MAR III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	ABNORMAL
OIL CONDITION	NORMAL

Machine Id
WARTSILA INTERMEDIATE THRUST BEARING (ITB) (S/N 40653477)
Component
Thrust Bearing
Fluid
PETRO CANADA TURBOFLO R&O 150 (138 LTR)

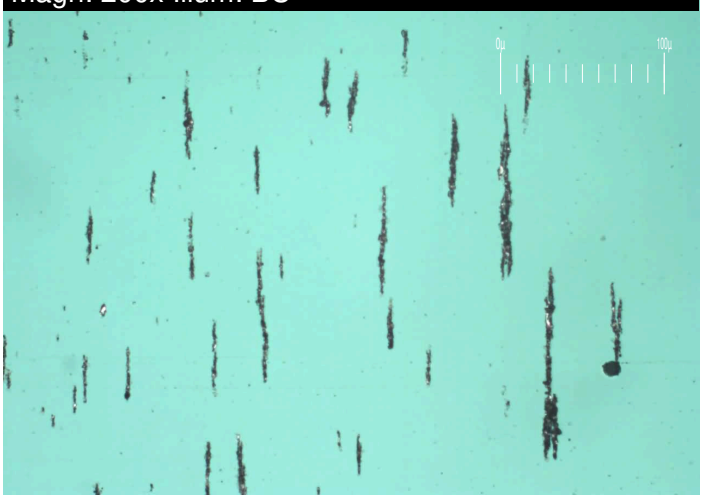
RECOMMENDATION

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

Magn: 200x Illum: BC



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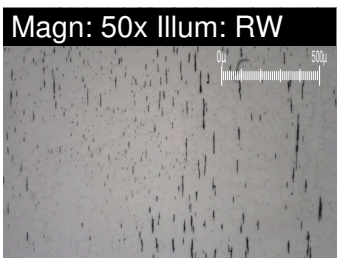

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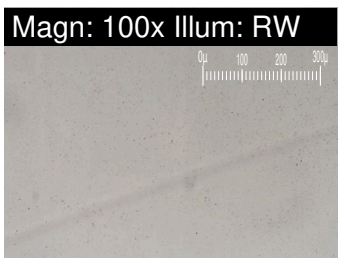


Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0883760	WC0883762	WC0757630
Sample Date		Client Info		06 Feb 2024	24 Dec 2023	03 Oct 2023
Machine Age	hrs	Client Info		0	0	4873
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	Not Changd	Not Changd
Filter Changed		Client Info		N/A	Not Changd	Not Changd
Sample Status				ABNORMAL	ATTENTION	ATTENTION
PQ		ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>85	<1	<1	<1
Chromium	ppm	ASTM D5185(m)	>2	0	0	0
Nickel	ppm	ASTM D5185(m)	>2	<1	<1	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	<1
Aluminum	ppm	ASTM D5185(m)	>40	<1	<1	0
Lead	ppm	ASTM D5185(m)	>60	<1	0	<1
Copper	ppm	ASTM D5185(m)	>7	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>40	2	2	2
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	NONE	VLITE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Large Particles		DR-Ferr*		8.3	6.6	5.9
Small Particles		DR-Ferr*		3.6	4.1	4.8
Total Particles		DR-Ferr*	>---	11.9	10.7	10.7
Large Particles Percentage	%	DR-Ferr*		39.5	23.4	10.3
Severity Index		DR-Ferr*		39	17	6
Ferrous Rubbing	Scale 0-10	ASTM D7684*		3	3	3
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				1

CONTAMINANTS

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil.

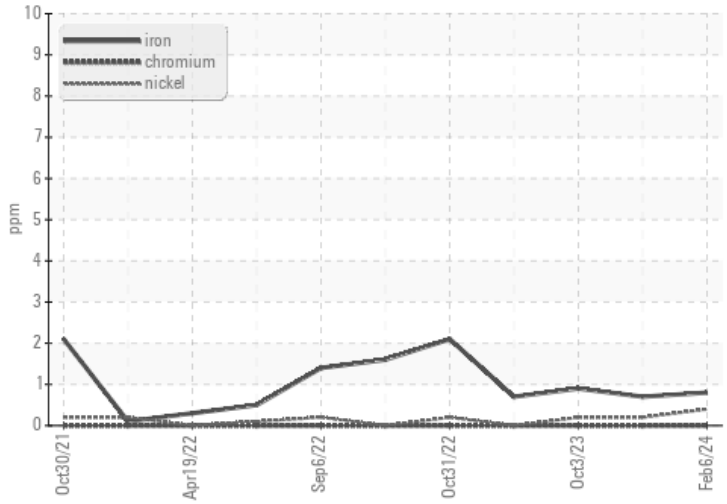
Silicon	ppm	ASTM D5185(m)	>20	**<1**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	4	0
Water		WC Method	>0.1	**NEG**	NEG	NEG
Particles >4µm		ASTM D7647	>10000	**14087**	15556	17385
Particles >6µm		ASTM D7647	>2500	**1127**	1791	2412
Particles >14µm		ASTM D7647	>160	**24**	36	77
Particles >21µm		ASTM D7647	>40	**12**	8	10
Particles >38µm		ASTM D7647	>10	**8**	3	2
Particles >71µm		ASTM D7647	>3	**6**	3	1
Oil Cleanliness		ISO 4406 (c)	>20/18/14	**21/17/12**	21/18/12	21/18/13
Silt	scalar	Visual*	NONE	**NONE**	NONE	NONE
Debris	scalar	Visual*	NONE	**NONE**	NONE	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*	>0.1	**NEG**	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	1	1

