

COOLANT REPORT

Area Kentucky [Kentucky] Coolant - Starboard Main Engine (Jacket) Coolant Fluid

CATERPILLAR ELC (--- GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. The fluid is suitable for further service.

Corrosion

All metal levels are normal indicating no corrosion in the cooling system.

Contaminants

There is no indication of any contamination in the coolant.

Coolant Condition

Carboxylate test failed. Glycol and nitrite levels are acceptable. The pH level of this fluid is within the acceptable limits.

Sample Date Client Info 25 May 2024 25 Apr 2024 16 Mar 2024 Machine Age hrs Client Info 14962 14434 0 Oil Age hrs Client Info 14962 14434 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Imit/base current history1 history2 Glycol Type FT-IR Specific Gravity 'ASTM D128 1.060 1.060 1.044 pH Scale 0.44 ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-053:2009 712 560 712 Percentage Glycol % ASTM D321 44.3 44.6 32.8 Freezing Point °F ASTM D3321 -21 -21 1 total Dissolved Solids Imit/base current history1 history2 Silicon ppm ASTM D6130 0 8 9 <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>							
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Oil Age hrs Client Info 14962 14434 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Imit/base Current history1 history2 Glycol Type FT-IR Specific Gravity Y ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-0532009 712 560 712 Reserve Alkalinity Scale 0.20 'ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-0532009 712 560 712 Reserve Alkalinity Scale 0.20 'ASTM D3321 44.3 44.6 32.8 Freezing Point °F ASTM D3321 -21 -21 1 1 Total Dissolved Solids Imit/base current history1 history2 Silicon ppm ASTM D6130 0 8 9 10 Phosphorus ppm ASTM D6130 0	Sample Date		Client Info		25 May 2024	25 Apr 2024	16 Mar 2024
Oil Changed Client Info N/A N/A N/A N/A Sample Status N/A N/A N/A N/A N/A N/A PHYSICAL TEST RESULTS method imit/base current history1 history2 Glycol Type FT-IR Specific Gravity *ASTM D1288 1.060 1.060 1.044 pH Scale014 ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP053:2009 712 560 712 Reserve Alkalinity Scale020 *ASTM D321 44.3 44.6 32.8 Freezing Point °F ASTM D3321 -21 -21 1 Total Dissolved Solids 331.0 286.0 221.5 1 Carboxylate fail fail fail fail fail CORROSION INHIBITORS method imit/base current history1 history2 Slicon ppm ASTM D6	Machine Age	hrs	Client Info		14962	14434	0
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PHYSICAL TEST RESULTS method limit/base current history1 history2 Glycol Type FT-IR Specific Gravity 'ASTM D1288 1.060 1.060 1.044 pH Scale 0.44 ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-053:2009 712 560 712 Reserve Alkalinity Scale 0.40 'ASTM D1281 21 -21 -1 1 Percentage Glycol % ASTM D3321 44.3 44.6 32.8 Freezing Point °F ASTM D3321 -21 -21 1 1 Total Dissolved Solids 221.5 Carboxylate fail fa	Oil Changed		Client Info		N/A	N/A	N/A
Glycol Type FT-IR Specific Gravity 'XSTM D1298 1.060 1.060 1.044 pH Scale 0.14 ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-053:2009 712 560 712 Reserve Alkalinity Scale 0.20 'ASTM D1287 8.53 8.53 8.44 Nitrites ppm AP-053:2009 712 560 712 Percentage Glycol % ASTM D1321 -21 -21 1 1 Total Dissolved Solids 331.0 286.0 221.5 5 1 1 Corboxylate fail fail fail fail fail fail 1 CORROSION INHIBITORS method limit/base current history1 history2 Silicon ppm ASTM D6130 0 3 0 13 Molybdenum ppm ASTM D6130 >15<<<1 <1 1 1 Cora	Sample Status				NORMAL	NORMAL	ABNORMAL
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Reserve Alkalinity Scale 0-20 *ASTM D1121 Percentage Glycol % ASTM D3321 44.3 44.6 ▲ 32.8 Freezing Point °F ASTM D3321 -21 -21 1 Total Dissolved Solids 331.0 286.0 221.5 Carboxylate fail fail fail fail CORROSION INHIBITORS method limit/base current history1 history2 Silicon ppm ASTM D6130 0 8 9 10 Phosphorus ppm ASTM D6130 0 3 0 13 Boron ppm ASTM D6130 0 3 0 13 Molybdenum ppm ASTM D6130 >15 <1	pН	Scale 0-14	ASTM D1287		8.53	8.53	8.44
