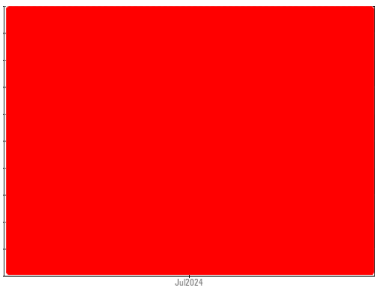
PROBLEM SUMMARY

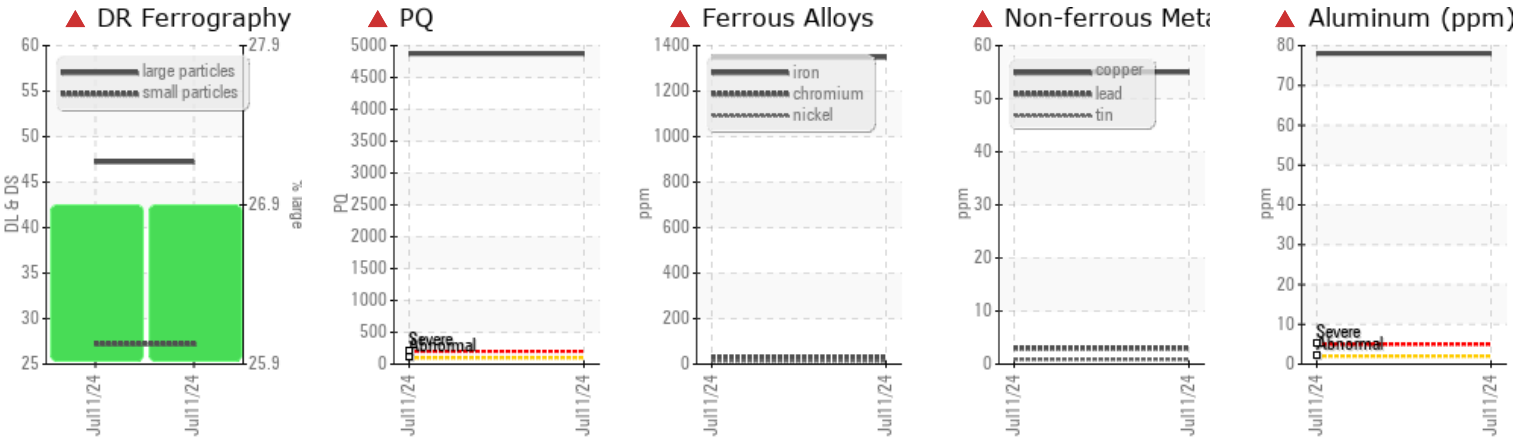
Sample Rating Trend



WEAR PARTICLES

Area
[RO# 5947]
Machine Id
280333AC (S/N C-FRMH)
Component
Right Jet Turbine
Fluid
MOBIL JET OIL II (--- LTR)

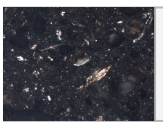
COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check for visible metal particles in the oil. Check seals and/or filters for points of contaminant entry. Oil and filter change at the time of sampling has been noted. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. An inspection for the source(s) of wear may be warranted at this time. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	---	---
PQ		ASTM D8184*		▲ 4873	---	---
Iron	ppm	ASTM D5185(m)	>8	▲ 1349	---	---
Chromium	ppm	ASTM D5185(m)	>2	▲ 30	---	---
Nickel	ppm	ASTM D5185(m)	>2	▲ 14	---	---
Titanium	ppm	ASTM D5185(m)	>2	▲ 5	---	---
Silver	ppm	ASTM D5185(m)	>2	▲ 42	---	---
Aluminum	ppm	ASTM D5185(m)	>2	▲ 78	---	---
Lead	ppm	ASTM D5185(m)	>3	▲ 3	---	---
Copper	ppm	ASTM D5185(m)	>3	▲ 55	---	---
Large Particles		DR-Ferr*		▲ 47.2	---	---
Small Particles		DR-Ferr*		▲ 27.2	---	---
Total Particles		DR-Ferr*	>---	▲ 74.4	---	---
Severity Index		DR-Ferr*		▲ 944	---	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		▲ 8		
Ferrous Sliding	Scale 0-10	ASTM D7684*		▲ 5		
Ferrous Cutting	Scale 0-10	ASTM D7684*		▲ 4		
Ferrous Rolling	Scale 0-10	ASTM D7684*		▲ 4		
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		▲ 3		
Nonferrous Sliding	Scale 0-10	ASTM D7684*		▲ 3		
Nonferrous Rolling	Scale 0-10	ASTM D7684*		▲ 3		
Carbonaceous Material	Scale 0-10	ASTM D7684*		▲ 5		
Sand/Dirt	Scale 0-10	ASTM D7684*		▲ 3		
Silicon	ppm	ASTM D5185(m)	>8	▲ 40	---	---
White Metal	scalar	Visual*	NONE	▲ HEAVY	---	---
PrtFilter					no image	no image

