

## **OIL ANALYSIS REPORT**

## ISV2401090001] Machine Id MCQUAY CAMDEN YARDS CHILLER 2 (S/N 58A81051-00) Component

**Refrigeration Compressor** 

MOBIL EAL ARTIC ISO 46 (8 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

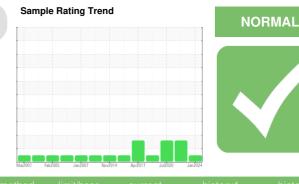
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

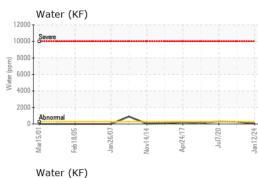
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

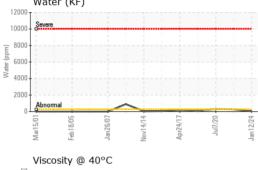


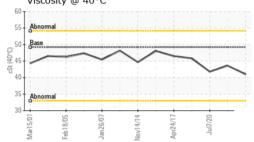
Sample Date         Client Info         12 Jan 2024         01 Apr 2021         07 Jul 20           Machine Age         hrs         Client Info         51550         48310         47720           Oil Age         hrs         Client Info         51550         48310         47720           Oil Changed         Client Info         Not Changd         Not Changd         Not Changd         Not Changd           Sample Status         method         limit/base         current         history1         histor           Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Silver         ppm         ASTM D5185m         >2         <1         1         1         1           Copper         ppm         ASTM D5185m         >4         <1         <1         0           Auminum         ppm         ASTM D5185m         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         51550         48310         47720           Oil Age         hrs         Client Info         S1550         48310         47720           Oil Changed         Client Info         Not Changd         Not Changd         Not Changd         Not Changd           Sample Status         Imit Distas         Imit Distas         Current         history1         history1           WEAR METALS         method         Imit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Silver         ppm         ASTM D5185m         >2         1	Sample Number		Client Info		WC0814433	WC0525438	WCI2322189
Oil Age         hrs         Client Info         51550         48310         47720           Oil Changed         Client Info         Not Changd         Not Changd         Not Changd         Not Changd           Sample Status         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         <1         1         <1           Copper         ppm         ASTM D5185m         >2         <1         1         0           Antimony         ppm         ASTM D5185m         >2         <1         1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0<	Sample Date		Client Info		12 Jan 2024	01 Apr 2021	07 Jul 2020
Oil Changed Sample Status         Client Info         Not Changd NORMAL         Not Changd MARGINAL         Not Changd MARGINAL         Not Changd MARGINAL           WEAR METALS         method         imit/base         current         history1         histor           Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         <1         1         1           Copper         ppm         ASTM D5185m         >2         <1         1         1           Tin         ppm         ASTM D5185m         >100         2         1         1         1           Copper         ppm         ASTM D5185m         >100         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Borium         ppm         ASTM D5	Machine Age	hrs	Client Info		51550	48310	47720
Sample Status         Image: Control of the status         NORMAL         MARGINAL         MARGINAL         MARGINAL           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >22         <1         0         0           Nickel         ppm         ASTM D5185m         22         <1         0         0           Silver         ppm         ASTM D5185m         >22         0         <1         0           Aluminum         ppm         ASTM D5185m         >22         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         1         1         1           Tin         ppm         ASTM D5185m         >100         2         1         1         1           Tin         ppm         ASTM D5185m         >100         2         1         1         1           Copper         ppm         ASTM D5185m         0         0         0         0           Cadatium         ppm         ASTM D5185m	Oil Age	hrs	Client Info		51550	48310	47720
WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         2         <1         0         0           Silver         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >50         2         4         3           Lead         ppm         ASTM D5185m         >100         2         1         1           Tin         ppm         ASTM D5185m         >100         2         1         1           Vanadium         ppm         ASTM D5185m         >100         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDTIVES         method         limit/base         current         history1         hist	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Iron         ppm         ASTM D5185m         >100         3         4         2           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         0         0         0         0           Silver         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >50         2         4         3           Lead         ppm         ASTM D5185m         >2         <1         1         <1           Copper         ppm         ASTM D5185m         >100         2         1         1         1           Tin         ppm         ASTM D5185m         >100         2         1         1         1           Antimony         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         0         0	Sample Status				NORMAL	MARGINAL	MARGINAL
Chromium         ppm         ASTM D5185m         >2         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         0         0         -         1           Titanium         ppm         ASTM D5185m         >2         0         <1	Iron	ppm	ASTM D5185m	>100	3	4	2
Titanium         ppm         ASTM D5185m         0         0         0         0           Silver         ppm         ASTM D5185m<>2         0         <1	Chromium	ppm	ASTM D5185m	>2	<1	0	0
Silver         ppm         ASTM D5185m         >2         0         <1         0           Aluminum         ppm         ASTM D5185m         >50         2         4         3           Lead         ppm         ASTM D5185m         >2         <1	Nickel	ppm	ASTM D5185m		0	0	<1
