



# OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	SEVERE
FLUID CONDITION	NORMAL

Machine Id  
**402 CRANE MAIN HOIST TROLLEY**  
 Component  
**Gearbox**  
 Fluid  
**SHELL OMALA S4 GX 220 (460 LTR)**

## RECOMMENDATION

Check seals and/or filters for points of contaminant entry. 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 recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.

## WEAR

All component wear rates are normal.

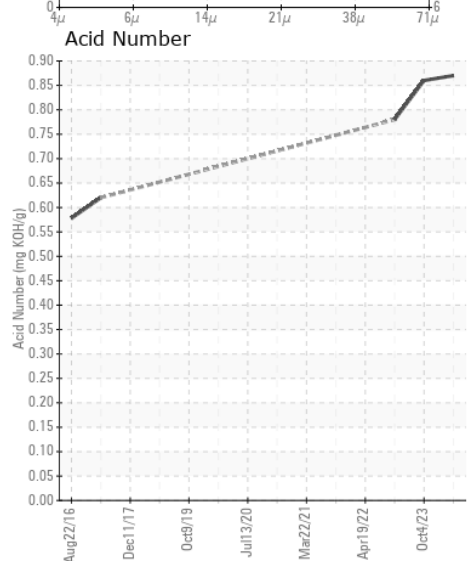
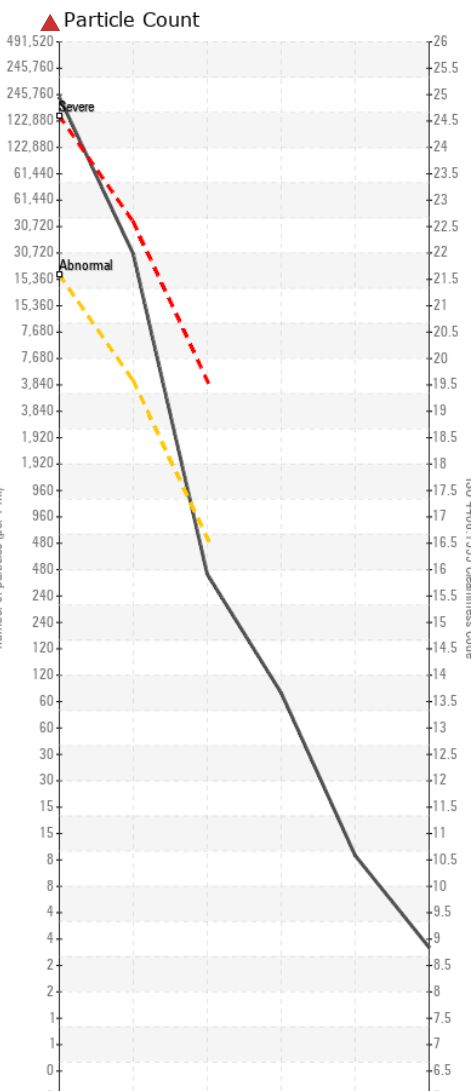
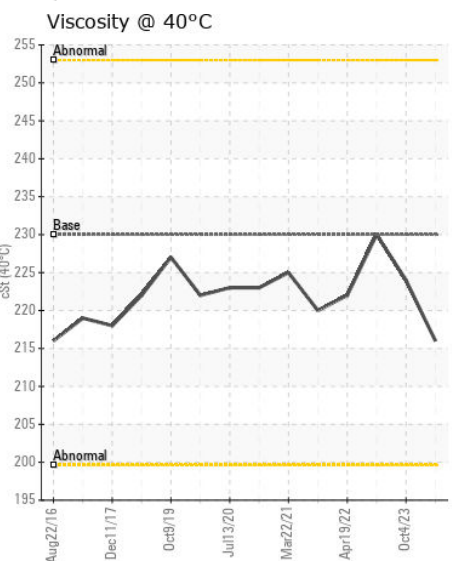
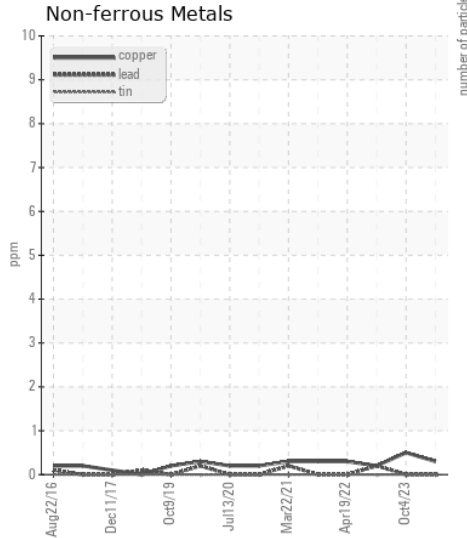
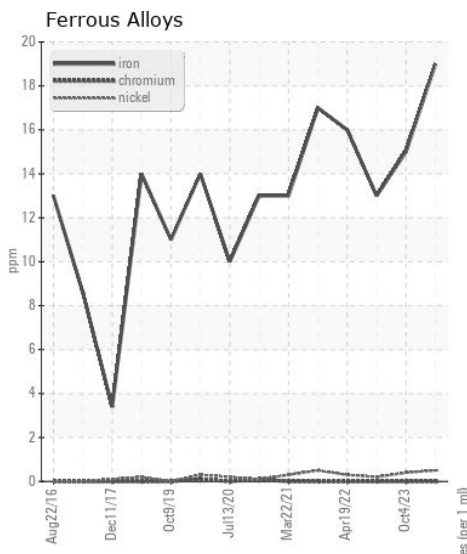
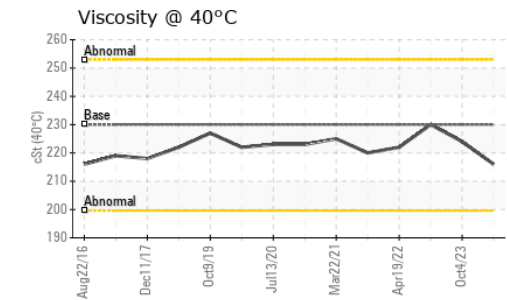
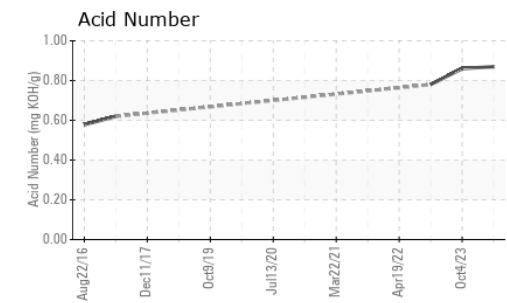
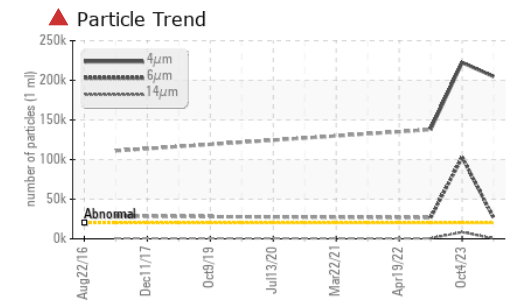
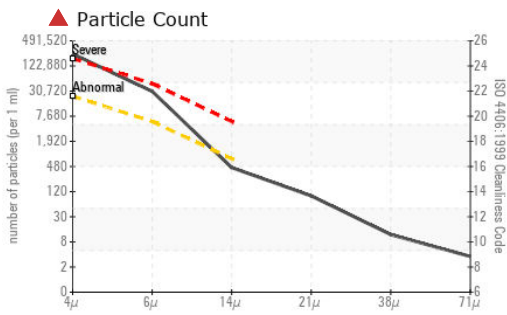
## CONTAMINATION

