

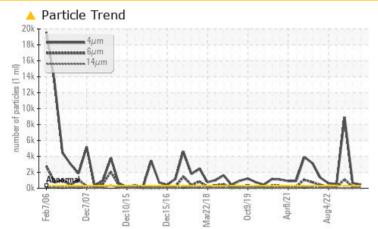
PROBLEM SUMMARY

SM312/013 FEED WORKS OPTIMIL (S/N 0238-32110-00180-04801)

Hydraulic System

AW HYDRAULIC OIL ISO 68 (--- 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 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. Please specify the brand, type, and viscosity of the oil on your next sample.

PROBLEMATIC TEST RESULTS

Sample Status			ABNORMAL	ABNORMAL	ABNORMAL
Particles >4µm	ASTM D7647	>320	<u> </u>	6 47	▲ 8909
Particles >6µm	ASTM D7647	>80	🔺 169	1 83	1084
Particles >14µm	ASTM D7647	>10	🔺 25	8	<u> </u>
Particles >21µm	ASTM D7647	>3	<u> </u>	2	6
Oil Cleanliness	ISO 4406 (c)	>15/13/10	<u> </u>	▲ 17/15/10	a 20/17/12

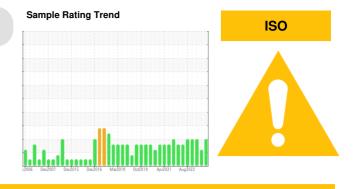
Customer Id: FLUMAR Sample No.: FC0000568 Lab Number: 05932105 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

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



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			?	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			?	Please specify the brand, type, and viscosity of the oil on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.		
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



03 May 2023 Diag: Wes Davis

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. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.



view report



26 Jan 2023 Diag: Jonathan Hester

03 Nov 2022 Diag: Don Baldridge

We recommend you service the filters on this component. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of particulates present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

ISO



We recommend you service the filters on this component. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of particulates present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Machine Id SM312/013 FEED WORKS OPTIMIL (S/N 0238-32110-00180-04801) Component Hydraulic System

AW HYDRAULIC OIL ISO 68 (--- 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 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. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

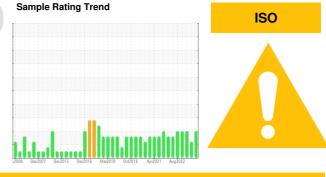
All component wear rates are normal.

Contamination

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

Fluid Condition

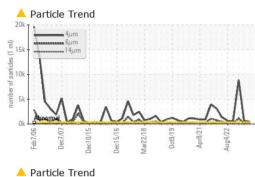
The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