Aluminum         ppm         ASTM D5185m         >50         2         4         3           Lead         ppm         ASTM D5185m         >2         <1         1         <11           Copper         ppm         ASTM D5185m         >2         <1         1         <1           Tin         ppm         ASTM D5185m         >4         <1         <1         0           Antimony         ppm         ASTM D5185m         >4         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Vanadium         ppm         ASTM D5185m         <1         3         2         2           Barium         ppm         ASTM D5185m         <0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0 </td <td>Titanium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Titanium	ppm	ASTM D5185m		0	0	0
Lead         ppm         ASTM D5185m         >2         <1         1         <1           Copper         ppm         ASTM D5185m         >100         2         1         1         1           Tin         ppm         ASTM D5185m         >4         <1	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper         ppm         ASTM D5185m         >100         2         1         1           Tin         ppm         ASTM D5185m         >4         <1	Aluminum	ppm	ASTM D5185m	>50	2	4	3
Tin         ppm         ASTM D5185m         >4         <1         <1         0           Antimony         ppm         ASTM D5185m          <1	Lead	ppm	ASTM D5185m	>2	<1	1	<1
Antimony         ppm         ASTM D5185m          <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         <1	Copper	ppm	ASTM D5185m	>100	2	1	1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         histor           Boron         ppm         ASTM D5185m         <1         3         2           Barium         ppm         ASTM D5185m         <1         3         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         0           Phosphorus         ppm         ASTM D5185m         0         14         6           Sulfur         ppm         ASTM D5185m         0         20         18           Sodium         ppm         ASTM D5185m         0         20         18           Sodium         ppm         ASTM D5185m	Tin	ppm	ASTM D5185m	>4	<1	<1	0
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history1BoronppmASTM D5185m<1	Antimony	ppm	ASTM D5185m			<1	0
ADDITIVESmethodlimit/basecurrenthistory1historBoronppmASTM D5185m<1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron         ppm         ASTM D5185m         <1         3         2           Barium         ppm         ASTM D5185m         3         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         3         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m		<1	3	2
Marganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m		3	0	0
Magnesium         ppm         ASTM D5185m         0         0         0           Calcium         ppm         ASTM D5185m         <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium         ppm         ASTM D5185m         <1         <1         0           Phosphorus         ppm         ASTM D5185m         303         20         8           Zinc         ppm         ASTM D5185m         0         14         6           Sulfur         ppm         ASTM D5185m         0         2         8           CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         >50         20         3         3           Potassium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus         ppm         ASTM D5185m         303         20         8           Zinc         ppm         ASTM D5185m         0         14         6           Sulfur         ppm         ASTM D5185m         0         2         8           CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         >50         20         33         3           Potassium         ppm         ASTM D5185m         >0         0         3         3           Water         %         ASTM D6304         >0.02         0.003         0.026         0.029           ppm         ASTM D6304         >250         33         269.2         297.1           FLUID DEGRADATION         method         limit/base         current         history1         history1	Magnesium	ppm	ASTM D5185m		0	0	0
Zinc         ppm         ASTM D5185m         0         14         6           Sulfur         ppm         ASTM D5185m         0         2         8           CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         >50         20         3         3           Potassium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m		<1	<1	0
SulfurppmASTM D5185m028CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m>50202018SodiumppmASTM D5185m>033PotassiumppmASTM D5185m>20<1	Phosphorus	ppm	ASTM D5185m		303	20	
CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m<>50202018SodiumppmASTM D5185m033PotassiumppmASTM D5185m<>20<1	Zinc	ppm	ASTM D5185m		0	14	6
Silicon         ppm         ASTM D5185m         >50         20         20         18           Sodium         ppm         ASTM D5185m         <0         3         3           Potassium         ppm         ASTM D5185m         >20         <1         0         0           Water         %         ASTM D6304         >0.02         0.003         ▲ 0.026         ▲ 0.029           ppm Water         ppm         ASTM D6304         >250         33         ▲ 269.2         ▲ 297.1           FLUID DEGRADATION         method         limit/base         current         history1         history1	Sulfur	ppm	ASTM D5185m		0	2	8
Sodium         ppm         ASTM D5185m         0         3         3           Potassium         ppm         ASTM D5185m<>20         <1	CONTAMINANTS	6	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         0         0           Water         %         ASTM D6304         >0.02         0.003         ▲         0.026         ▲         0.029           ppm Water         ppm         ASTM D6304         >250         33         ▲         269.2         ▲         297.1           FLUID DEGRADATION         method         limit/base         current         history1         history1	Silicon	ppm	ASTM D5185m	>50	20	20	18
Water         %         ASTM D6304         >0.02         0.003         0.026         0.029           ppm Water         ppm         ASTM D6304         >250         33         269.2         297.1           FLUID DEGRADATION         method         limit/base         current         history1         history1	Sodium	ppm	ASTM D5185m		0	3	3
ppm WaterppmASTM D6304>25033269.2297.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	Potassium	ppm	ASTM D5185m	>20	<1	0	0
FLUID DEGRADATION method limit/base current history1 histo	Water	%	ASTM D6304	>0.02	0.003	▲ 0.026	▲ 0.029
	ppm Water	ppm	ASTM D6304	>250	33	▲ 269.2	<b>2</b> 97.1
Acid Number (AN) mg KOH/g ASTM D974 0.028 0.016 0.032	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D974		0.028	0.016	0.032