OIL CONDITION

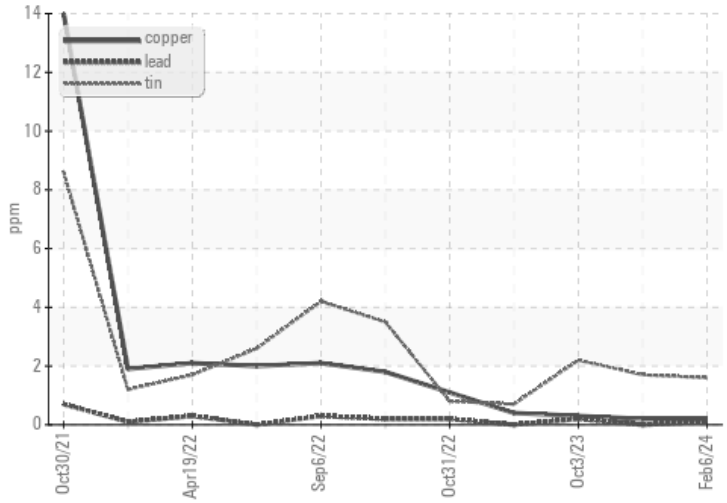
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185(m)		**0**	0	<1
Boron	ppm	ASTM D5185(m)		**7**	7	8
Barium	ppm	ASTM D5185(m)		**0**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**<1**	<1	0
Calcium	ppm	ASTM D5185(m)	0	**3**	<1	1
Phosphorus	ppm	ASTM D5185(m)	4	**37**	36	39
Zinc	ppm	ASTM D5185(m)	0	**3**	2	2
Sulfur	ppm	ASTM D5185(m)		**1136**	1123	1088
Acid Number (AN)	mg KOH/g	ASTM D974*	0.18	**0.16**	0.20	0.13
Visc @ 40°C	cSt	ASTM D7279(m)	137.1	**143**	143	144
Lubricant Degradation	Scale 0-10	ASTM D7684*				

Ferrous Alloys

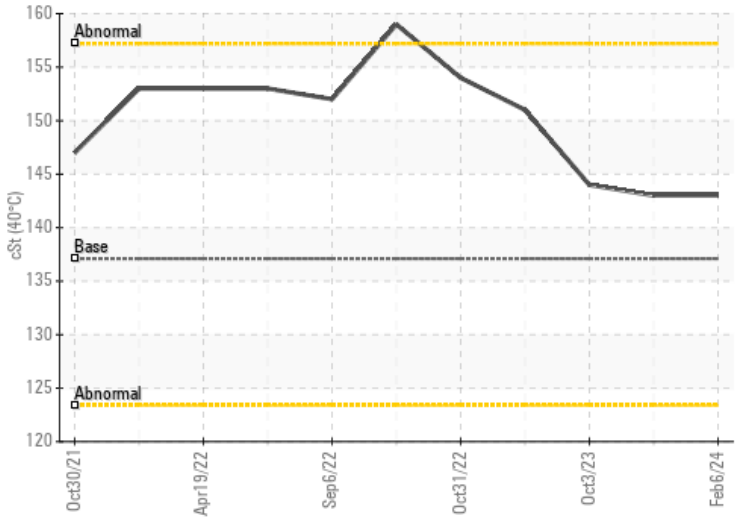


Non-ferrous Metals



Particle Filter (Magn: 200 x)

Viscosity @ 40°C



Acid Number

ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0883760
Lab Number : 02618972
Unique Number : 5736082
Test Package : MAR 3 (Additional Tests: BottomAnalysis, FilterPatch, PrtCount, PrtFilter, TAN Data)

Received : 29 Feb 2024
Tested : 04 Mar 2024
Diagnosed : 04 Mar 2024 - Kevin Marson

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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