Percentage Glycol % ASTM D3321 44.3 44.6 ▲ 32.8 Freezing Point °F ASTM D3321 -21 -21 1 Total Dissolved Solids 331.0 286.0 221.5 Carboxylate fail fail fail fail CORROSION INHIBITORS method limit/base current history1 history2 Silicon ppm ASTM D6130 0 8 9 10 Phosphorus ppm ASTM D6130 0 4 0 0 Boron ppm ASTM D6130 950 496 581 441 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130 >10 <1 0 1 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130 >10 <1 0 1 Copper ppm	Nitrites	ppm	AP-053:2009		712	560	712
Freezing Point °F ASTM D3321 -21 -21 1 Total Dissolved Solids 331.0 286.0 221.5 Carboxylate fail fail fail fail CORROSION INHIBITORS method limit/base current history1 history2 Silicon ppm ASTM D6130 0 8 9 10 Phosphorus ppm ASTM D6130 0 4 0 0 Boron ppm ASTM D6130 0 3 0 13 Molybdenum ppm ASTM D6130 950 496 581 441 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130<>10 <1 <1 1 1 Aluminum ppm ASTM D6130<>10 1 <1 1 1 Lead ppm ASTM D6130<>10 0 0 <1 1 CONTAMINANTS <td< th=""><th>Reserve Alkalinity</th><th>Scale 0-20</th><th>*ASTM D1121</th><th></th><th></th><th></th><th></th></td<>	Reserve Alkalinity	Scale 0-20	*ASTM D1121				
Total Dissolved Solids 331.0 286.0 221.5 Carboxylate fail fail <thfail< th=""> fail fail <</thfail<>	Percentage Glycol	%	ASTM D3321		44.3	44.6	▲ 32.8
CarboxylatefailfailfailCORROSION INH/BITORSmethodlimit/basecurrenthistory1history2SiliconppmASTM D613008910PhosphorusppmASTM D61300400BoronppmASTM D613003013MolybdenumppmASTM D61309504965811441CORROSIONmethodlimit/basecurrenthistory1history2IronppmASTM D6130>15<1<11AluminumppmASTM D6130>10<101CopperppmASTM D6130>101<1<1LeadppmASTM D6130>1000<1TinppmASTM D6130>10<100ZincppmASTM D6130>10<10<1CONTAMINANTSmethodlimit/basecurrenthistory1history2ChlorineppmASTM D6130131182875PotassiumppmASTM D61307812SCALE POTENTIALmethodlimit/basecurrenthistory1history2CalciumppmASTM D61305429	Freezing Point	°F	ASTM D3321		-21	-21	1
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Silicon ppm ASTM D6130 0 8 9 10 Phosphorus ppm ASTM D6130 0 4 0 0 Boron ppm ASTM D6130 0 3 0 13 Molybdenum ppm ASTM D6130 950 496 581 441 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130 >15 <1 <1 1 Aluminum ppm ASTM D6130 >10 <1 0 1 Copper ppm ASTM D6130 >10 <1 <1 <1 Lead ppm ASTM D6130 >10 0 0 <1 Contractine ppm ASTM D6130 >10 <1 0 0 Zinc ppm ASTM D6130 >10 <1 0 <1 Contractine ppm ASTM D6130 13 11 8	Carboxylate				fail	fail	fail
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Boron ppm ASTM D6130 0 3 0 13 Molybdenum ppm ASTM D6130 950 496 581 441 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130 >15 <1	Silicon	ppm	ASTM D6130	0	8	9	10
Molybdenum ppm ASTM D6130 950 496 581 441 CORROSION method limit/base current history1 history2 Iron ppm ASTM D6130 >15 <1 <1 1 Aluminum ppm ASTM D6130 >10 <1 0 1 Copper ppm ASTM D6130 >10 <1 <1 <1 Lead ppm ASTM D6130 >10 1 <1 <1 <1 Lead ppm ASTM D6130 >10 0 0 <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	Phosphorus	ppm	ASTM D6130	0	4	0	0
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Iron ppm ASTM D6130 >15 <1	Molybdenum	ppm	ASTM D6130	950	496	581	441
Aluminum ppm ASTM D6130 >10 <1	CORROSION		method	limit/base	current	history1	history2
CopperppmASTM D6130>101<1<1LeadppmASTM D6130>1000<1	Iron	ppm	ASTM D6130	>15	<1	<1	1
LeadppmASTM D6130>1000<1	Aluminum	ppm	ASTM D6130	>10	<1	0	1
TinppmASTM D6130>10<1	Copper	ppm	ASTM D6130	>10	1	<1	<1
ZincppmASTM D613000<1	Lead	ppm	ASTM D6130	>10	0	0	<1
CONTAMINANTSmethodlimit/basecurrenthistory1history2ChlorineppmASTM D613013118CARRIER SALTSmethodlimit/basecurrenthistory1history2SodiumppmASTM D6130374043232875PotassiumppmASTM D61307812SCALE POTENTIALmethodlimit/basecurrenthistory1history2CalciumppmASTM D61305429	Tin	ppm	ASTM D6130	>10	<1	0	0
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PotassiumppmASTM D61307812SCALE POTENTIALmethodlimit/basecurrenthistory1history2CalciumppmASTM D61305429	CARRIER SALTS		method	limit/base	current	history1	history2
PotassiumppmASTM D61307812SCALE POTENTIALmethodlimit/basecurrenthistory1history2CalciumppmASTM D61305429	Sodium	ppm	ASTM D6130		3740	4323	2875
Calcium ppm ASTM D6130 5 4 29	Potassium		ASTM D6130		7	8	12
	SCALE POTENTI	AL	method	limit/base	current	history1	history2
Magnesium ppm ASTM D6130 3 2 4	Calcium	ppm	ASTM D6130		5	4	29
	Magnesium	ppm	ASTM D6130		3	2	4