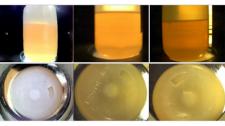
# **OIL ANALYSIS REPORT**



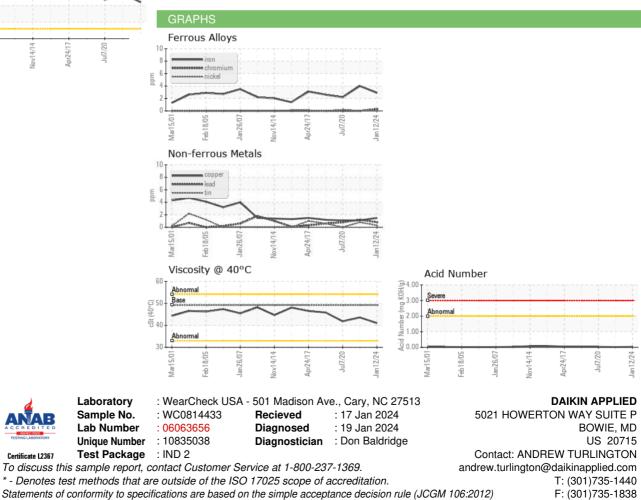




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.02	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	49.2	41.0	43.6	41.8
SAMPLE IMAGES	S	method	limit/base	current	history1	history2
Color				a		



Bottom



Certificate L2367

Contact/Location: ANDREW TURLINGTON - MCQUPP