

## Machine Id **RIVER SPIRIT** Component **Starboard Genset** Filuid **PETRO CANADA DURON MARINE SAE 40 (4 GAL)**

Fessample at the next service interval to monitor.   Sample Date Machine Age Ni Age   Client Into   99 Apr 2024   98 Feb 2024   12 Dec 2021 (224)5     Machine Age Ni Age   hrs   Client Into   2315   22435   326     Oil Age Filter Changed   Client Into   830   1050   336     Oil Changed   Client Into   830   1050   336     Oil Changed   Client Into   830   1050   336     Oil Changed   Client Into   NCRMAL   NCRMAL   NCRMAL     Micromoter wear rates are normal.   Iron   ppm   ASIM D518m   >40   0   -1   0     Nickle   ppm   ASIM D518m   >50   0   -1   0     All component wear rates are normal.   ppm   ASIM D518m   >2   0   -1   0     Silver   ppm   ASIM D518m   >17   0   2   0     Qopper   ppm   ASIM D518m   >15   0   -1   0     Variati minum   ppm   ASIM D518m <td< th=""><th>FEITIO CANADA DOTION MATINE SAL 40 (4 C</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	FEITIO CANADA DOTION MATINE SAL 40 (4 C							
Beaample at the next service interval to monitor.   Sample Number Sample Number (Normation Sample Number)   Client Info   W0008002 (20)   W000800 (20)   W0008000 (20)   W0008000 (20)   W0008000 (20)   W00080000 (20)   W00080000000	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
Simple Data   Clinit info   22243   22435     Machine Age   hrs   Clinit info   2245   22445     Ol Age   hrs   Clinit info   2245   22455     Ol Age   hrs   Clinit info   230   1550   36     Filter Age   hrs   Clinit info   Changed   Changed <td rowspan="8"></td> <th>Sample Number</th> <td></td> <td>Client Info</td> <td></td> <th>MW0066905</th> <td>MW0036022</td> <td>MW0036020</td>		Sample Number		Client Info		MW0066905	MW0036022	MW0036020
Oil Age   hrs   Client Info   S30   1050   335     Oil Changed   Client Info   Changed		Sample Date		Client Info		09 Apr 2024	08 Feb 2024	12 Dec 2023
Filter Age   Ins   Client Info   No   830   1050   335     Oil Changed   Client Info   Changed   Changed </td <th>Machine Age</th> <td>hrs</td> <td>Client Info</td> <td></td> <th>22315</th> <td>22485</td> <td>22435</td>		Machine Age	hrs	Client Info		22315	22485	22435
Oil Changad Sample Status   Client Info Sample Status   Client Info Sample Status   Changad NoRMA   Changad NoRMA <thchangad NoRMA   Changad NoRMA   Chan</thchangad 		Oil Age	hrs	Client Info		830	1050	336
Filter Changed Sample Status   Client Info   Changed NORMAL   Changed NORMAL   Changed NORMAL   NORMAL   NORM		Filter Age	hrs	Client Info		830	1050	336
NormalNormalNormalNormalNormalWEARAll component wear rates are normal.IronpmAND(5)-2060.Nake(pmKN0160-4000.TalaniumpmKN0160-20000.TalaniumpmKN0160-10000.AuminumpmKN0160-100100.CopperpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-000.VanadiumpmKN0160-10-10-1010.VanadiumpmKN0160-10-10-1010.VanadiumpmKN1160-10-10-1010.VanadiumpmKN1160-10-101010.VanadiumpmKN1160-10-101010. <t< td=""><th>Oil Changed</th><td></td><td>Client Info</td><td></td><th>Changed</th><td>Changed</td><td>Changed</td></t<>		Oil Changed		Client Info		Changed	Changed	Changed
WEAR   Iron   ppm   ASTM DB18m   >50   2   6   2     All component wear rates are normal.   Diversion   ppm   ASTM DB18m   >4   0   <1		Filter Changed		Client Info		Changed	Changed	Changed
All component wear rates are normal.   Chromium Nickel   ppm   ASTI0 (585) (587)   -22   00   <10   0     Nickel   ppm   ASTI0 (585)   >22   00   <10		Sample Status				NORMAL	NORMAL	NORMAL
All component wear rates are normal.   Chromium Nickel   ppm   ASTI0 (585) (587)   -22   00   <10   0     Nickel   ppm   ASTI0 (585)   >22   00   <10	WEAR	Iron	ppm	ASTM D5185m	>50	2	6	2