Sample Rating Trend

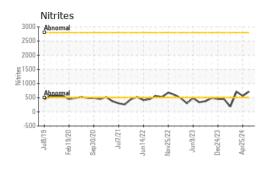
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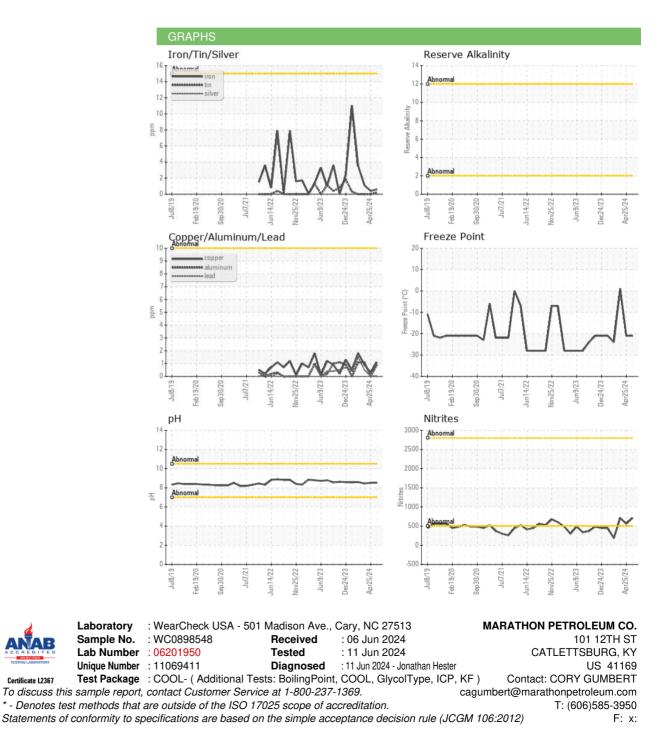
NORMAL



COOLANT REPORT



VISUAL	method	limit/base	current	history1	history2
Coolant Color	*Visual		Red	Red	Red
Coolant Appearance	*Visual	Clear	normal	normal	normal
Color					
Bottom					



Report Id: MARCAT [WUSCAR] 06201950 (Generated: 06/11/2024 12:23:44) Rev: 1

Certificate 12367

Submitted By: M/V KENTUCKY

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