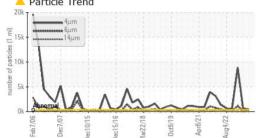


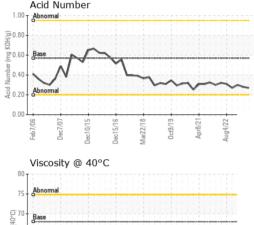
Sample Date Client Info 15 Aug 2023 03 May 2023 26 Jan 2023 Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A Sample Status Imit/base current history1 history2 Iron ppm ASTM D5185m >20 c1 <1 <1 Nickel ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >20 0 <1 <1 Copper ppm ASTM D5185m >20 0 <1 0 0 Cadmium ppm ASTM D5185m >20 0 <1 0 0 Astm D5185m >20 0 <1 <1 0 0 0 0 0 <th>SAMPLE INFORM</th> <th>MATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 0 Oil Age hrs Client Info 0 0 0 0 Oil Age Client Info N/A N/A N/A ABNORMAL ABNORMAL ABNORMAL Sample Status Imethod Imit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 <1 <1 Claed ppm ASTM D5185m >20 4 3 4 Tian ppm ASTM D5185m >20 0 <1 0 Cadmium ppm ASTM D5185m >20 0 <1 0 Cadmium ppm ASTM D5185m 5 0 0 0 ABandum ppm ASTM D5185m 5	Sample Number		Client Info		FC0000568	FC0000473	FC0000273
Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Im Im ABNORMAL ABNORMAL ABNORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 <1 0 Silver ppm ASTM D5185m >20 0 <1 0 Aluminum ppm ASTM D5185m >20 0 <1 <1 Copper ppm ASTM D5185m >20 0 <1 0 Vanadium ppm ASTM D5185m >20 0 <1 0 Cadmium ppm ASTM D5185m >0 0 0 0 AstM D5185m 5 1 <1 <1 <1 <1	Sample Date		Client Info		15 Aug 2023	03 May 2023	26 Jan 2023
Oil Changed Client Info N/A N/A N/A N/A Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 <1 0 Silver ppm ASTM D5185m >20 0 <1 0 Lead ppm ASTM D5185m >20 0 <1 0 0 Cadmium ppm ASTM D5185m >20 0 <1 0 0 Cadmium ppm ASTM D5185m >20 0 0 0 0 Adminum ppm ASTM D5185m >20 0 0 0 Cadmium ppm ASTM D5185m 5 0 0 0 Barium ppm ASTM D5185m 5 <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Machine Age	hrs	Client Info		0	0	0
Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 <1 Chromium ppm ASTM D5185m >20 0 0 0 0 Nickel ppm ASTM D5185m >20 0 <1 0 0 Silver ppm ASTM D5185m 0 0 0 0 0 Aluminum ppm ASTM D5185m 20 0 <1 0 0 Copper ppm ASTM D5185m >20 0 <1 0 0 Copper ppm ASTM D5185m >20 0 <1 0	Oil Age	hrs	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165m<>20 <1 <1 <1 Chromium ppm ASTM D5165m<>20 0 0 0 Nickel ppm ASTM D5165m 20 0 0 0 Silver ppm ASTM D5165m 20 <1 0 0 Aluminum ppm ASTM D5165m >20 <1 0 0 Lead ppm ASTM D5165m >20 <1 0 0 Vanadium ppm ASTM D5165m >20 0 <1 0 Vanadium ppm ASTM D5165m >20 0 0 0 Vanadium ppm ASTM D5165m 5 0 0 0 Vanadium ppm ASTM D5165m 5 <1 <1 <1 Managanese ppm ASTM D5165m 5 <1 <1 <1	Oil Changed		Client Info		N/A	N/A	N/A
Iron ppm ASTM D5185m >20 <1	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
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Nickel ppm ASTM D5185m >20 0 <1	Iron	ppm	ASTM D5185m	>20	<1	<1	<1
Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >20 <1 0 0 Aluminum ppm ASTM D5185m >20 <1 0 0 Lead ppm ASTM D5185m >20 4 3 4 Copper ppm ASTM D5185m >20 0 <1 0 Vanadium ppm ASTM D5185m >20 0 <1 0 Cadmium ppm ASTM D5185m >20 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 0 0 0 Magnesium ppm ASTM D5185m 25 2 6 3 Calcium ppm ASTM D5185m 255 2 6 3 Sulfur ppm ASTM D5185m 250 3546 3854	Chromium	ppm	ASTM D5185m	>20	0	0	0
Silver ppm ASTM D5185m >20 <1	Nickel	ppm	ASTM D5185m	>20	0	<1	0
Aluminum ppm ASTM D5185m >20 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >20 0 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >20 4 3 4 Tin ppm ASTM D5185m >20 0 <1 0 Vanadium ppm ASTM D5185m >20 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5 0 0 0 Barium ppm ASTM D5185m 5 <1 <1 <1 Manganese ppm ASTM D5185m 5 <1 <1 <1 Manganese ppm ASTM D5185m 25 2 6 3 <5 Phosphorus ppm ASTM D5185m 200 65 63 65 <13 <24 Sulfur ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m </th <th>Aluminum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>20</th> <th><1</th> <th>0</th> <th>0</th>	Aluminum	ppm	ASTM D5185m	>20	<1	0	0
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Boron ppm ASTM D5185m 5 0 0 0 Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 5 <1 <1 <1 Manganese ppm ASTM D5185m 2 <1 <1 0 Magnesium ppm ASTM D5185m 25 2 <6 3 Calcium ppm ASTM D5185m 200 <65 <63 <65 Phosphorus ppm ASTM D5185m 300 <1325 <313 Zinc ppm ASTM D5185m 300 <3447 Sulfur ppm ASTM D5185m 200 <3546 <3854 <3447 Sodium ppm ASTM D5185m >15 2 2 Sodium ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 5 <1 <1 <1 Manganese ppm ASTM D5185m 25 2 6 3 Calcium ppm ASTM D5185m 25 2 6 3 Calcium ppm ASTM D5185m 200 655 63 65 Phosphorus ppm ASTM D5185m 300 321 325 313 Zinc ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m 2500 3546 3854 3447 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 470<	ADDITIVES		method	limit/base	current	history1	history2
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Magnesium ppm ASTM D5185m 25 2 6 3 Calcium ppm ASTM D5185m 200 65 63 65 Phosphorus ppm ASTM D5185m 300 321 325 313 Zinc ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m 2500 3546 3854 3447 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 470 647 8909 Particles >6µm ASTM D7647 >30 470 647 8909 Particles >1µm ASTM D7647 >32 9 2 6 Particles >21µm ASTM D7647 3 0 0	Molybdenum	ppm	ASTM D5185m	5	<1	<1	<1
