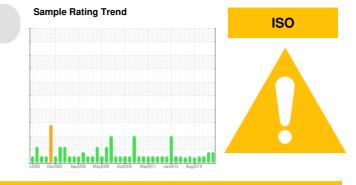
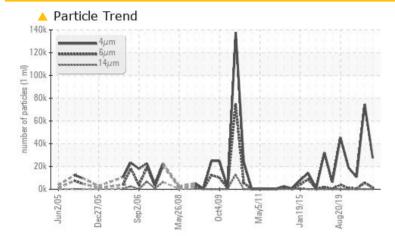


PROBLEM SUMMARY



Machine Id **17** Component **Turbine** Fluid **R&O OIL ISO 68 (--- QTS)**

COMPONENT CONDITION SUMMARY



RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status			ATTENTION	ABNORMAL	NORMAL			
Particles >6µm	ASTM D7647	>1300	<u> </u>	▲ 5565	475			
Oil Cleanliness	ISO 4406 (c)	>/17/14	A 22/18/11	A 23/20/12	21/16/10			

Customer Id: COLALB Sample No.: WC0813267 Lab Number: 05923376 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 <u>don.b505@comcast.net</u>

To change component or sample information: Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

14 Sep 2022 Diag: Don Baldridge



No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. There is a high 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.



16 Nov 2021 Diag: Doug Bogart

08 Sep 2020 Diag: Don Baldridge



Resample at the any contamination level is acceptab

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



NODIAL



Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend

ISO

Machine Id **17** Component **Turbine** Fluid **R&O OIL ISO 68 (--- QTS)**

DIAGNOSIS

A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

Fluid Condition

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



SAMPLE INFORMATION method limit/base current history1 history2 Sample Number Client Info 13 Aug 202 14 Sep 2021 16 Nov2021 Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Age hrs Client Info N/A N/A N/A Sample Status method Imit/base current history1 history2 Iron ppm ASTM 0516m >15 4 6 5 Chromium ppm ASTM 0516m >15 4 6 0 Nickel ppm ASTM 0516m >10 0 0 0 Itanium ppm ASTM 0516m >10 <11 0 0 Itanium ppm ASTM 0516m >5 <1 <1 <1 Itanium ppm ASTM 0516m >5 <1< <1 <1 Itanium ppm ASTM 0516m >5 <1< <1 <1 Itanium ppm ASTM 0516m >5 <1< <1 <th></th> <th></th> <th>n2005 Dec20</th> <th>05 Sep2006 May2008</th> <th>Oct2009 May2011 Jan2015 J</th> <th>Aug2019</th> <th></th>			n2005 Dec20	05 Sep2006 May2008	Oct2009 May2011 Jan2015 J	Aug2019	
Sample Date Client Info 13 Aug 2023 14 Sep 2022 16 Nov 2021 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 Imit Date Current history1 history2 Iron ppm ASTM D5185n >15 4 6 5 Chromium ppm ASTM D5185n >4 0 0 <1 Nickel ppm ASTM D5185n >4 0 0 0 Tatanium ppm ASTM D5185n <1 <1 0 0 Lead ppm ASTM D5185n >5 <1 <1 0 0 Cadmium ppm ASTM D5185n >5 0 0 0 0 Lead ppm ASTM D5185n 5 0 0 0 0 Cadmium<	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Nachine AgehrsClient InfoI000Oil ChangedTClient InfoN/AN/AN/ASample StatusTClient InfoN/AABNORMALNORMALSample StatusTImit/basATTENTONABNORMALNORMALWEAR METALSmemodImit/basCurrentABNORMALNORMALIronppmASM D51855465ChromiumppmASM D51852000NickelppmASM D51852000SilverppmASM D51852000SilverppmASM D51850000AduminumppmASM D51850000AduminumppmASM D518556000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000AduminumppmASM D518550000Man	Sample Number		Client Info		WC0813267	WC0700731	WC0577553
Oil AgehrsClient Info000Oil ChangedClient InfoN/AN/AN/ASample StatusIIIATTENTIONABNORMALWEAR METALSmethodImitbasecurrenthistory1history2IronppmASTM D5185m>15465ChromiumppmASTM D5185m>200<1	Sample Date		Client Info		13 Aug 2023	14 Sep 2022	16 Nov 2021
Oil Changed Sample StatusClient InfoN/A ATTENTIONN/A ABNORMALN/A NORMALWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>15465ChromiumppmASTM D5185m>200<1	Machine Age	hrs	Client Info		0	0	0
Sample Status Image of the status ATTENTION ABNORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 0 0 <1	Oil Age	hrs	Client Info		0	0	0
WeAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >15 4 6 5 Chromium ppm ASTM 05185m >2 0 0 <1	Oil Changed		Client Info		N/A	N/A	N/A
IronppmASTM 05185m>15465ChromiumppmASTM 05185m>400<1NickelppmASTM 05185m>2000SilverppmASTM 05185m<000SilverppmASTM 05185m0<100LeadppmASTM 05185m>50<1<10LeadppmASTM 05185m>50000CopperppmASTM 05185m>5000AntimonyppmASTM 05185m>5000VanadiumppmASTM 05185m5000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM 05185m5000ManganeseppmASTM 05185m56<10ManganeseppmASTM 05185m56<10CalciumppmASTM 05185m5000SulfurppmASTM 05185m5000SulfurppmASTM 05185m56<10SulfurppmASTM 05185m5000SulfurppmASTM 05185m5000SulfurppmASTM 05185m5000SulfurppmASTM 05185m500 <th>Sample Status</th> <th></th> <th></th> <th></th> <th>ATTENTION</th> <th>ABNORMAL</th> <th>NORMAL</th>	Sample Status				ATTENTION	ABNORMAL	NORMAL
ChromiumppmASTM D5185m>400<1	WEAR METALS		method	limit/base	current	history1	history2
NickelppmASTM D5185m>2000TitaniumppmASTM D5185m0000SilverppmASTM D5185m>10<1	Iron	ppm	ASTM D5185m	>15	4	6	5
TitaniumppmASTM D5185m00SilverppmASTM D5185m>10<1	Chromium	ppm	ASTM D5185m	>4	0	0	<1
SilverppmASTM D5185m0000AluminumppmASTM D5185m>10<1	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum ppm ASTM D5185m >10 <1 <1 <1 0 Lead ppm ASTM D5185m >5 <1	Titanium	ppm	ASTM D5185m		<1	0	0
LeadppmASTM D5185m0<10CopperppmASTM D5185m>5<1	Silver	ppm	ASTM D5185m		-	0	0
Copper ppm ASTM D5185m >5 <1 <1 <1 Tin ppm ASTM D5185m >5 0 0 0 Antimony ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m 0 0 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 5 0 0 0 Magnesium ppm ASTM D5185m 5 6 <1		ppm		>10			
TinppmASTM D5185m>5000AntimonyppmASTM D5185m0VanadiumppmASTM D5185m0CadmiumppmASTM D5185m-10CadmiumppmASTM D5185mCurrenthistory1history2BoronppmASTM D5185m5000BariumppmASTM D5185m5000BariumppmASTM D5185m5000MolybdenumppmASTM D5185m56<1		ppm			-		0
AntimonyppmASTM D5185m0VanadiumppmASTM D5185m<1		ppm					
VanadiumppmASTM D5185m<100CadmiumppmASTM D5185mImit/basecurrenthistory1history2BoronppmASTM D5185m50000BariumppmASTM D5185m50000MolybdenumppmASTM D5185m50000MagnaeseppmASTM D5185m56<100MagnesiumppmASTM D5185m56<100PhosphorusppmASTM D5185m1004022ZincppmASTM D5185m1506695CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>152<11SodiumppmASTM D5185m>20<110PtLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>130014335565475Particles >50µmASTM D7647>160132310Particles >38µmASTM D7647>10000Particles >71µmiASTM D7647>3000				>5	-		
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m5000BariumppmASTM D5185m5000MolybdenumppmASTM D5185m5000ManganeseppmASTM D5185m56<1		ppm					
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 0 0 0 Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 5 0 0 0 Manganese ppm ASTM D5185m 5 6 <1							
BoronppmASTM D5185m5000BariumppmASTM D5185m5<100MolybdenumppmASTM D5185m5000ManganeseppmASTM D5185m56<10MagnesiumppmASTM D5185m56<10CalciumppmASTM D5185m5000PhosphorusppmASTM D5185m100402ZincppmASTM D5185m1502230SulfurppmASTM D5185m15000695CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>152<11SodiumppmASTM D5185m>20<110Patricles >4µmASTM D5185m>20<110Patricles >6µmIASTM D7647>130014335665475Patricles >1µmASTM D7647>160132310Patricles >38µmASTM D7647>10000Patricles >71µmIASTM D7647>1000Patricles >71µmIASTM D7647>3000	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 5 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 5 0 0 0 Manganese ppm ASTM D5185m 5 6 <1 0 0 Magnesium ppm ASTM D5185m 5 6 <1 0 0 Calcium ppm ASTM D5185m 5 6 <1 0 0 Phosphorus ppm ASTM D5185m 5 0 0 0 2 Zinc ppm ASTM D5185m 25 22 3 0 Sulfur ppm ASTM D5185m 25 22 3 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1 1 0 Potassium ppm ASTM D5185m >20 <1 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm	Boron	ppm	ASTM D5185m	5	0	0	0