Customer Id: ROT142PAR
Sample No.: WC
Lab Number: 02647627
Test Package: AVI 3

To manage this report scan the QR code

To discuss the diagnosis or test data:
Bill Quesnel CLS,OMA II,MLA-III,LLA-I +1 (289)291-4641 x4641
Bill.Quesnel@wearcheck.com

To change component or sample information:
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

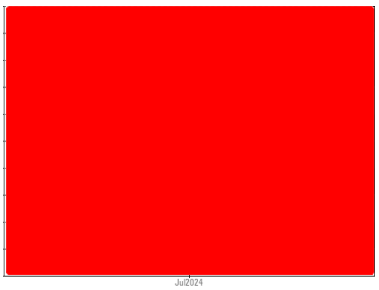
RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Inspect Wear Source	---	---	?	An inspection for the source(s) of wear may be warranted at this time.
Change Fluid	---	---	?	Oil and filter change at the time of sampling has been noted.
Change Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Oil and filter change at the time of sampling has been noted.
Resample	---	---	?	Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF).
Information Required	---	---	?	NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.
Check For Visual Metal	---	---	?	We advise that you check for visible metal particles in the oil.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.
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

OIL ANALYSIS REPORT

Sample Rating Trend



WEAR PARTICLES

Area
[RO# 5947]
Machine Id
280333AC (S/N C-FRMH)
Component
Right Jet Turbine
Fluid
MOBIL JET OIL II (--- LTR)

DIAGNOSIS

Recommendation

We advise that you check for visible metal particles in the oil. Check seals and/or filters for points of contaminant entry. Oil and filter change at the time of sampling has been noted. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. An inspection for the source(s) of wear may be warranted at this time. Re-sampling is suggested to confirm test results prior to significant maintenance activities being performed. Please indicate that this is a resample on your Sample Information Form (SIF). NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

Wear

Wear particle analysis indicates that the ferrous cutting particles are severe. Iron and silver and aluminum and chromium and copper ppm levels are severe. Large Particles and small particles and total particles, severity index levels are severe. Titanium, nickel ppm levels are severe. Wear particle analysis indicates that the ferrous rubbing particles are severe. PQ levels are severe. Wear particle analysis indicates that the ferrous rolling, ferrous black oxides and ferrous sliding, nonferrous rolling, nonferrous sliding particles are abnormal. Lead ppm levels are abnormal. High concentration of visible metal present. Bearing and/or gear wear is indicated. The very high ferrous density (PQ) index indicates that severe wear is occurring. The most likely alloy matches are Ball Bearing Steel (SAE 52100), Low Alloy Steel (AISI 4340) and Precip Hardening Steel (AMS 6415).

Contaminants

High concentration of dirt present in the oil. High amount of ingressed dirt has caused abrasive wear to the component.

