Sample Rating Trend

......

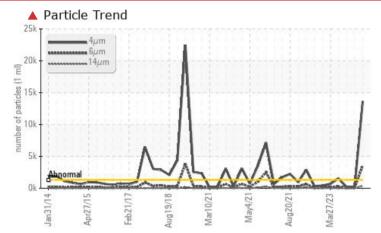
ISO



PROBLEM SUMMARY

Area SAB1 SAB1 G5 Component Thrust Bearing Fluid PETRO CANADA TURBOFLO XL46 (1182 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

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 advise that you perform a filter service, and use offline 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. 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	NORMAL	NORMAL		
Particles >4µm		ASTM D7647	>1300	13632	182	163		
Particles >6µm		ASTM D7647	>320	3592	45	41		
Particles >14µm		ASTM D7647	>40	4 348	6	5		
Particles >21µm		ASTM D7647	>10	A 87	2	2		
Oil Cleanliness		ISO 4406 (c)	>17/15/12	1 /19/16	15/13/10	15/13/10		
White Metal	scalar	Visual*	NONE	🔺 LIGHT	NONE	NONE		
PrtFilter						•		

Customer Id: ONTQUE Sample No.: WC0933971 Lab Number: 02645512 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 <u>gloria.gonzalez@wearcheck.com</u>

RECOMMENDED ACTIONS								
Action	Status	Date	Done By	Description				
Change Filter			?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.				
Resample			?	Resample in 30-45 days to monitor this situation.				
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,				
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 For Visual Metal			?	We advise that you check for visible metal particles in the oil.				
Filter Fluid			?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.				

HISTORICAL DIAGNOSIS



15 May 2024 Diag: Kevin Marson

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 IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.Component wear rates appear to be normal (unconfirmed). The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



view report

NORMAL

21 Dec 2023 Diag: Kevin Marson

Resample at the next service interval to monitor.All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

27 Aug 2023 Diag: Kevin Marson

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.Light concentration of visible metal present. 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 suitable for further service.





Area SAB1

OIL ANALYSIS REPORT

Oil Cleanliness

Sample Rating Trend



PETRO CANADA TURBOFLO XL46 (1182 LTR)

DIAGNOSIS

SAB1 G5 **Thrust Bearing**

Recommendation

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 advise that you perform a filter service, and use offline 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. 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.

A Wear

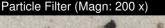
Light concentration of visible metal present.

Contamination

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





Report Id: ONTQUE [WCAMIS] 02645512 (Generated: 07/09/2024 16:59:17) Rev: 1

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0933971	WC0812556	WC0642844
Sample Date		Client Info		03 Jul 2024	15 May 2024	21 Dec 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				SEVERE	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Water		WC Method	>2	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>85	<1	<1	<1
Chromium	ppm	ASTM D5185(m)	>20	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)	>40	<1	0	<1
Lead	ppm	ASTM D5185(m)	>60	0	0	<1
Copper	ppm	ASTM D5185(m)	>7	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>40	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	0	0
Barium	ppm	ASTM D5185(m)		0	0	0
	10.10	//01/11/00/00(11)		-	0	0
Molybdenum	ppm	ASTM D5185(m)		0	0	0
Molybdenum Manganese						
-	ppm	ASTM D5185(m)		0	0	0
Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m)		0 0	0 0	0
Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		0 0 0	0 0 0	0 0 0
Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	0 0 0 <1	0 0 0 0	0 0 0 <1
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	0 0 <1 2	0 0 0 0 2	0 0 0 <1 1
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	0 0 <1 2 1	0 0 0 2 1	0 0 0 <1 1 1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 limit/base	0 0 <1 2 1 670	0 0 0 2 1 631	0 0 <1 1 1 693
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		0 0 <1 2 1 670 <1	0 0 0 2 1 631 <1	0 0 <1 1 1 693 <1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm ppm ppm ppm ppm 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) method	limit/base	0 0 <1 2 1 670 <1 current	0 0 0 2 1 631 <1 history1	0 0 2 3 3 4 4 5 93 3 3 3 5 1 5 5 7 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method ASTM D5185(m)	limit/base	0 0 <1 2 1 670 <1 current 4	0 0 0 2 1 631 <1 history1 3	0 0 <1 1 1 693 <1 history2 5
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm 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) ASTM D5185(m)	limit/base >20	0 0 2 1 2 1 670 <1 Current 4 0	0 0 0 2 1 631 <1 history1 3 0	0 0 2 3 3 4 1 693 3 3 3 3 3 5 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20	0 0 <1 2 1 670 <1 current 4 0 <1	0 0 0 2 1 631 <1 history1 3 0 <1	0 0 () () () () () () () () () () () () ()
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 limit/base	0 0 2 1 2 1 670 <1	0 0 0 2 1 631 <1 history1 3 0 <1 history1	0 0 2 3 3 4 1 1 693 3 3 3 3 3 3 5 0 0 3 1 1 1 693 5 1 1 1 693 3 3 1 1 1 693 5 1 1 1 1 693 5 1 1 1 1 1 1 1 693 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 limit/base >1300	0 0 0 <1 2 1 670 <1	0 0 0 2 1 631 <1 history1 3 0 <1 history1 182	0 0 0 <1 1 1 693 <1 history2 5 0 <1 history2 163
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIP Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	limit/base >20 >20 >20 limit/base >1300 >320 >40	0 0 0 <1 2 1 670 <1	0 0 0 2 1 631 <1 history1 3 0 <1 history1 182 45	0 0 0 <1 1 1 693 <1 history2 5 0 <1 history2 163 41
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	limit/base >20 >20 >20 limit/base >1300 >320 >40	0 0 0 <1 2 1 670 <1 current 4 0 <1 current 4 0 <1 13632 ▲ 13632 ▲ 3592 ▲ 348	0 0 0 2 1 631 <1 history1 3 0 <1 history1 182 45 6	0 0 0 <1 1 1 693 <1 history2 5 0 <1 history2 163 41 5
Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	limit/base >20 >20 limit/base >1300 >320 >40 >10	0 0 0 <1 2 1 670 <1 current 4 0 <1 current ↓ 13632 ▲ 3592 ▲ 348 ▲ 87	0 0 0 2 1 631 <1 history1 3 0 <1 history1 182 45 6 2	0 0 0 <1 1 1 693 <1 history2 5 0 <1 history2 163 41 5 2

