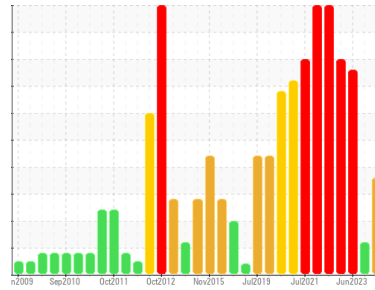




# OIL ANALYSIS REPORT

Sample Rating Trend



**WATER**



Area  
**(ZONE3) BRUCE A/0A/34340**  
 Machine Id  
**0A-34340-MV324-ActuatorHydFluid**  
 Component  
**Hydraulic System**  
 Fluid  
**SUPRESTA FYRQUEL EHC-S (8 GAL)**

## DIAGNOSIS

### Recommendation

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The oil is near the end of its useful service life, recommend schedule an oil change. 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 advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We recommend you service the filters on this component. 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.

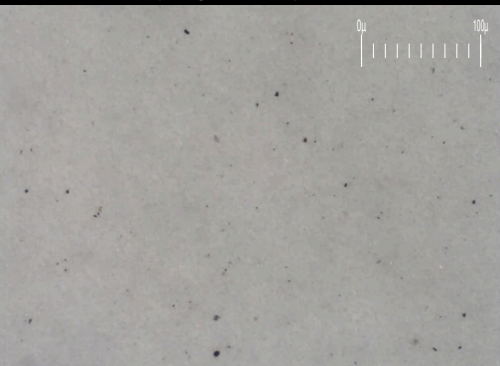
### Contaminants

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. There is a moderate concentration of water present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

### Oil Condition

Zinc ppm levels are abnormally high. The AN level is acceptable for this fluid.

Particle Filter (Magn: 200 x)



## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC</b>	WC0815747	WC0801503
Sample Date	Client Info		<b>03 Jun 2024</b>	20 Feb 2024	05 Jun 2023
Machine Age	hrs	Client Info	<b>0</b>	0	0
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>ABNORMAL</b>	ATTENTION	SEVERE

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m) >5	<1	<1	5
Chromium	ppm	ASTM D5185(m) >5	0	0	0
Nickel	ppm	ASTM D5185(m) >5	<1	0	0
Titanium	ppm	ASTM D5185(m) >5	0	0	0
Silver	ppm	ASTM D5185(m)	0	0	0
Aluminum	ppm	ASTM D5185(m) >5	<1	<1	0
Lead	ppm	ASTM D5185(m) >5	0	<1	<1
Copper	ppm	ASTM D5185(m) >5	<1	<1	2
Tin	ppm	ASTM D5185(m) >5	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	2

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	<1	<1	<1
Barium	ppm	ASTM D5185(m)	0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0
Manganese	ppm	ASTM D5185(m)	<1	0	1
Magnesium	ppm	ASTM D5185(m)	<1	<1	2
Calcium	ppm	ASTM D5185(m)	2	<1	18
Phosphorus	ppm	ASTM D5185(m)	<b>33408</b>	37845	28135
Zinc	ppm	ASTM D5185(m)	<b>17</b>	11	240
Sulfur	ppm	ASTM D5185(m)	2	0	6
Lithium	ppm	ASTM D5185(m)	<1	<1	3