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

## 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.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>WC0863483</b>	WC0811779	WC0698322
Sample Date		Client Info		<b>25 Mar 2024</b>	04 Oct 2023	11 Oct 2022
Machine Age	yrs	Client Info		<b>0</b>	0	0
Oil Age	yrs	Client Info		<b>0</b>	0	0
Filter Age	yrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Not Chngd</b>	N/A	Not Chngd
Filter Changed		Client Info		<b>Not Chngd</b>	N/A	Not Chngd
Sample Status				<b>SEVERE</b>	SEVERE	ABNORMAL
Iron	ppm	ASTM D5185(m)	>200	<b>19</b>	15	13
Chromium	ppm	ASTM D5185(m)	>15	<b>0</b>	0	0
Nickel	ppm	ASTM D5185(m)	>15	<b>&lt;1</b>	<1	<1
Titanium	ppm	ASTM D5185(m)		<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185(m)		<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185(m)	>25	<b>0</b>	<1	0
Lead	ppm	ASTM D5185(m)	>100	<b>0</b>	0	<1
Copper	ppm	ASTM D5185(m)	>200	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m)	>25	<b>0</b>	0	0
Vanadium	ppm	ASTM D5185(m)		<b>0</b>	0	0
White Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silicon	ppm	ASTM D5185(m)	>50	<b>18</b>	24	24
Potassium	ppm	ASTM D5185(m)	>20	<b>3</b>	4	4
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Particles >4µm		ASTM D7647	>20000	<b>▲ 204806</b>	▲ 222437	▲ 137851
Particles >6µm		ASTM D7647	>5000	<b>▲ 26248</b>	▲ 102973	▲ 26673
Particles >14µm		ASTM D7647	>640	<b>398</b>	▲ 8378	564
Particles >21µm		ASTM D7647	>160	<b>84</b>	▲ 1314	103
Particles >38µm		ASTM D7647	>40	<b>10</b>	33	3
Particles >71µm		ASTM D7647	>10	<b>3</b>	1	1
Oil Cleanliness		ISO 4406 (c)	>21/19/16	<b>▲ 25/22/16</b>	▲ 25/24/20	▲ 24/22/16
Silt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>VLITE</b>	▲ MODER	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*	>0.2	<b>NEG</b>	NEG	NEG
Sodium	ppm	ASTM D5185(m)		<b>2</b>	3	2
Boron	ppm	ASTM D5185(m)		<b>15</b>	14	14
Barium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Molybdenum	ppm	ASTM D5185(m)		<b>3</b>	0	0
Manganese	ppm	ASTM D5185(m)		<b>0</b>	0	0
Magnesium	ppm	ASTM D5185(m)		<b>&lt;1</b>	<1	<1
Calcium	ppm	ASTM D5185(m)		<b>6</b>	4	5
Phosphorus	ppm	ASTM D5185(m)		<b>393</b>	406	460
Zinc	ppm	ASTM D5185(m)		<b>5</b>	8	6
Sulfur	ppm	ASTM D5185(m)		<b>4972</b>	5015	5209
Acid Number (AN)	mg KOH/g	ASTM D974*		<b>0.87</b>	0.86	0.78
Visc @ 40°C	cSt	ASTM D7279(m)	230	<b>216</b>	224	230



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC0863483 **Received** : 04 Apr 2024  
**Lab Number** : 02626732 **Tested** : 05 Apr 2024  
**Unique Number** : 5759864 **Diagnosed** : 05 Apr 2024 - Wes Davis  
**Test Package** : IND 2 ( Additional Tests: TAN Man )

**Vale - Copper Cliff Smelter**  
 COPPER CLIFF SMELTER WAREHOUSE, 155 BALSAM ST.  
 COPPER CLIFF, ON  
 CA P0M 1N0  
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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.