Calcium ppm ASTM D5185m 200 65 63 65 Phosphorus ppm ASTM D5185m 300 321 325 313 Zinc ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m 2500 3546 3854 3447 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 470 647 8909 Particles >6µm ASTM D7647 >80 169 183 1084 Particles >14µm ASTM D7647 >3 0 0 1 Particles >21µm ASTM D7647 3 0 0	Manganese	ppm	ASTM D5185m		<1	<1	0
Phosphorus ppm ASTM D5185m 300 321 325 313 Zinc ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m 2500 3546 3854 3447 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 470 647 8909 Particles >6µm ASTM D7647 >80 169 183 1084 Particles >14µm ASTM D7647 >3 9 2 6 Particles >21µm ASTM D7647 3 0 0 1	Magnesium	ppm	ASTM D5185m	25	2	6	3
Zinc ppm ASTM D5185m 370 371 381 374 Sulfur ppm ASTM D5185m 2500 3546 3854 3447 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m >0 5 <1	Calcium	ppm	ASTM D5185m	200	65	63	65
SulfurppmASTM D5185m2500354638543447CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>15222SodiumppmASTM D5185m05<1PotassiumppmASTM D5185m>20010FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>320477064778909Particles >6µmASTM D7647>301691831084Particles >14µmASTM D7647>3926Particles >21µmASTM D7647>3001Particles >71µmASTM D7647>3000Oil CleanlinessISO 4406 (c)>15/13/1016/15/1217/15/1020/17/12FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Phosphorus	ppm	ASTM D5185m	300	321	325	313
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>15222SodiumppmASTM D5185m05<1PotassiumppmASTM D5185m>20010FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>320▲470▲647▲8909Particles >6µmASTM D7647>80▲169▲183▲1084Particles >14µmASTM D7647>3 0 011Particles >21µmASTM D7647>3 0 011Particles >71µmASTM D7647>3 0 000Oil CleanlinessISO 4406 (c)>15/13/10▲16/15/12▲17/15/10▲20/17/12FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Zinc	ppm	ASTM D5185m	370	371	381	374
Silicon ppm ASTM D5185m >15 2 2 2 Sodium ppm ASTM D5185m 0 5 <1	Sulfur	ppm	ASTM D5185m	2500	3546	3854	3447
Sodium ppm ASTM D5185m 0 5 <1	CONTAMINANTS	6	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 470 647 8909 Particles >6µm ASTM D7647 >80 169 183 1084 Particles >6µm ASTM D7647 >10 25 8 24 Particles >14µm ASTM D7647 >3 9 2 6 Particles >21µm ASTM D7647 >3 0 0 1 Particles >38µm ASTM D7647 >3 0 0 1 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) 15/13/10 16/15/12 17/15/10 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Silicon	ppm	ASTM D5185m	>15	2	2	2
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >320 ▲ 470 ▲ 647 ▲ 8909 Particles >6µm ASTM D7647 >80 ▲ 169 ▲ 183 ▲ 1084 Particles >6µm ASTM D7647 >10 ▲ 25 8 ▲ 24 Particles >14µm ASTM D7647 >3 ▲ 9 2 ▲ 6 Particles >21µm ASTM D7647 >3 0 0 1 Particles >38µm ASTM D7647 >3 0 0 1 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 16/15/12 17/15/10 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	5	<1
Particles >4µm ASTM D7647 >320 ▲ 470 ▲ 647 ▲ 8909 Particles >6µm ASTM D7647 >80 ▲ 169 ▲ 183 ▲ 1084 Particles >14µm ASTM D7647 >10 ▲ 25 8 ▲ 24 Particles >21µm ASTM D7647 >3 ▲ 9 2 ▲ 6 Particles >38µm ASTM D7647 >3 ④ 0 0 1 Particles >71µm ASTM D7647 >3 ④ 0 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 ▲ 16/15/12 ▲ 17/15/10 ▲ 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	0	1	0
Particles >6µm ASTM D7647 >80 ▲ 169 ▲ 183 ▲ 1084 Particles >14µm ASTM D7647 >10 ▲ 25 8 ▲ 24 Particles >21µm ASTM D7647 >3 ▲ 9 2 ▲ 6 Particles >38µm ASTM D7647 >3 ④ 0 0 1 Particles >38µm ASTM D7647 >3 0 0 1 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 ▲ 16/15/12 ▲ 17/15/10 ▲ 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
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Particles >21μm ASTM D7647 >3 ● 9 2 ▲ 6 Particles >38μm ASTM D7647 >3 0 0 1 Particles >371μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 ▲ 16/15/12 ▲ 17/15/10 ▲ 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>80	🔺 169	1 83	1 084
Particles >38μm ASTM D7647 >3 0 0 1 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 16/15/12 17/15/10 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm		ASTM D7647	>10	<u> </u>	8	4
Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >15/13/10 16/15/12 17/15/10 20/17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>3	<u> </u>	2	<u> </u>
Oil CleanlinessISO 4406 (c) >15/13/10 16/15/1217/15/1020/17/12FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Particles >38µm		ASTM D7647	>3	0	0	1
FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm		ASTM D7647	>3	0	0	0
	Oil Cleanliness		ISO 4406 (c)	>15/13/10	16/15/12	▲ 17/15/10	▲ 20/17/12
Acid Number (AN) mg KOH/g ASTM D8045 0.57 0.27 0.28 0.30	FLUID DEGRADA		method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	0.57	0.27	0.28	

