

# **OIL ANALYSIS REPORT**

# Area **Direct Strip Mill/Caster** LLO.3 CIRCULATING LUBE OIL SYSTEM (DSC032) (S/N 1000026092) Component

Gear Lube System

GEAR OIL ISO 460 (3720 LTR)

### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

#### Wear

Component wear rates appear to be normal (unconfirmed).

# Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

# Fluid Condition

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

		ΠП						
120	Nov2020	May2021	Nov2021	Mav2022	Dct2022	Apr2023	Nov2023	
020	14042020	IVI dy 2 0 2 1	14042021	WIdyZUZZ	002022	MDIZOZO	14042023	

Sample Rating Trend



NORMAL

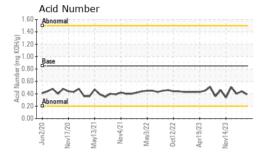
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0931236	WC0780551	WC0837376
Sample Date		Client Info		11 Jun 2024	16 Apr 2024	29 Feb 2024
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>150	4	2	2
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	0	0	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>25	0	0	<1
Lead	ppm	ASTM D5185(m)	>100	0	0	0
Copper	ppm	ASTM D5185(m)	>50	0	<1	0
Tin	ppm	ASTM D5185(m)	>10	0	0	0
Antimony	ppm	ASTM D5185(m)	>5	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	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base 50	current <1	history1 <1	history2 <1
	ppm ppm		50			
Boron		ASTM D5185(m)	50	<1	<1	<1
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	50 15	<1 0	<1 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	50 15	<1 0 0	<1 0 0	<1 0 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	50 15 15 50	<1 0 0 0	<1 0 0 0	<1 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)	50 15 15 50	<1 0 0 0 <1	<1 0 0 0 0	<1 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)	50 15 15 50 50	<1 0 0 <1 0	<1 0 0 0 0 0	<1 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)	50 15 15 50 50 350	<1 0 0 <1 0 69	<1 0 0 0 0 0 69	<1 0 0 0 0 0 82
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)	50 15 15 50 50 350 100	<1 0 0 <1 0 69 2	<1 0 0 0 0 0 69 2	<1 0 0 0 0 0 82 2
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)	50 15 15 50 50 350 100	<1 0 0 <1 0 69 2 8782	<1 0 0 0 0 0 69 2 8762	<1 0 0 0 0 0 82 2 10112
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)	50 15 15 50 50 350 100 12500	<1 0 0 <1 0 69 2 8782 <1	<1 0 0 0 0 0 69 2 8762 <1	<1 0 0 0 0 0 82 2 10112 <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) ASTM D5185(m)	50 15 15 50 50 350 100 12500 Iunit/base	<1 0 0 <1 0 69 2 8782 <1 current	<1 0 0 0 0 0 69 2 8762 <1 kistory1	<1 0 0 0 0 82 2 10112 <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)	50 15 15 50 50 350 100 12500 Iunit/base	<1 0 0 <1 0 69 2 8782 <1 2 8782 <1 2	<1 0 0 0 0 69 2 8762 <1 history1 <1	<1 0 0 0 0 82 2 10112 <1 history2 2
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)	50 15 15 50 350 100 12500 <b>limit/base</b> >50	<1 0 0 <1 0 69 2 8782 <1 2 8782 <1 2 2 8782 <1	<1 0 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0	<1 0 0 0 0 0 82 2 10112 <1 history2 2 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)	50 15 15 50 50 350 100 12500 <b>imit/base</b> >50	<1 0 0 <1 0 69 2 8782 <1 <i>current</i> <1 2 2 2	<1 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0	<1 0 0 0 0 0 82 2 10112 <1 <b>history2</b> 2 0 0 <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)	50 15 15 50 350 100 12500 <b>limit/base</b> >20 <b>limit/base</b>	<1 0 0 4 1 0 69 2 8782 <1 <b>current</b> 2 2 7 2 2 2 2 <b>current</b>	<1 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b>	<1 0 0 0 0 0 82 2 10112 <1 history2 2 0 <1 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)	50 15 15 50 350 100 12500 imit/base >50 20 imit/base >20	<1 0 0 4 1 0 69 2 8782 <1 <b>current</b> 2 2 2 2 <b>current</b> 2 2 2 2	<1 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b> 168392	<1 0 0 0 0 82 2 10112 <1 history2 2 0 <1 history2 97000
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)	50 15 15 50 50 350 100 12500 12500 12500 100 12500 100 12500 100 12500 100 12500 100 100 100 100 100 100 100 100 100	<1 0 0 4 1 0 69 2 8782 <1 <b>current</b> 2 2 2 2 <b>current</b> 2 2 2 <b>current</b> 2 1 2 2 2	<1 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b> 168392 27392	<1 0 0 0 0 82 2 10112 <1 history2 2 0 <1 history2 97000 14836
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647	50 15 15 50 50 350 100 12500 12500 12500 100 12500 100 12500 100 12500 100 12500 100 12500 100 100 100 100 100 100 100 100 100	<1 0 0 1 0 4 1 0 6 9 2 8782 <1  Current < 1 2 2 2 Current 2 17265 45906 584	<1 0 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b> 168392 27392 447	<1 0 0 0 0 82 2 10112 <1 history2 2 0 <1 history2 97000 14836 160
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 ASTM D7647	50 15 15 50 350 350 100 12500 12500 binit/base >50 binit/base >20 binit/base >640000 >160000 >10000 >40000	<1 0 0 0 <1 0 69 2 8782 <1 current <1 2 2 current 217265 45906 584 65	<1 0 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b> 168392 27392 447 43	<1 0 0 0 0 82 2 10112 <1 history2 2 0 <1 history2 97000 14836 160 18
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647	50 15 15 50 350 350 100 12500 12500 <b>imit/base</b> >50 <b>imit/base</b> >20 <b>imit/base</b> >20 <b>i</b> mit/base >50 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	<1 0 0 0 4 1 0 69 2 8782 <1  Current <1 2 2 2  Current 217265 45906 584 65 2 1 217265	<1 0 0 0 0 69 2 8762 <1 <b>history1</b> <1 0 0 0 <b>history1</b> 168392 27392 447 43 0 0 0 25/22/16	<1 0 0 0 0 0 0 82 2 10112 <1 1 history2 2 0 <1 history2 97000 14836 160 18 0