Oil Condition

The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC**	---	---
Sample Date		Client Info		**11 Jul 2024**	---	---
TSN	hrs	Client Info		**31279**	---	---
TSO	hrs	Client Info		**41**	---	---
Oil Age	hrs	Client Info		**41**	---	---
Oil Changed		Client Info		**Changed**	---	---
Sample Status				**SEVERE**	---	---

WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		▲ **4873**	---	---
Iron	ppm	ASTM D5185(m)	>8	▲ **1349**	---	---
Chromium	ppm	ASTM D5185(m)	>2	▲ **30**	---	---
Nickel	ppm	ASTM D5185(m)	>2	▲ **14**	---	---
Titanium	ppm	ASTM D5185(m)	>2	▲ **5**	---	---
Silver	ppm	ASTM D5185(m)	>2	▲ **42**	---	---
Aluminum	ppm	ASTM D5185(m)	>2	▲ **78**	---	---
Lead	ppm	ASTM D5185(m)	>3	▲ **3**	---	---
Copper	ppm	ASTM D5185(m)	>3	▲ **55**	---	---
Tin	ppm	ASTM D5185(m)	>2	**<1**	---	---
Antimony	ppm	ASTM D5185(m)		**<1**	---	---
Vanadium	ppm	ASTM D5185(m)		**2**	---	---
Beryllium	ppm	ASTM D5185(m)		**0**	---	---
Cadmium	ppm	ASTM D5185(m)		**4**	---	---

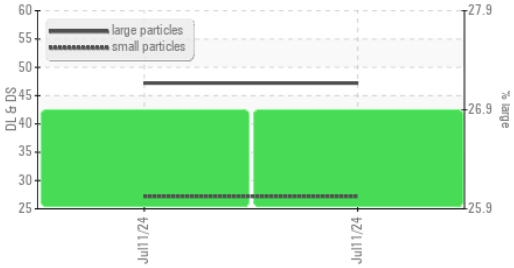
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**<1**	---	---
Barium	ppm	ASTM D5185(m)		**<1**	---	---
Molybdenum	ppm	ASTM D5185(m)		**11**	---	---
Manganese	ppm	ASTM D5185(m)		**8**	---	---
Magnesium	ppm	ASTM D5185(m)		**2**	---	---
Calcium	ppm	ASTM D5185(m)		**4**	---	---
Phosphorus	ppm	ASTM D5185(m)		**2896**	---	---
Zinc	ppm	ASTM D5185(m)		**24**	---	---
Sulfur	ppm	ASTM D5185(m)		**10**	---	---
Lithium	ppm	ASTM D5185(m)		**<1**	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>8	▲ **40**	---	---
Sodium	ppm	ASTM D5185(m)		**2**	---	---
Potassium	ppm	ASTM D5185(m)	>20	**1**	---	---
Water	%	ASTM D6304*	>.1	**0.080**	---	---
ppm Water	ppm	ASTM D6304*	>1000	**808**	---	---

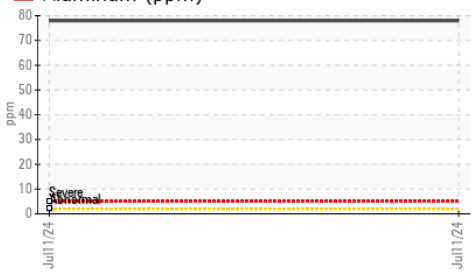
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.03	**0.16**	---	---

OIL ANALYSIS REPORT

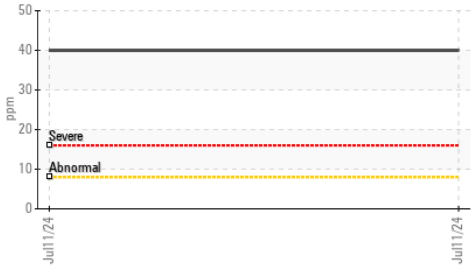
DR Ferrography



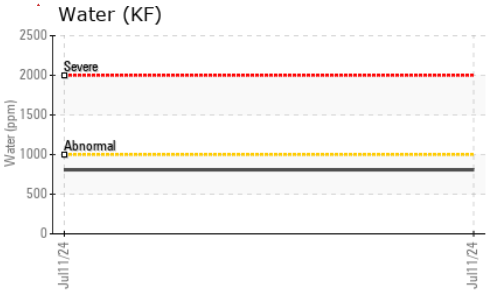
Aluminum (ppm)