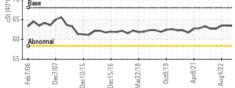


OIL ANALYSIS REPORT



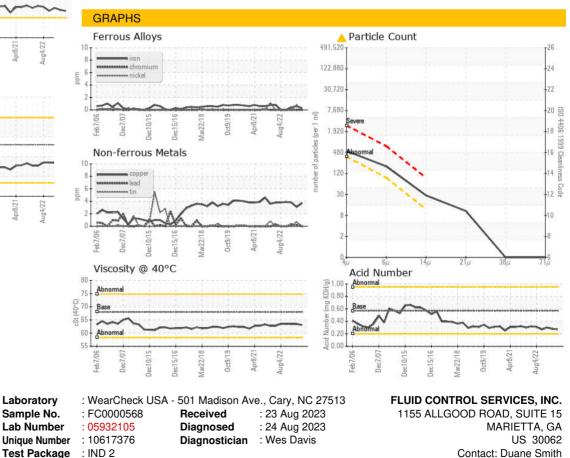






VISUAL method limit/base history1 history2 current NONE NONE White Metal *Visual NONE NONE scalar Yellow Metal NONE NONE NONE NONE scalar *Visual Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE NONE NONE Debris *Visual NONE scalar NONE Sand/Dirt scalar *Visual NONE NONE NONE NORML Appearance NORML NORML NORML scalar *Visua Odor NORML NORML NORML scalar *Visual NORML *Visual **Emulsified Water** scalar >0.05 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG FLUID PROPERTIES method limit/base curren history history2 Visc @ 40°C cSt ASTM D445 68 63.1 63.4 63.4 method SAMPLE IMAGES limit/base historv2 history1 current Color

Bottom



To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Certificate L2367

Contact/Location: Duane Smith - FLUMAR

dsmith.fcs@sealsaver.com

T: (770)509-5833

F: (770)509-5832