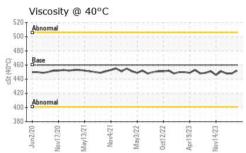
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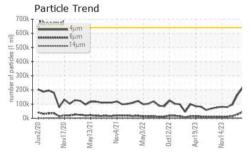


# **OIL ANALYSIS REPORT**

700k 600k	Contraction and the second second	m					
500k -		μm μm					
400k -						1111	
3004							
JUOKT							
200k							
600k - 500k - 400k - 300k - 200k -	h	~	-	~	~	~	1
200k 100k 0k	h	~	~	~	~	~	
2000	Nov17/20	May13/21	Nov4/21	May3/22	0ct12/22	Apr19/23	Nov14/23

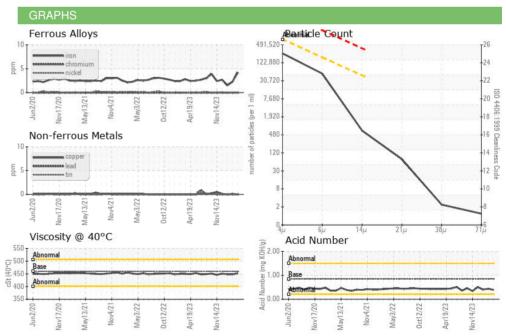






FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.85	0.39	0.44	0.40
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	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*	>0.1	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)	460	452	448	448
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
Color						

Bottom



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 ALGOMA STEEL INC. - STORES DEPT. CALA Sample No. : WC0931236 Received : 14 Jun 2024 301 WALLACE TERRACE Lab Number : 02642119 Tested : 17 Jun 2024 SAULT STE MARIE, ON ISO 17025:2017 Accredited Unique Number : 5799658 Diagnosed : 17 Jun 2024 - Kevin Marson CA P6C 1K8 Laboratory Test Package : IND 2 (Additional Tests: TAN Man) Contact: Algoma Reliability algomareliability@algoma.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. T: (705)206-1059 Validity of results and interpretation are based on the sample and information as supplied. F: (705)945-3585

Report Id: ALGSSM [WCAMIS] 02642119 (Generated: 06/17/2024 14:31:07) Rev: 1

Contact/Location: Maintenance Technology - Algoma Reliability - ALGSSM