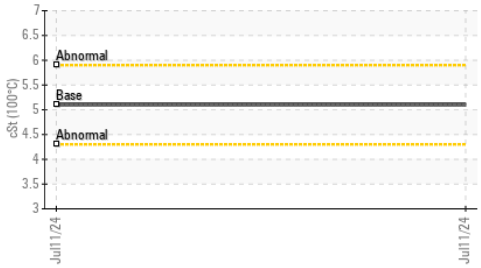
Silicon (ppm)



Water (KF)

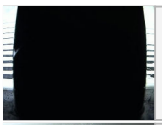
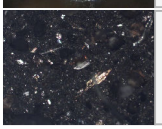


Viscosity @ 100°C



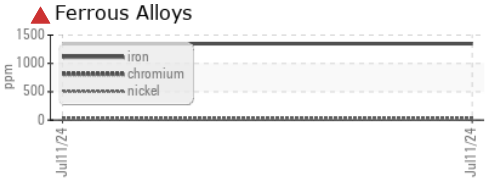
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	▲ **HEAVY**	---	---
Yellow Metal	scalar	Visual*	NONE	**NONE**	---	---
Precipitate	scalar	Visual*	NONE	**NONE**	---	---
Silt	scalar	Visual*	NONE	**NONE**	---	---
Debris	scalar	Visual*	NONE	**NONE**	---	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	---	---
Appearance	scalar	Visual*	NORML	**NORML**	---	---
Odor	scalar	Visual*	NORML	**NORML**	---	---
Emulsified Water	scalar	Visual*	>.1	**NEG**	---	---
Free Water	scalar	Visual*		**NEG**	---	---

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	27.6	**25.8**	---	---
Visc @ 100°C	cSt	ASTM D7279(m)	5.1	**5.1**	---	---
Viscosity Index (VI)	Scale	ASTM D2270*		**128**	---	---

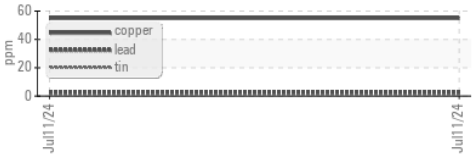
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				*no image*	*no image*
Bottom				*no image*	*no image*
PrtFilter				*no image*	*no image*

GRAPHS

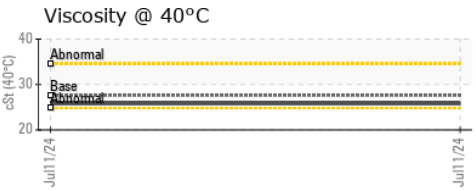
Ferrous Alloys



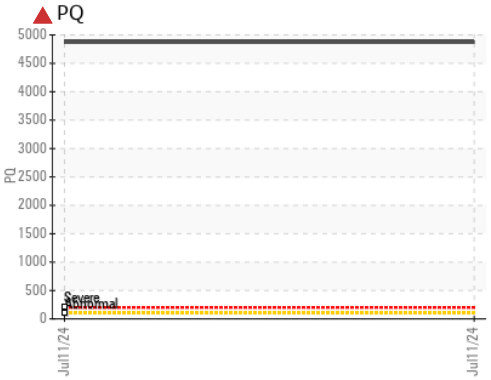
Non-ferrous Metals



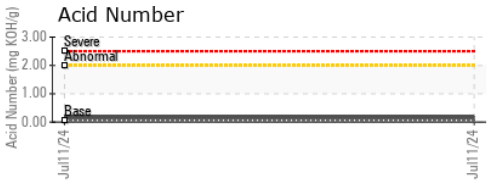
Viscosity @ 40°C



PQ



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC
Lab Number : 02647627
Unique Number : 5813179
Test Package : AVI 3 (Additional Tests: Bottom, BottomAnalysis, FILTERPATCH, PQ)

Received : 12 Jul 2024
Tested : 12 Jul 2024
Diagnosed : 12 Jul 2024 - Bill Quesnel

