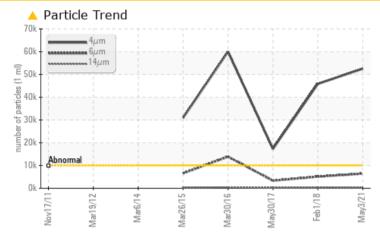
# **PROBLEM SUMMARY**

#### Area EAR FALLS GS Machine Id FP1G4 Component

Lower Guide Bearing Fluid R&O OIL ISO 46 (--- GAL)

### COMPONENT CONDITION SUMMARY



### RECOMMENDATION

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) R&O OIL ISO 46. Please confirm. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

### PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	SEVERE	ATTENTION
Particles >4µm	ASTM D7647	>10000	<u> </u>	<b>4</b> 5835	<b>1</b> 7314
Particles >6µm	ASTM D7647	>2500	<u> </u>	<b>4</b> 5111	<b>A</b> 3333
Particles >14µm	ASTM D7647	>160	<u> </u>	<u> </u>	<b>1</b> 74
Oil Cleanliness	ISO 4406 (c)	>20/18/14	<b>A</b> 23/20/15	🔺 23/20/15	🔺 21/19/15

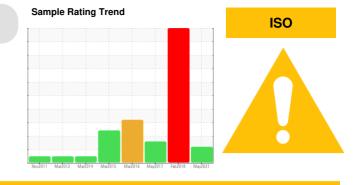
Customer Id: ONTKEE Sample No.: WC0560618 Lab Number: 02423570 Test Package: IND 2



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>



RECOM		ONS
RECOMI	ACTI	UNS

Action	Status	Date	Done By	Description
Change Filter			?	We recommend you service the filters on this component.
Resample			?	We recommend an early resample to monitor this condition.
Alert			?	Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment.
Information Required			?	NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

### HISTORICAL DIAGNOSIS



### 01 Feb 2018 Diag: Bill Quesnel

We recommend that you perform vacuum distillation and/or air drying to attempt to remove any residual water and/or entrained gases from this oil that may be contributing to abnormal foaming and/or poor water separability. 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. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. Separability (Emulsion) % is severely high. Separability (Water) % is severely low. Particles >21 µm are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >14µm are notably high. Separability (Oil) % is marginally low. MPC (Membrane Patch Calorimetery) test indicates acceptable levels of varnish present. Water Separability results (ASTM D1401) are poor and indicate that the oil will form emulsions with water. The water content is negligible. Linear Sweep Voltammetry (RULER – ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



### 30 May 2017 Diag: Kevin Marson

We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. 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.





#### 30 Mar 2016 Diag: Wes Davis

We advise that you check all areas where dirt 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. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. Silicon ppm levels are abnormally high. Particles >14µm are abnormally high. Particles >6µm are abnormally high. Particles >21µm are notably high. There is a moderate concentration of dirt present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.





## **OIL ANALYSIS REPORT**

#### Area EAR FALLS GS Machine Id FP1G4 Component

Lower Guide Bearing Fluid R&O OIL ISO 46 (--- GAL)

### DIAGNOSIS

### Recommendation

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) R&O OIL ISO 46. Please confirm. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

### Wear

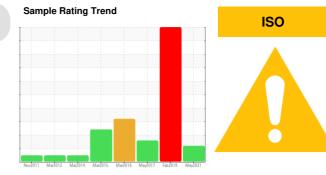
All component wear rates are normal.

### Contamination

Particles >4 $\mu$ m are abnormally high. Particles >6 $\mu$ m are abnormally high. Particles >14 $\mu$ m are notably high.

