

## **COOLANT REPORT**

### Machine Id Machine Id [Map Runner] Coolant - Starboard Main Engine Coolant

CAT EXTENDED LIFE COOLANT (ELC) (--- GA

#### DIAGNOSIS

Fluic

A Recommendation

We recommend drain/flush system, and refill with 50/50 antifreeze water mixture.

#### Corrosion

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

Contaminants

Sediment present.

#### **Coolant Condition**

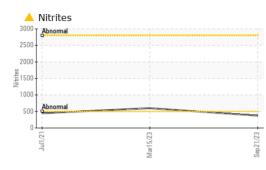
Carboxylate test failed. The nitrite level is acceptable. The glycol level is acceptable. The pH level of this fluid is within the acceptable limits.

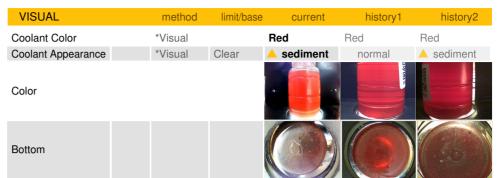
SAMPLE INFORMATIONmethodlimit/basecurrenthistory1history2Sample NumberClient InfoWC0805576RP0015800RP0015859Sample DateClient Info21 Sep 202315 Mar 202301 Jul 2021Machine AgehrsClient Info0012238	GAL)						
Sample NumberClient InfoWC0805576RP0015800RP0015800Sample DateIClient Info0012238Machine AgehrsClient Info0012238Oil AgehrsClient InfoN/AN/ANAC ChangdSample StatusIImil/baseCurrenthistory1history2Specific Gravity'ASTM D128Imil/baseCurrenthistory1history2Specific Gravity'ASTM D1281.0411.029PHScale 044ASTM D1289.237.138.76NitritesppmAP-053:20930.422.736.6Percentage Charles'ASTM D12830.422.736.6Precentage CharlesScale 044ASTM D12830.422.736.6Precentage Charles'ASTM D12830.422.736.6Precentage Charles'ASTM D12830.422.736.6Precentage Charles'ASTM D128'A14.4-7Total Dissolved Solids'211.5131.0311.0Carboxylateimit basecurrenthistory1history2SliconppmASTM D613002031.4PhosphorusppmASTM D613000SolonppmASTM D6130100MotybdenumppmASTM D6130100SolonppmASTM D6130 <t< th=""><th>SAMPLE INFORM</th><th>IATION</th><th></th><th></th><th></th><th></th><th>history2</th></t<>	SAMPLE INFORM	IATION					history2
Sample Date         Client Info         21 Sep 2023         15 Mar 2023         01 Jul 2021           Machine Age         hrs         Client Info         0         12238           Oil Age         hrs         Client Info         2716         0         718           Oil Changed         Client Info         N/A         N/A         Not Changd           Sample Status         Imit/base         current         history1         Nistory2           Specific Gravity         'ASTM D1289         1.041         1.029            PHYSICAL TEST RESULTS         method         9.23         7.13         8.76           Nitrites         pp         ASTM D1287         9.23         7.13         8.76           Nitrites         pp         AP-053:2009         372         600         448           Reserve Alkalinity         Scale 021         'ASTM D321         30.4         22.7         36           Freezing Point         °F         ASTM D332         4         14         -7           Total Dissolved Solids          211.5         131.0         311.0           Carboxylate         pp         ASTM D6130         0         20            Boron	Sample Number		Client Info		WC0805576		
Machine Age Oil AgehrsClient Info0012238Oil AgehrsClient Info27160718Oil ChangedClient InfoN/AN/ANot ChangdSample StatusIImit/basecurrenthistory1history2PHYSICAL TEST RESULTSmethodlimit/basecurrenthistory1history2Specific Gravity'ASTM D1281.0411.029PHScale014ASTM D1289.237.136600NitritespmAP-05320093726600448Reserve AlkalinityScale020'ASTM D121Percentage Glycol%ASTM D32130.422.736Freezing Point%ASTM D321414-7Carboxylate%ASTM D613002031PhosphoruspmASTM D613002031SliconppmASTM D6130020MolybdenumpmASTM D6130950749535CORROSIONppmASTM D6130>1000InnppmASTM D6130>100CorrentppmASTM D6130>100CorrentppmASTM D6130>100InnppmASTM D6130>100Correntp			Client Info		21 Sep 2023	15 Mar 2023	01 Jul 2021
Oil AgehrsClient Info27160718Oil ChangedClient InfoN/AN/ANot ChangedSample StatusImageImageABNORMALNORMALABNORMALPHYSICAL TEST RESULTSmethodlimit/basecurrenthistory1history2Specific Gravity'ASTM D1281.0411.029pHScale0.14ASTM D12879.237.138.76NitritesppmAP-053:2093726004448Reserve AlkalinityScale0.21'ASTM D1231Percentage Glycol'AASTM D332130.422.736Freezing Point°FASTM D332130.422.736Freezing Point°FASTM D3321414-7Total Dissolved SolidsImagecurrenthistory1history2SiliconppmASTM D613002031PhosphorusppmASTM D6130020BoronppmASTM D6130950749535CORROSIONppmASTM D61301000IronppmASTM D6130100AluminumppmASTM D6130100IronppmASTM D6130100CORROSIONmethodlimit/basecurrenthistory1history2Iron <td></td> <td>hrs</td> <td></td> <td></td> <td>•</td> <td></td> <td></td>		hrs			•		
Sample Status         Image Status         ABNORMAL         NORMAL         ABNORMAL           PHYSICAL TEST RESULTS         method         limit/base         current         history1         history2           Specific Gravity         'ASTM D1298         1.041         1.029            pH         Scale 0:41         ASTM D1287         9.23         7.13         8.76           Nitrites         ppm         AP-053:2009         372         6000         448           Reserve Alkalinity         Scale 0:40         'ASTM D1287              Percentage Glycol         %         ASTM D1321          14         14         -7           Total Dissolved Solids          131.0         311.0         Carboxylate         131.0         311.0           Correcycled         ppm         ASTM D6130         0         20         31            Phosphorus         ppm         ASTM D6130         0         2         0            Boron         ppm         ASTM D6130         0         0         0            Molybdenum         ppm         ASTM D6130         >10         0	Oil Age	hrs	Client Info		2716	0	718