Nicket   ppm   Astitution   pzc   0   <1   0     Silver   ppm   ASTM 05185m   >12   0   0   0     Aluminum   ppm   ASTM 05185m   >12   0   1   1     Lead   ppm   ASTM 05185m   >70   0   2   0     Copper   ppm   ASTM 05185m   >70   0   <1		Chromium	ppm	ASTM D5185m	>4	0	<1	0
Silver   pp   ASTM D585m   >5   0   0   0     Aluminum   pp   MSIM 0585m   >12   0   1   <1	All component wear rates are normal.	Nickel	ppm	ASTM D5185m	>2	0	<1	0
Aluminum   ppm   ASTM D5185m   >12   0   1   <1     Lead   ppm   ASTM D5185m   70   0   2   0     Copper   ppm   ASTM D5185m   70   0   <1		Titanium	ppm	ASTM D5185m		0	<1	0
Lead   ppm   ASTM D5185m   >17   0   2   0     Cooper   ppm   ASTM D5185m   >16   <1		Silver	ppm	ASTM D5185m	>5	0	0	0
Copper   ppm   ASTM D5185m   >70   0   <1   <1     Tin   ppm   ASTM D5185m   >15   0   <1		Aluminum	ppm	ASTM D5185m	>12	0	1	<1
Tin   ppm   ASTM D5185m   >15   0   <1   0     Vanadium   ppm   ASTM D5185m    0.0   <1.0		Lead	ppm	ASTM D5185m	>17	0	2	0
Vanadium   ppm   ASTM D5185m   0   <1   0     White Metal Vellow Metal   scalar   'Visual   NONE   <		Copper		ASTM D5185m	>70	0	<1	<1
White Metal Yellow Metal   scalar   'Visual   NONE   NONE   NONE   NONE   NONE     CONTAMINATION   Silicon   ppm   ASTM D5185m   >20   0   21   0 </td <th>Tin</th> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;15</td> <th>0</th> <td>&lt;1</td> <td>0</td>		Tin	ppm	ASTM D5185m	>15	0	<1	0
Vellow MetalscalarVisualNONENONENONENONECONTAMINATIONThere is no indication of any contamination in the oil.SiliconppmASTM D5185m>20020FuelWC Method>4.0<		Vanadium	ppm	ASTM D5185m		0	<1	0
Silicon   ppm   ASTM D5185m   >25   2   4   2     There is no indication of any contamination in the oil.   Potassium   ppm   ASTM D5185m   >20   0   2   0     Fuel   WC Method   >4.0   <1.0		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Potassium   ppm   ASTM D5185m   >20   0   2   0     Fuel   WC Method   >4.0   <1.0		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Potassium   ppm   ASTM D5185m   >20   0   2   0     Fuel   WC Method   >4.0   <1.0	CONTAMINATION	Silicon	maa	ASTM D5185m	>25	2	4	2
Fuel   WC Method   >4.0   <1.0   <1.0   <1.0     Water   I   WC Method   >0.1   NEG   NEG   NEG     Glycol   WC Method   >0.1   NEG   NEG   NEG   NEG     Sold   %   % STM D784   O   0.2   0.1   0.1   NEG     Nitration   Abs/m   %STM D784   >20   4.9   4.6   4.3     Sulfation   Abs/m   %STM D784   >30   14.3   14.4   13.9     Sulfation   Abs/m   %Stal   NONE   NORM								
Water   W CM ethod   >0.1   NEG   NEG   NEG     Glycol   WC Method   >0.1   NEG   NEG   NEG     Sott %   %   'ASTM D784   <0.2	There is no indication of any contamination in the oil.		1-1-					
Giycol   WC Method   NEG   NEG   NEG   NEG   NEG     Soot %   %   ASTM D784   C   0.2   0.1   0.1     Nitration   Abs/om   'ASTM D784   SO   4.9   4.6   4.3     Sulfation   Abs/om   'ASTM D784   SO   14.3   14.4   13.9     Silt   scalar   'Visual   NONE   NORM				WC Method	>0.1		NEG	
Soot %   %   *ASTM D7844   0.2   0.1   0.1     Nitration   Abs/cm   *ASTM D7624   >20   4.9   4.6   4.3     Sulfation   Abs/tm   *ASTM D7624   >20   14.3   14.4   13.9     Sulfation   Abs/tm   *Visual   NONE   NORM		Glycol		WC Method		NEG		
Nitration   Abs/cm   'ASTM D762   >20   4.9   4.6   4.3     Sulfation   Abs/tm   'ASTM D7415   >30   14.3   14.4   13.9     Silt   scalar   'Visual   NONE   NONE   NONE   NONE   NONE     Debris   scalar   'Visual   NONE   NONE   NONE   NONE   NONE     Sand/Dirt   scalar   'Visual   NORE   NORE   NONE   NONE   NONE     Sand/Dirt   scalar   'Visual   NORE   NORE   NORE   NORE   NORE     Appearance   scalar   'Visual   NORE   NORE   NORE   NORE   NORE     FLUID CONDITION   scalar   'Visual   NORE   NORE<		Soot %	%	*ASTM D7844		0.2	0.1	0.1
Siltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONENONEAppearancescalar*VisualNORUNORUNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORUNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORUNORUNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORUNORUNORMLNORMLNORMLNORMLNORMLEnulsifiedWaterscalar*VisualNORUNORUNORMLNORMLNORMLNORMLNORMLFLUIDCONDITIONSodiumppmASTM D5185m1.0Q		Nitration	Abs/cm	*ASTM D7624	>20	4.9	4.6	4.3
Debrisscalar*VisualNONENONENONENONENONESand/Dirtscalar*VisualNONENONENONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGNEGNEGNEGNEGNEGNEGFLUID CONDITIONSodiumppmASTM D5185m1.0<		Sulfation	Abs/.1mm	*ASTM D7415	>30	14.3	14.4	13.9
Sand/Dirtscalar*VisualNONENONENONENONENONEAppearancescalar*VisualNORMNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMNORMLNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visualscalar*VisualscalarNORNORMLNORMLNORMLNORMLFLUID CONDITIONSodiumppmASTM D5185m1.0of<10<1<10BoronppmASTM D5185m1.00<1		Silt	scalar	*Visual	NONE		NONE	NONE
Appearancescalar*VisualNORML<		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Odorscalar*VisualNORML <t< td=""><th>Sand/Dirt</th><td>scalar</td><td>*Visual</td><td>NONE</td><th>NONE</th><td>NONE</td><td>NONE</td></t<>		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Emulsified Waterscalar*Visual>0.1NEGNEGFLUID CONDITIONThe BN result indicates that there is suitable alkalinity remaining in the oil is suitable for further service.SodiumppmASTM D5185m1.0<1		Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
FLUID CONDITIONSodiumppmASTM D5185m0<10The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.BoronppmASTM D5185m1.0<1		Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Boron ppm ASTM D5185m 1.0 <1 <1 <1 <1   Barium ppm ASTM D5185m 1.0 0 34 0   Molybdenum ppm ASTM D5185m 1.0 0 2 0   Manganese ppm ASTM D5185m 1.0 0 <1		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Boron ppm ASTM D5185m 1.0 <1 <1 <1 <1   Barium ppm ASTM D5185m 1.0 0 34 0   Molybdenum ppm ASTM D5185m 1.0 0 2 0   Manganese ppm ASTM D5185m 1.0 0 <1	FI UID CONDITION	Sodium	maa	ASTM D5185m		0	<1	0
BariumppmASTM D5185m1.00340MolybdenumppmASTM D5185m1.0020ManganeseppmASTM D5185m10<1		Boron		ASTM D5185m	1.0	<1	<1	<1
Molybdenum ppm ASTM D5185m 1.0 0 2 0   Manganese ppm ASTM D5185m 1 0 <1		Barium				0		0
Manganese ppm ASTM D5185m 1 0 <1 <1   Magnesium ppm ASTM D5185m 15 903 831 944   Calcium ppm ASTM D5185m 2540 1059 949 1023   Phosphorus ppm ASTM D5185m 1000 1085 934 1068   Zinc ppm ASTM D5185m 1110 1301 1197 1350   Sulfur ppm ASTM D5185m 3700 3413 2921 3018   Oxidation Abs/.1mm *ASTM D7414 >25 8.0 7.9 7.7								
Magnesium ppm ASTM D5185m 15 903 831 944   Calcium ppm ASTM D5185m 2540 1059 949 1023   Phosphorus ppm ASTM D5185m 1000 1085 934 1068   Zinc ppm ASTM D5185m 1110 1301 1197 1350   Sulfur ppm ASTM D5185m 3700 3413 2921 3018   Oxidation Abs/.1mm *ASTM D7414 >25 8.0 7.9 7.7								
Calcium ppm ASTM D5185m 2540 1059 949 1023   Phosphorus ppm ASTM D5185m 1000 1085 934 1068   Zinc ppm ASTM D5185m 1110 1301 1197 1350   Sulfur ppm ASTM D5185m 3700 3413 2921 3018   Oxidation Abs/.1mm *ASTM D7414 >25 8.0 7.9 7.7		0						
Phosphorus   ppm   ASTM D5185m   1000   1085   934   1068     Zinc   ppm   ASTM D5185m   1110   1301   1197   1350     Sulfur   ppm   ASTM D5185m   3700   3413   2921   3018     Oxidation   Abs/.1mm   *ASTM D7414   >25   8.0   7.9   7.7		J J						
Zinc   ppm   ASTM D5185m   1110   1301   1197   1350     Sulfur   ppm   ASTM D5185m   3700   3413   2921   3018     Oxidation   Abs/.1mm   *ASTM D7414   >25   8.0   7.9   7.7								
Sulfur   ppm   ASTM D5185m   3700   3413   2921   3018     Oxidation   Abs/.1mm   *ASTM D7414   >25   8.0   7.9   7.7								
Oxidation   Abs/.1mm   *ASTM D7414   >25   8.0   7.9   7.7								
					-			