Maganese ppm ASTM D5185m < <1 0 0 Magnesium ppm ASTM D5185m 5 6 <1	Barium	ppm	ASTM D5185m	5	<1	0	0
Magnesium ppm ASTM D5185m 5 6 <1 0 Calcium ppm ASTM D5185m 5 0 0 0 0 Phosphorus ppm ASTM D5185m 100 4 0 2 Zinc ppm ASTM D5185m 25 22 3 0 Sulfur ppm ASTM D5185m 1500 0 6 95 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1	Molybdenum	ppm	ASTM D5185m	5	0		
Calcium ppm ASTM D5185m 5 0 0 0 Phosphorus ppm ASTM D5185m 100 4 0 2 Zinc ppm ASTM D5185m 25 22 3 0 Sulfur ppm ASTM D5185m 1500 0 6 95 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1	-	ppm	ASTM D5185m				
Phosphorus ppm ASTM D5185m 100 4 0 2 Zinc ppm ASTM D5185m 25 22 3 0 Sulfur ppm ASTM D5185m 1500 0 6 95 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1 1 Sodium ppm ASTM D5185m >15 2 <1 1 Sodium ppm ASTM D5185m >20 <1 0 0 Potassium ppm ASTM D5185m >20 <1 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >1300 1433 5565 475 Particles >14µm ASTM D7647 >160 13 23 10 Particles >21µm ASTM D7647 40 3 2 3 <th>Magnesium</th> <td>ppm</td> <td>ASTM D5185m</td> <td>5</td> <th>6</th> <td></td> <td></td>	Magnesium	ppm	ASTM D5185m	5	6		
Zinc ppm ASTM D5185m 25 22 3 0 Sulfur ppm ASTM D5185m 1500 0 6 95 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1	Calcium	ppm	ASTM D5185m	-	0	0	
SulfurppmASTM D5185m15000695CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>152<1		ppm					
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 <1	-	ppm					
Silicon ppm ASTM D5185m >15 2 <1		ppm	ASTM D5185m	1500	0	6	95
Sodium ppm ASTM D5185m 1 0 0 Potassium ppm ASTM D5185m >20 <1 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 27514 74581 10725 Particles >6µm ASTM D7647 >1300 ▲ 1433 ▲ 5565 475 Particles >14µm ASTM D7647 >160 13 23 10 Particles >21µm ASTM D7647 >40 3 2 3 Particles >38µm ASTM D7647 >10 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >1300 1433 5565 475 Particles >6µm ASTM D7647 >160 13 23 10 Particles >14µm ASTM D7647 >40 3 2 3 Particles >21µm ASTM D7647 >10 0 0 0 Particles >38µm ASTM D7647 >10 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0	Silicon	ppm	ASTM D5185m	>15	2	<1	1
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 27514 74581 10725 Particles >6µm ASTM D7647 >1300 1433 5565 475 Particles >14µm ASTM D7647 >160 13 23 10 Particles >21µm ASTM D7647 >40 3 2 3 Particles >38µm ASTM D7647 >10 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0	Sodium	ppm	ASTM D5185m		1	0	0
Particles >4μm ASTM D7647 27514 74581 10725 Particles >6μm ASTM D7647 >1300 ▲ 1433 ▲ 5565 475 Particles >14μm ASTM D7647 >160 13 23 10 Particles >21μm ASTM D7647 >40 3 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Potassium	ppm	ASTM D5185m	>20	<1	1	0
Particles >6µm ASTM D7647 >1300 ▲ 1433 ▲ 5565 475 Particles >14µm ASTM D7647 >160 13 23 10 Particles >21µm ASTM D7647 >40 3 2 3 Particles >21µm ASTM D7647 >40 3 0 0 Particles >38µm ASTM D7647 >10 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >160 13 23 10 Particles >21μm ASTM D7647 >40 3 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0			ASTM D7647			74581	10725
Particles >21μm ASTM D7647 >40 3 2 3 Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Particles >6µm		ASTM D7647	>1300	<u> </u>	▲ 5565	475
Particles >38μm ASTM D7647 >10 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	I		ASTM D7647	>160			10
Particles >71μm ASTM D7647 >3 0 0 0				>40	3		
	•						
Oil Cleanliness ISO 4406 (c) >/17/14 ▲ 22/18/11 ▲ 23/20/12 21/16/10							
	Oil Cleanliness		ISO 4406 (c)	>/17/14	A 22/18/11	▲ 23/20/12	21/16/10