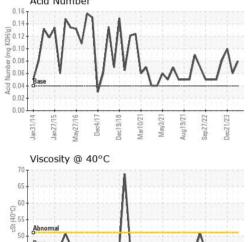
ISO 4406 (c) >17/15/12 **21/19/16**

15/13/10 15/13/10



OIL ANALYSIS REPORT

491,520 T	ticle Coun	IL .			τ26
122,880 -					-24
30,720 Severe					and the second se
7,680					-22 (SU 4406: 1999 Cleanline -18 1999 Cleanline -16 -17 -14 -12 code -10 Ode
1,920 Abnor	mal				-18 g
480 -					-16 😭
120-					14 1
30-					-12 8
8-					
2-					
0 4µ	6µ	14µ	21µ	38µ	71µ
25k T	ticle Tren	d		00000000	
25k (a) 20k - 20k - 3015k - 3015k - 3010k -	ticle Trend 4μm βμm 14μm			A	
25k - (Tu 20k - 1) septimed 10k - 10k - 10k - 10k -	4μm 6μm 14μm	N		An	
25k - (Tu 20k - 1) september 10k - 10 to 10k - 0k -	4μm 6μm 14μm	N		12021	21/23
25k	4μm 6μm 14μm	Aug 19/18	Mar10/21	Aug20/21	Mar21/23



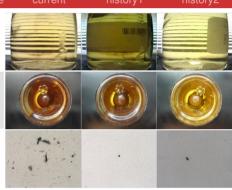
Ba 45 40 Abnormal Jan27/15 May27/16 -Dec4/17. Dec19/18 -Mar10/21 May3/21. Aug19/21 Sep27/22. Dec21/23

Jan31/14

FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	0.08	0.06	0.10
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	🔺 LIGHT	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	VLITE	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	VLITE	NONE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	46.39	45.6	45.5	45.3
SAMPLE IMAGES	3	method	limit/base	current	history1	history2

Color

Bottom



PrtFilter

CALA	Laboratory	: WearCheck - C8-117	5 Appleby Line, I	Burlington, ON L7L 5H9	c	Intario Power Generation
Acreditation No. 1005019	Sample No.	: WC0933971	Received	: 04 Jul 2024	NIAGARA PLAN	IT GROUP,, 14000 NIAGARA PKWY
ISO 17025:2017	Lab Number	: 02645512	Tested	: 09 Jul 2024	NIA	GARA ON THE LAKE, ON
Accredited	Unique Number	: 5803051	Diagnosed	: 09 Jul 2024 - Kevin Marso	on	CA LOS 1J0
Laboratory	Test Package	: IND 2 (Additional Tes	sts: BottomAnaly	sis, FilterPatch, PrtFilter,	TAN Man)	Contact: Michael Brochu
To discuss this	s sample report,	contact Customer Serv	ice at 1-800-268	-2131.		mike.brochu@opg.com
Test denoted (*) outside scope	e of accreditation, (m) m	ethod modified,	(e) tested at external lab		T: (905)357-0322
Validity of resu	Its and interpre	tation are based on the	sample and infor	rmation as supplied.		F: (905)374-5466

Report Id: ONTQUE [WCAMIS] 02645512 (Generated: 07/09/2024 16:59:17) Rev: 1

Submitted By: ? Page 4 of 4