## CONTAMINANTS

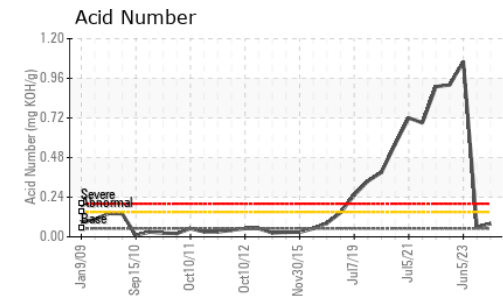
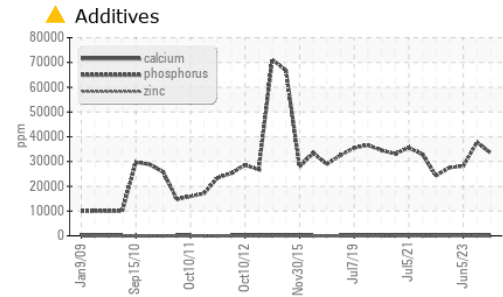
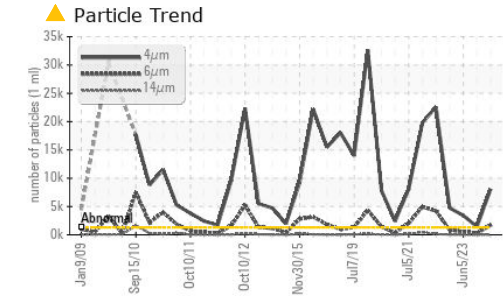
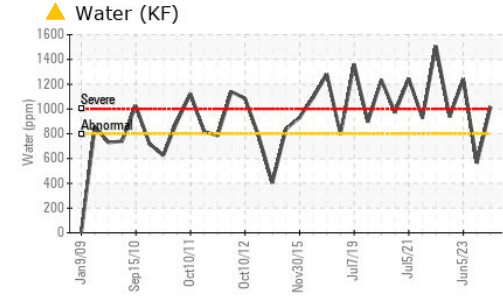
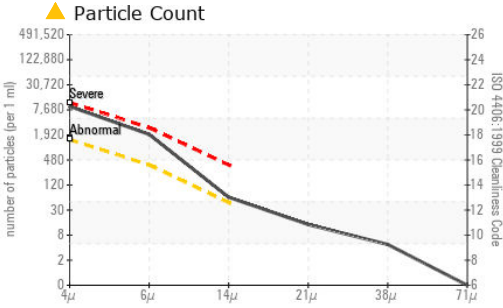
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >5	<1	0	2
Sodium	ppm	ASTM D5185(m) >5	<1	0	<1
Potassium	ppm	ASTM D5185(m) >20	<1	2	<1
Water	%	ASTM D6304* >0.08	<b>0.101</b>	0.056	0.124
ppm Water	ppm	ASTM D6304* >800	<b>1018</b>	564	1242.2

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>1300	<b>8085</b>	1431	3409
Particles >6µm	ASTM D7647	>320	<b>1730</b>	303	564
Particles >14µm	ASTM D7647	>40	<b>54</b>	17	29
Particles >21µm	ASTM D7647	>10	<b>12</b>	4	8
Particles >38µm	ASTM D7647	>3	<b>4</b>	0	1
Particles >71µm	ASTM D7647	>3	<b>0</b>	0	1
Oil Cleanliness	ISO 4406 (c)	>17/15/12	<b>20/18/13</b>	18/15/11	19/16/12



# OIL ANALYSIS REPORT

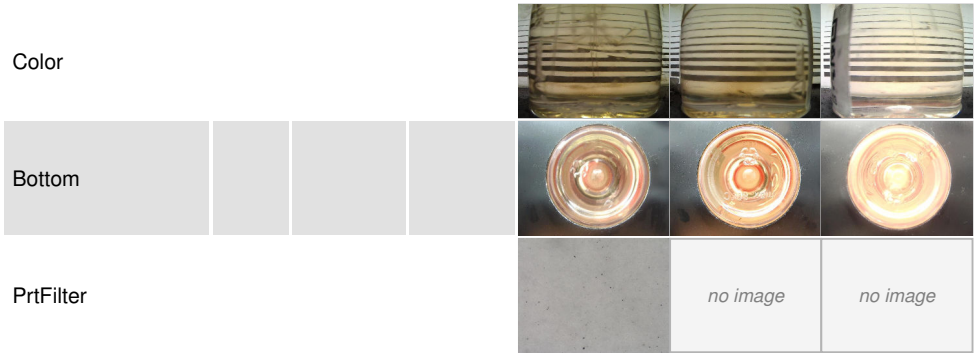


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.05	<b>0.08</b>	0.06	▲ 1.06

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>0.08	<b>NEG</b>	NEG	NEG
Free Water	scalar	Visual*		<b>NEG</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	47	<b>44.7</b>	45.4	43.0