PHYSICAL TEST RESULTS         method         limit/base         current         history1         history2           Specific Gravity         'ASTM D128         1.041         1.029            pH         Scale 0:4         ASTM D1287         9.23         7.13         8.76           Nitrites         ppm         AP-053:2009         372         6000         4481           Reserve Alkalinity         Scale 0:20         'ASTM D1121              Percentage Glycol         %         ASTM D1321         30.4         22.7         36           Freezing Point         °F         ASTM D1321         4         14         -7           Total Dissolved Solids          remethod         fail         fail         pass           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Sliicon         ppm         ASTM D6130         0         20         31            Boron         ppm         ASTM D6130         0         2         0            CORROSION         ppm         ASTM D6130         >10         0	Oil Changed		Client Info		N/A	N/A	Not Changd
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pH         Stale 0-14         ASTM D1287         9.23         7.13         8.76           Nitrites         ppm         AP-053:2009         372         600         448           Reserve Alkalinity         Stale 0:20         'ASTM D121              Percentage Glycol         %         ASTM D3321         30.4         22.7         36           Freezing Point         °F         ASTM D3321         4         14         -7           Total Dissolved Solids          211.5         131.0         311.0           Carboxylate         Imit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         20         31            Boron         ppm         ASTM D6130         0         2         0            Molybdenum         ppm         ASTM D6130         950         749         535            CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         0             Aluminum         ppm	PHYSICAL TEST R	ESULTS	method	limit/base	current	history1	history2
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Reserve Alkalinity         Scale 0.20         *ASTM D1121             Percentage Glycol         %         ASTM D3321         30.4         22.7         36           Freezing Point         °F         ASTM D3321         4         14         -7           Total Dissolved Solids         211.5         131.0         311.0         311.0           Carboxylate         Imit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         20         31            Phosphorus         ppm         ASTM D6130         0         20         31            Boron         ppm         ASTM D6130         0         2         0            CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         0         0            CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         0         0            CORROSION         met	рН	Scale 0-14	ASTM D1287		9.23	7.13	8.76
Percentage Glycol%ASTM D332130.422.736Freezing Point°FASTM D3321414-7Total Dissolved Solids211.5131.0311.0CarboxylateImit/basecurrenthistory1history2SoliconppmASTM D613002031PhosphorusppmASTM D6130020BoronppmASTM D6130020MolybdenumppmASTM D6130950749535CORROSIONmethodlimit/basecurrenthistory1history2IronppmASTM D6130>15487AluminumppmASTM D6130>1000CopperppmASTM D6130>1000CopperppmASTM D6130>1000IronppmASTM D6130>1000CopperppmASTM D6130>100IronppmASTM D6130>1946ContakinenceppmASTM D61301946ContakinenceppmASTM D613000ContakinenceppmASTM D61301910ContakinenceppmASTM D61301900ContakinenceppmASTM D61301910 </td <td>Nitrites</td> <td>ppm</td> <td>AP-053:2009</td> <td></td> <td>372</td> <td>600</td> <td>448</td>	Nitrites	ppm	AP-053:2009		372	600	448
Freezing Point         °F         ASTM D3321         4         14         -7           Total Dissolved Solids         211.5         131.0         311.0           Carboxylate         fail         fail         pass           CORROSION INHIBITORS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         20         31            Phosphorus         ppm         ASTM D6130         0         20         31            Boron         ppm         ASTM D6130         0         2         0            Molybdenum         ppm         ASTM D6130         950         749         535            CORROSION         method         limit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         0         0            Aluminum         ppm         ASTM D6130         >10         0         0            Copper         ppm         ASTM D6130         >10         0         0            ContAMINANTS         method	Reserve Alkalinity	Scale 0-20	*ASTM D1121				
Total Dissolved Solids         211.5         131.0         311.0           Carboxylate         Image Solids         211.5         131.0         311.0           Corboxylate         Image Solids         Image Solids         211.5         131.0         311.0           CORROSION INHIBITORS         method         Iimit/base         current         history1         history2           Silicon         ppm         ASTM D6130         0         20         31            Phosphorus         ppm         ASTM D6130         0         20         31            Boron         ppm         ASTM D6130         0         2         0            Molybdenum         ppm         ASTM D6130         950         749         535            CORROSION         method         Iimit/base         current         history1         history2           Iron         ppm         ASTM D6130         >10         0         0            Aluminum         ppm         ASTM D6130         >10         0             Lead         ppm         ASTM D6130         >10         0	Percentage Glycol		ASTM D3321		30.4	22.7	36
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Potassium     ppm     ASTM D6130     0        SCALE POTENTIAL     method     limit/base     current     history1     history2       Calcium     ppm     ASTM D6130     9     10	CARRIER SALTS		method	limit/base	current	history1	history2
SCALE POTENTIAL         method         limit/base         current         history1         history2           Calcium         ppm         ASTM D6130         9         10	Sodium	ppm	ASTM D6130		4517	3748	
Calcium ppm ASTM D6130 9 10	Potassium	ppm	ASTM D6130		0	0	
	SCALE POTENTI	AL	method	limit/base	current	history1	history2
Magnesium ppm ASTM D6130 <1 11	Calcium	ppm	ASTM D6130		9	10	
	Magnesium		ASTM D6130		<1	11	