### **Fluid Condition**

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



SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0560618	WC944500	WC22123107
Sample Date		Client Info		03 May 2021	01 Feb 2018	30 May 2017
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				ABNORMAL	SEVERE	ATTENTION
CONTAMINATION	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)	>20	2	<1	<1
Chromium	ppm	ASTM D5185(m)	>20	0	0	0
Nickel	ppm	ASTM D5185(m)	>20	<1	<1	0
Titanium	ppm	ASTM D5185(m)		0	<1	0
Silver	ppm	ASTM D5185(m)		<1	0	0
Aluminum	ppm	ASTM D5185(m)	>20	0	0	0
Lead	ppm	ASTM D5185(m)	>20	8	1	<1
Copper	ppm	ASTM D5185(m)	>20	<1	<1	<1
Tin	ppm	ASTM D5185(m)	>20	<1	0	0
Antimony	ppm	ASTM D5185(m)		<1	<1	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
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base 5	current <1	history1 <1	history2 0
	ppm ppm					
Boron		ASTM D5185(m)	5	<1	<1	0
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	5 5	<1 0	<1 0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 5	<1 0 0	<1 0 0	0 0 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 5 5 5	<1 0 0 0	<1 0 0 0	0 0 0 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 5 5 5	<1 0 0 0 <1	<1 0 0 0 <1	0 0 0 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	5 5 5 5 5	<1 0 0 <1 <1	<1 0 0 0 <1 0	0 0 0 0 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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)	5 5 5 5 5 5 5 100	<1 0 0 <1 <1 3	<1 0 0 <1 0 <1	0 0 0 0 0 0 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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)	5 5 5 5 5 5 100 25	<1 0 0 <1 <1 3 <1	<1 0 0 <1 0 <1 <1 <1	0 0 0 0 0 <1 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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)	5 5 5 5 5 5 100 25	<1 0 0 <1 <1 3 <1 1233	<1 0 0 <1 0 <1 0 <1 <1 <1 1137	0 0 0 0 0 <1 <1 <1 1144
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	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)	5 5 5 5 5 100 25 1500	<1 0 0 <1 <1 3 <1 1233 <1	<1 0 0 <1 0 <1 <1 <1 1137 <1	0 0 0 0 0 <1 <1 <1 1144 <1
Boron Barium Molybdenum 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) ASTM D5185(m)	5 5 5 5 5 100 25 1500	<1 0 0 <1 <1 3 <1 1233 <1 1233 <1	<1 0 0 <1 0 <1 <1 1137 <1 history1	0 0 0 0 0 <1 <1 1144 <1 1144 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	5 5 5 5 100 25 1500 limit/base >15	<1 0 0 <1 <1 3 <1 1233 <1 1233 <1 <u>current</u> 8	<1 0 0 <1 <1 <1 <1 1137 <1 history1 10	0 0 0 0 0 <1 <1 <1 1144 <1 history2 15
Boron Barium Molybdenum 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)	5 5 5 5 100 25 1500 Iimit/base >15	<1 0 0 <1 <1 3 <1 1233 <1 1233 <1 <i>current</i> 8 0	<1 0 0 <1 <1 <1 <1 <1 1137 <1 history1 10 <1	0 0 0 0 0 <1 <1 <1 1144 <1 history2 15 <1
Boron Barium Molybdenum 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)	5 5 5 5 100 25 1500 Imit/base >15 >20	<1 0 0 <1 <1 3 <1 1233 <1 1233 <1 <u>current</u> 8 0 0	<1 0 0 <1 0 <1 <1 <1 1137 <1 history1 10 <1 0	0 0 0 0 0 <1 <1 <1 1144 <1 history2 15 <1 0
Boron Barium Molybdenum 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)	5 5 5 5 100 25 1500 25 1500 25 1500 25 25 20 215 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 0 0 <1 <1 3 <1 1233 <1 2 0 current 8 0 0 0 0 current	<1 0 0 <1 0 <1 <1 <1 1137 <1 history1 10 <1 0 history1	0 0 0 0 0 <1 <1 <1 1144 <1 history2 15 <1 0 history2
Boron Barium Molybdenum 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)	5 5 5 5 100 25 1500 25 1500 25 1500 25 25 20 215 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 0 0 4 1 3 4 1 233 <1 1233 <1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<1 0 0 4 1 0 <1 <1 <1 1137 <1 1137 <1 10 10 <1 0 0 history1 0 45835	0 0 0 0 0 0 <1 <1 <1 1144 <1 1144 <1 15 15 <1 0 0 history2 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	5 5 5 5 100 25 1500 25 1500 1 1000 >15 20 1 10000 >2500 >2500 >160	<1 0 0 (1) (1) (1) (1) (1) (1) (1) (1)	<1 0 0 0 <1 0 <1 (1) (1) (1) (1) (1) (1) 0 (1) 0 history1 (1) (1) (1) (1) (1) (1) (1) (1	0 0 0 0 0 0 1 1 1144 <1 1144 <1 15 15 <1 0 0 15 0 15 15 15 15 15 15
Boron Barium Molybdenum 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 D76477 ASTM D7647	5 5 5 5 100 25 1500 25 1500 1 1000 >15 20 1 10000 >2500 >2500 >160	<1 0 0 0 1 0 1 1 1 1 3 < 1 1 3 < 1 1 3 < 1 1 3 < 1 1 3 < 1 1 1 2 3 < 1 1 2 3 < 1 1 2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<1 0 0 0 <1 0 <1 (1) (1) (1) (1) (1) (1) 0 (1) (1) (1) (1) (1) (1) (1) (1)	0 0 0 0 0 0 1 0 1 1 1 1 4 1 1 4 1 5 1 5 1 5 1 5 1 5 1 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	5 5 5 5 5 5 100 25 1500 25 1500 3 15 3 15 3 15 3 15 3 15 3 15 3 1	<1 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<1 0 0 0 <1 (1) (1) (1) (1) (1) (1) (1) (1	0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Contact/Location: Josh Robinson - ONTKEE