SAMPLE IMAGES		method	limit/base	current	history1	history2
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**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC  
**Lab Number** : 02643302  
**Unique Number** : 5800841  
**Test Package** : IND 2 ( Additional Tests: A-FERR, BottomAnalysis, DR-FERR, FILTERPATCH, PrtFilter, TAND)

**Bruce Power - Bruce A PdM**  
 P.O.Box 1540, 177 Tie Road,, RM-222 U2 Column 2N11 615'  
 Tiverton, ON  
 CA N0G 2T0  
 Contact: Andrew Roffey  
 andrew.roffey@brucepower.com

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.

T: (519)361-2673 x:17186  
 F:



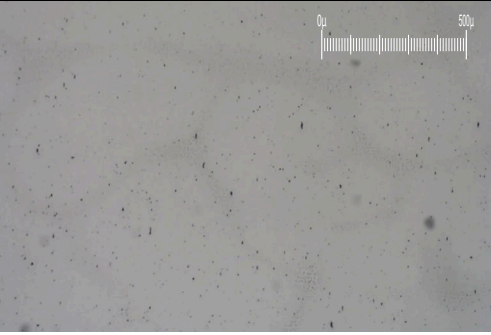
# FERROGRAPHY REPORT

Area  
**(ZONE3) BRUCE A/0A/34340**  
 Machine Id  
**0A-34340-MV324-ActuatorHydFluid**  
 Component  
**Hydraulic System**  
 Fluid  
**SUPRESTA FYRQUEL EHC-S (8 GAL)**

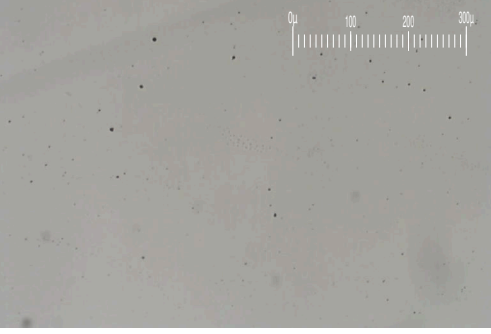
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

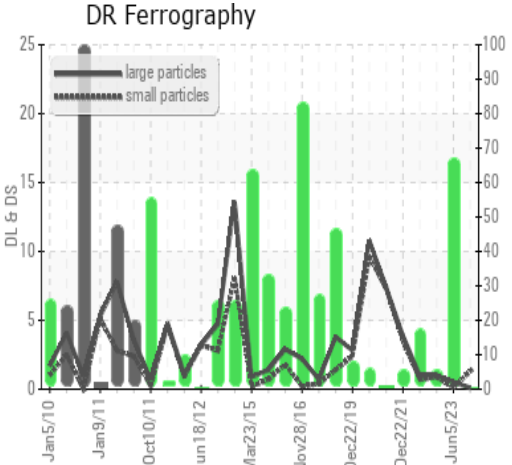


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		<b>0.1</b>	---	0.5
Small Particles		DR-Ferr*		<b>1.3</b>	---	0.1
Total Particles		DR-Ferr*	>---	<b>1.4</b>	---	0.6
Large Particles Percentage	%	DR-Ferr*		<b>0</b>	---	66.7
Severity Index		DR-Ferr*		<b>0</b>	---	0

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		<b>2</b>		1
Ferrous Sliding	Scale 0-10	ASTM D7684*		<b>1</b>		
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		<b>1</b>		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*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		<b>1</b>		1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		<b>1</b>		1

### WEAR

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



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