 0 Vater % ASTM D5185(m) >20 0 0 <1 <1 0 <1 <1 0 Vater % ASTM D5185(m) >1 0 0 0 <1 <1 0 0 Particles >4 % ASTM D5185(m) >20 0 0 0	Phosphorus	ppm	ASTM D5185(m)	330	294	328	307
CONTAMINANTS method limit/base current history1 histo	Zinc	ppm	ASTM D5185(m)	430	359	376	380
CONTAMINANTS method limit/base current history1 his Silicon ppm ASTM D5185(m) >15 0 <1	Sulfur	ppm	ASTM D5185(m)	760	733	792	730
Solicon ppm ASTM D5185(m) >15 0 <1 <1 Sodium ppm ASTM D5185(m) >20 0 0 <1 0 Potassium ppm ASTM D5185(m) >20 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 <1 0 0 0 <1 0 0 <1 0 0 0 <1 0 <th< td=""><td>ithium</td><td>ppm</td><td>ASTM D5185(m)</td><td></td><td><1</td><td><1</td><td><1</td></th<>	ithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) <1 <1 0 0 Cotassium ppm ASTM D5185(m) >20 0 0 0 <1 Mater % ASTM D6304* >0.05 0.013 copm Water ppm ASTM D6304* >500 134 Copm Water ppm ASTM D6304* >500 134 Copm Water ppm ASTM D6304* >500 134 Copm Water ppm ASTM D647 >5000 9974 1863 4009 ASTM D7647 >1300 2016 468 846 ASTM D7647 >1300 2016 468 846 ASTM D7647 >160 147 35 64 ASTM D7647 >160 147 35 64 ASTM D7647 >10 3 0 1 ASTM D7647 >10 3 0 1 ASTM D7647 >10 3 0 0 Copm D741 ASTM D7647 >30 0	CONTAMINANTS	6	method	limit/base	current	history1	history
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Potassium ppm ASTM D5185(m) >20 0 0 <1 Water % ASTM D6304* >0.05 0.013 ppm Water ppm ASTM D6304* >500 134 FLUID CLEANLINESS method limit/base current history1 his Particles >4μm ASTM D7647 >5000 9974 1863 4009 Particles >6μm ASTM D7647 >1300 2016 468 846 Particles >14μm ASTM D7647 >160 147 35 64 Particles >21μm ASTM D7647 >40 42 7 14 Particles >71μm ASTM D7647 >3 1 0 0	Sodium	ppm	ASTM D5185(m)		<1	<1	0
Water % ASTM D6304* >0.05 0.013 opm Water ppm ASTM D6304* >500 134 FLUID CLEANLINESS method limit/base current history1 his Particles >4μm ASTM D7647 >5000 9974 1863 4008 Particles >6μm ASTM D7647 >1300 2016 468 846 Particles >14μm ASTM D7647 >160 147 35 64 Particles >21μm ASTM D7647 >40 42 7 14 Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0	Potassium			>20			<1
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Particles >4μm ASTM D7647 >5000 9974 1863 4009 Particles >6μm ASTM D7647 >1300 2016 468 846 Particles >14μm ASTM D7647 >160 147 35 64 Particles >21μm ASTM D7647 >40 42 7 14 Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0							
Particles >6μm ASTM D7647 >1300 2016 468 846 Particles >14μm ASTM D7647 >160 147 35 64 Particles >21μm ASTM D7647 >40 42 7 14 Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0	FLUID CLEANLIN	NESS	method	limit/base	current	history1	history
Particles >14μm ASTM D7647 >160 147 35 64 Particles >21μm ASTM D7647 >40 42 7 14 Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0	Particles >4µm		ASTM D7647	>5000	9974	1863	4009
Particles >14µm ASTM D7647 >160 147 35 64 Particles >21µm ASTM D7647 >40 42 7 14 Particles >38µm ASTM D7647 >10 3 0 1 Particles >71µm ASTM D7647 >3 1 0 0	Particles >6µm		ASTM D7647	>1300	2016	468	846
Particles >21μm ASTM D7647 >40 42 7 14 Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0	Particles >14µm		ASTM D7647	>160	147		64
Particles >38μm ASTM D7647 >10 3 0 1 Particles >71μm ASTM D7647 >3 1 0 0	•		ASTM D7647				
Particles >71μm ASTM D7647 >3 1 0 0	•						
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70 Gearniness 150 4400 (C) 5 19/1 / 14 = 20/18/14 18/16/19 19/1	Dil Cleanliness		ISO 4406 (c)	>19/17/14	20/18/14	18/16/12	19/17/13



OIL ANALYSIS REPORT







Laboratory Sample No. Lab Number

: WC0747563 : 02628171 Unique Number : 5761303

Tested Diagnosed Test Package : MAR 2 (Additional Tests: KF)

Received

: 11 Apr 2024

: 12 Apr 2024

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.

: 12 Apr 2024 - Kevin Marson Contact: Chief Engineer Senior Engineer sirwilliamalexanderse@nwa.ccgs-ngcc.gc.ca

CCGS SIR WILLIAM ALEXANDER, 13 AKERLEY BLVD, DOOR 1A

T: (902)456-9281 Validity of results and interpretation are based on the sample and information as supplied. F: (902)701-0593

Report Id: CCGSSWA [WCAMIS] 02628171 (Generated: 04/12/2024 15:19:53) Rev: 1

Contact/Location: Chief Engineer Senior Engineer - CCGSSWA

DARTMOUTH, NS

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