

OIL ANALYSIS REPORT

CHEATHAM ANNEX **2A** 1719 CRANE 2A (S/N 6250226)

Component Gearbox

SHELL OMALA S4 WE 220 (--- GAL)

Sample Rating Trend



Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

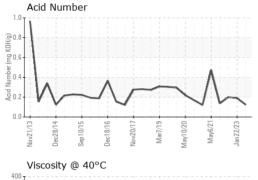
Fluid Condition

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

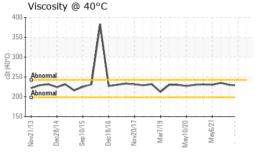
Sample Number	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Image: Client Info N/A N/A N/A N/A Machine Status Image: Client Info N/A N/A N/A N/A Machine Status Image: Client Info N/A N/A N/A N/A Machine Status Image: Client Info N/A N/A N/A N/A Machine Status 200 1 2 1 1 1 1 1 1 1 1 1 1 2 1 1 2 1 1 2 1 1 2 2 3 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4	Sample Number		Client Info		WC0752734	WC0573873	WC0573799
Oil Age hrs Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A WEAR METALS method limit/base current history2 Iron ppm ASTM D5185m >200 2 3 4 Chromium ppm ASTM D5185m >15 0 -1 -1 Nickel ppm ASTM D5185m -15 0 3 2 Titanium ppm ASTM D5185m -15 0 0 0 Aluminum ppm ASTM D5185m -20 0 -1 -1 Aluminum ppm ASTM D5185m >200 1 2 2 Tin ppm ASTM D5185m >20 1 2 2 Tin ppm ASTM D5185m >25 -1 -1 -1 Antimony ppm ASTM D5185m 0 -1 -1 -1	Sample Date		Client Info		01 Oct 2023	22 Jan 2023	24 Apr 2022
Oil Changed Status Client Info N/A N/A </th <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
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		0	0	0
Iron	Oil Changed		Client Info		N/A	N/A	N/A
Iron	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >15 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >15 0 3 2 Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 <1 <1 <1 Aluminum ppm ASTM D5185m >25 8 <1 6 6 Lead ppm ASTM D5185m >200 1 2 2 2 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <th>Iron</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>200</th> <th>2</th> <th>3</th> <th>4</th>	Iron	ppm	ASTM D5185m	>200	2	3	4
Titanium ppm ASTM D5185m 0 0 0 1 <1	Chromium	ppm	ASTM D5185m	>15	0	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>15	0	3	2
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Aluminum	Silver	ppm	ASTM D5185m		0	<1	<1
Copper ppm ASTM D5185m >200 1 2 2 Tin ppm ASTM D5185m >25 <1 <1 <1 Antimony ppm ASTM D5185m >5 Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 Boron ppm ASTM D5185m 0 0 6 Boron ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 5 <1 1 1 Phosphorus ppm ASTM D5185m 501 406 447 7 Phosphorus ppm ASTM D5185m 0 3 0 0 Sulfur ppm ASTM D5185m	Aluminum		ASTM D5185m	>25	8	<1	6
Copper ppm ASTM D5185m >200 1 2 2 Tin ppm ASTM D5185m >25 <1 <1 <1 Antimony ppm ASTM D5185m >5 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 5 <1 1 1 Calcium ppm ASTM D5185m 5 <1 1 7 Phosphorus ppm ASTM D5185m 501 406 447 7 Zinc ppm ASTM D5185m 501 406 42	Lead		ASTM D5185m	>100	0	0	0
Tin	Copper		ASTM D5185m	>200	1	2	2
Antimony ppm ASTM D5185m >5 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 6 6 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 5 <1 1 1 0 Magnesium ppm ASTM D5185m 501 406 447 7 Phosphorus ppm ASTM D5185m 501 406 447 7 Phosphorus ppm ASTM D5185m 501 406 447 7 Phosphorus ppm ASTM D5185m 501 406 447 <th></th> <th></th> <th>ASTM D5185m</th> <th>>25</th> <th><1</th> <th><1</th> <th><1</th>			ASTM D5185m	>25	<1	<1	<1