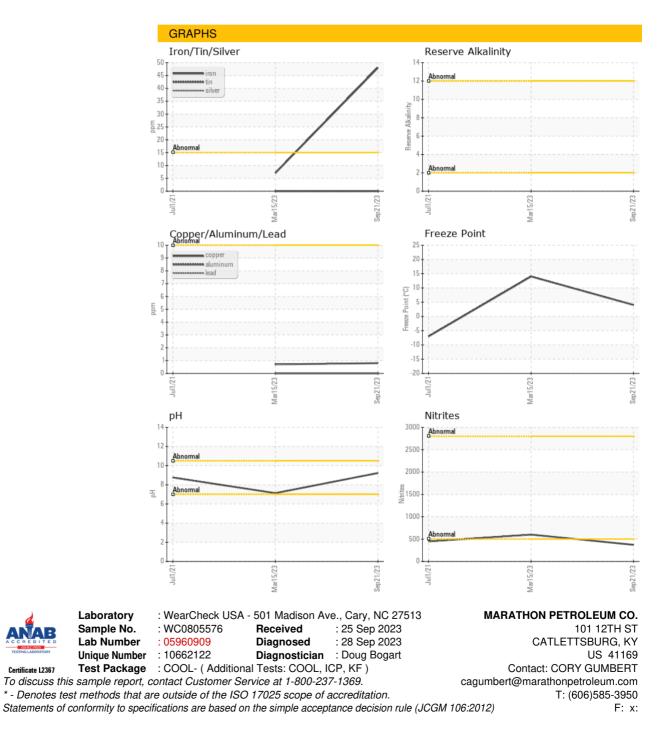




# **COOLANT REPORT**







Submitted By: M/V MAP RUNNER

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