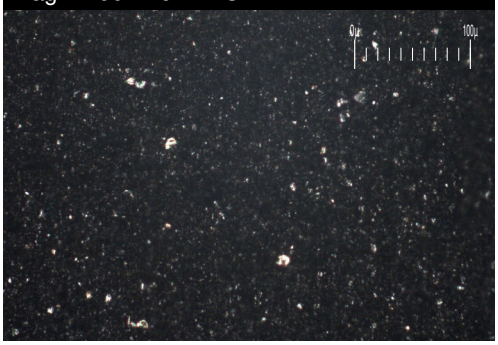
To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

Rotor Maxx Support Ltd
1420 Springhill Rd
Parksville, BC
CA V9P 2T2
Contact: Laura Masur
laura.masur@rotormaxx.com
T: (250)248-1915
F: (250)248-1970

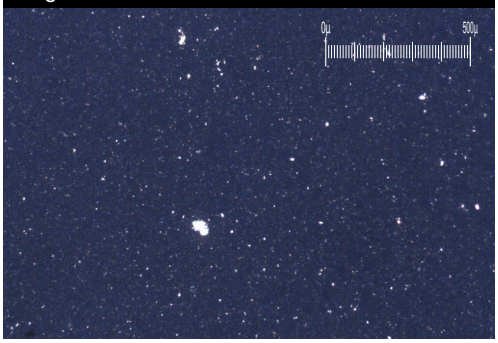
FERROGRAPHY REPORT

Area
[RO# 5947]
Machine Id
280333AC (S/N C-FRMH)
Component
Right Jet Turbine
Fluid
MOBIL JET OIL II (--- LTR)

Magn: 200x Illum: BC



Magn: 50x Illum: RW



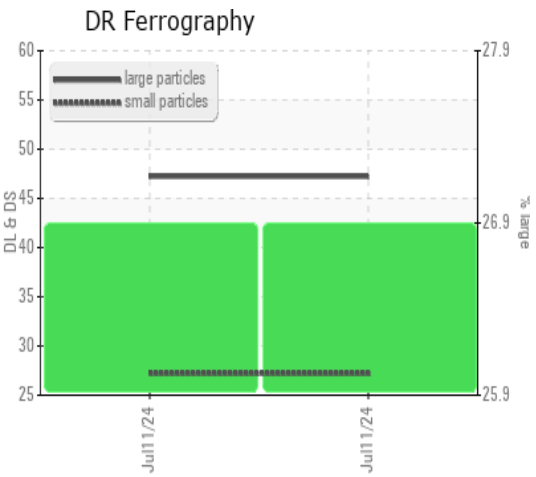
Magn: 100x Illum: RW

DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		▲ 47.2	---	---
Small Particles		DR-Ferr*		▲ 27.2	---	---
Total Particles		DR-Ferr*	>---	▲ 74.4	---	---
Large Particles Percentage	%	DR-Ferr*		26.9	---	---
Severity Index		DR-Ferr*		▲ 944	---	---

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		▲ 8		
Ferrous Sliding	Scale 0-10	ASTM D7684*		▲ 5		
Ferrous Cutting	Scale 0-10	ASTM D7684*		▲ 4		
Ferrous Rolling	Scale 0-10	ASTM D7684*		▲ 4		
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*		▲ 3		
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*		5		
Nonferrous Sliding	Scale 0-10	ASTM D7684*		▲ 3		
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*		▲ 3		
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*		▲ 5		
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		▲ 3		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*				

WEAR

Wear particle analysis indicates that the ferrous cutting particles are severe. Iron and silver and aluminum and chromium and copper ppm levels are severe. Large Particles and small particles and total particles, severity index levels are severe. Titanium, nickel ppm levels are severe. Wear particle analysis indicates that the ferrous rubbing particles are severe. PQ levels are severe. Wear particle analysis indicates that the ferrous rolling, ferrous black oxides and ferrous sliding, nonferrous rolling, nonferrous sliding particles are abnormal. Lead ppm levels are abnormal. High concentration of visible metal present. Bearing and/or gear wear is indicated. The very high ferrous density (PQ) index indicates that severe wear is occurring. The most likely alloy matches are Ball Bearing Steel (SAE 52100), Low Alloy Steel (AISI 4340) and Precip Hardening Steel (AMS 6415).



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