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Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 6 Barium ppm ASTM D5185m 0 1 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 5 <1 1 Calcium ppm ASTM D5185m 501 406 447 Phosphorus ppm ASTM D5185m 501 406 447 Zinc ppm ASTM D5185m 0 3 0 Sulfur ppm ASTM D5185m 66 42 70 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 13 6 18 Sodium ppm ASTM D5185m >20 13 6 <th>•</th> <th></th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th><1</th> <th><1</th>	•		ASTM D5185m		0	<1	<1
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Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m		0	0	6
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m		0	1	0
Magnesium ppm ASTM D5185m 5 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m <1	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus ppm ASTM D5185m 501 406 447 Zinc ppm ASTM D5185m 0 3 0 Sulfur ppm ASTM D5185m 66 42 70 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 13 6 18 Sodium ppm ASTM D5185m >50 4 2 Potassium ppm ASTM D5185m >20 4 <1 3 FLUID DEGRADATION method limit/base current history1 history2 ASTM D8045 0.124 0.19 0.20 VISUAL method limit/base current history1 history2 VISUAL NONE NONE NONE NONE NONE Visual NONE NONE NONE NONE Visual NONE	Magnesium	ppm	ASTM D5185m		5	<1	1
Zinc ppm ASTM D5185m 0 3 0 Sulfur ppm ASTM D5185m 66 42 70 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 13 6 18 Sodium ppm ASTM D5185m >50 4 2 Potassium ppm ASTM D5185m >20 4 <1 3 FLUID DEGRADATION method limit/base current history1 history2 Acid Number (AN) mg KOHlg ASTM D8045 0.124 0.19 0.20 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE Viellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE <t< th=""><th>Calcium</th><th>ppm</th><th>ASTM D5185m</th><th></th><th><1</th><th>4</th><th>7</th></t<>	Calcium	ppm	ASTM D5185m		<1	4	7
Sulfur ppm ASTM D5185m 66 42 70 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 13 6 18 Sodium ppm ASTM D5185m >20 4 2 Potassium ppm ASTM D5185m >20 4 <1 3 FLUID DEGRADATION method limit/base current history1 history2 ASTM D5185m >20 4 <1 3 FLUID DEGRADATION method limit/base current history1 history2 ASTM D5185m >20 4 <1 3 FLUID DEGRADATION method limit/base current history1 history2 ASTM D5185m >20 0.124 0.19 0.20 ViSUAL NONE NONE NONE	Phosphorus	ppm	ASTM D5185m		501	406	447
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Acid Number (AN) mg KOH/g ASTM D8045 0.124 0.19 0.20 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 >0.2 NEG NEG	Potassium	ppm	ASTM D5185m	>20	4	<1	3
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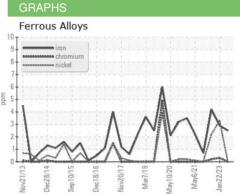


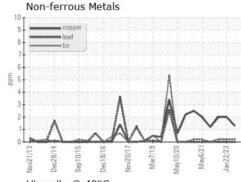
OIL ANALYSIS REPORT

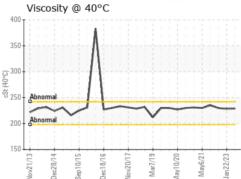


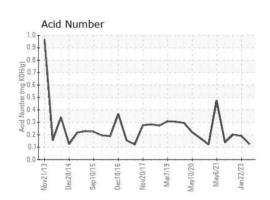
















Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10672056 Test Package : IND 2

: WC0752734 : 05965505

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 29 Sep 2023 Diagnosed

: 02 Oct 2023 Diagnostician : Don Baldridge **CARGOTEC MARINE - MACGREGOR**

525 BYRON ST, SUITE B CHESAPEAKE, VA US 23320

Contact: TARMO MAGI

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* - 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)

Submitted By: TARMO MAGI

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