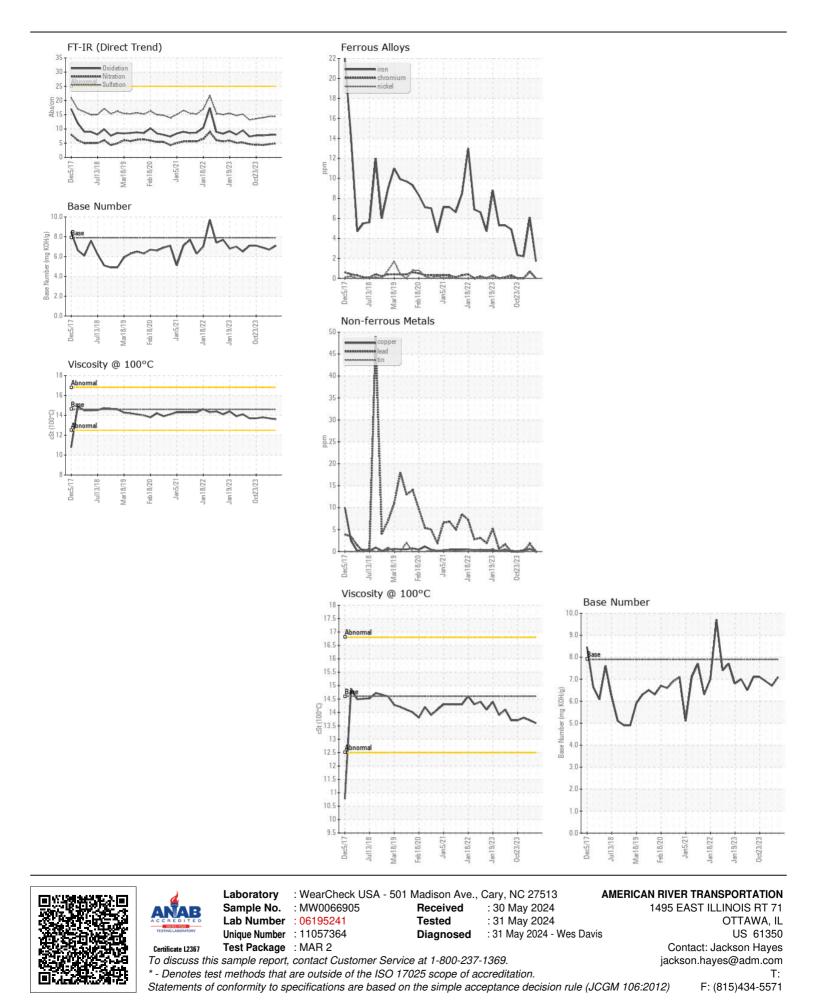
Visc @ 100°C cSt

ASTM D445 14.6

13.7

13.8

13.6



Report Id: AMEOTT [WUSCAR] 06195241 (Generated: 05/31/2024 12:08:35) Rev: 1

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