# **OIL ANALYSIS REPORT**

Bottom

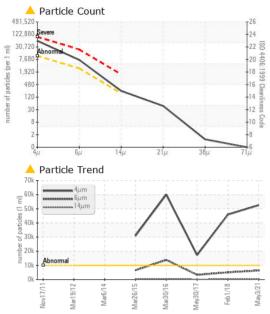
MPC

May3/21-

Feb1/18-

May30/17

Mar30/16 -



0.30 T	l Numb	ber					
Abno	rmal					1	
5 0.24							
0.18							
B0.24 - B0.18 - B0.12 - Base 0.06 - Base 0.06 - Base 0.06 - Base 0.06 - Base Base 0.06 - Base 0.06 - 0.06 - 0.0							
Base						1	
0.06				~	$\sim$		
0.00 Abno	rmal		_/				
	9/12	Mar6/14 -	8/15	0/16	11/0	Feb1/18	May3/21-
Nov17/1	Mar19/12	Mar	Mar26/15	Mar3(	May3	Feb	May
				Mar30/16	May30/17	Feb	May
Visc		b 40°C		Mar3(	May3	Feb	May
	osity (			Mar3	May3	Feb	May
Visc	osity (			Mar3	May3	Feb	May
Visc	osity (			Mar3	May3	Feb	May
Visc	osity (			Mar3	May3	Feb	May
Visc 52 50 48 (2000) 46 50 48 50 50 50 50 50 50 50 50 50 50 50 50 50	osity (			Mar3	May3	Feb	Way
Visc	mal			Mar3	May3	Feb	May

40

Nov17/11

Mar19/12 -

Mar6/14 -

Mar26/15 -

FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.08	0.05	0.062	0.04
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	NONE	VLITE
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*	>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	46.2	46.3	46.4
SAMPLE IMAGES	S	method	limit/base	current	history1	history2
				AM		
Color						



	🔘 CALA	Laboratory	: WearCheck - C8-	-1175 Appleby Lin	e, Burlington, ON L7L 5H9	Ontario Power Generation	
	Accreditation No. 1006219	Sample No.	: WC0560618	Received	: 26 May 2021	KENORA PRODUCTION CENTRE, 200-60 FOURTEENTH ST N.	
	ISO 17025:2017	Lab Number	: 02423570	Diagnosed	: 27 May 2021	KENORA, ON	
	Accredited	Unique Number	: 5227070	Diagnostician	: Kevin Marson	CA P9N 4M9	
	Laboratory	Test Package	: IND 2 ( Additiona	I Tests: PrtCount )	)	Contact: Josh Robinson	
E CARLES	To discuss this	s sample report, d	contact Customer Se	ervice at 1-800-26	8-2131.	josh.robinson@opg.com	
	Test denoted	noted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.					
	Validity of resu	ults and interpreta	ation are based on th	he sample and info	ormation as supplied.	F:	

no image