FLUID DEGRADATION

Acid Number (AN)

method

mg KOH/g ASTM D8045 0.08

limit/base

current

0.087

history1

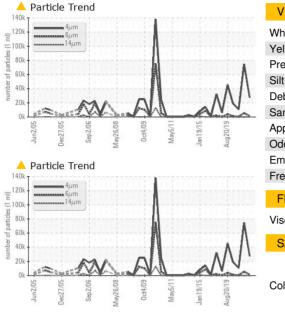
0.061

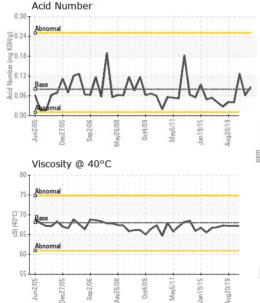
history2

0.127



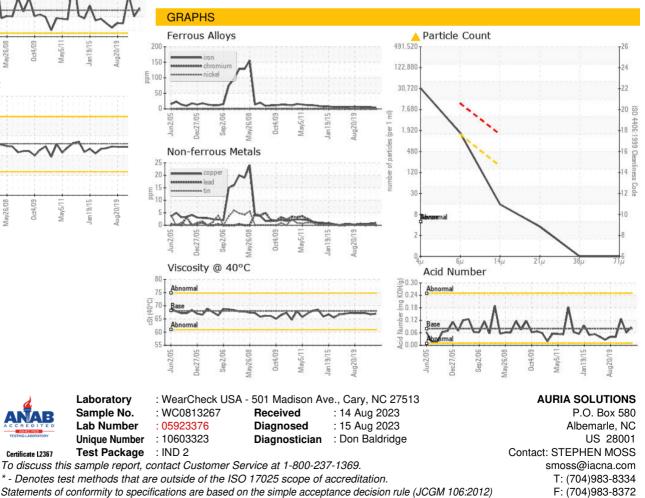
OIL ANALYSIS REPORT





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	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	>0.03	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	68	67.0	66.7	67.2
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
Color						
Bottom				(48.)		

Bottom



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Contact/Location: STEPHEN MOSS - COLALB