

Machine Id MISS SHEILA Component Starboard Main Engine Fluid DIESEL ENGINE OIL SAE 15W40 (20 GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

W	FΔ	н

All component wear rates are normal.

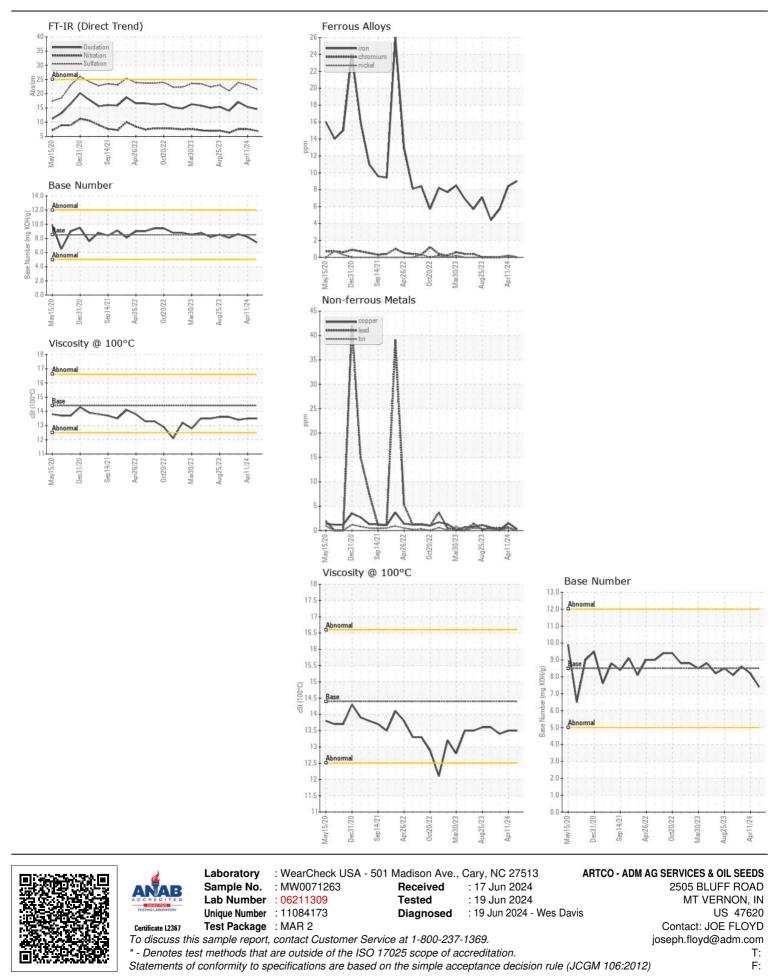
CONTAMINATION

There is no indication of any contamination in the oil.

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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Sample Date Client Info 07 Jun 2024 11 Apr 2024 13 Dec 2023 Machine Age hrs Client Info 22136 30953 28683 Oil Age hrs Client Info 1183 1211 1222 Oil Changed Client Info 1183 1211 1222 Oil Changed Client Info Changed Changed Changed Changed Sample Status Viscal NORMAL NORMAL NORMAL NORMAL Iron ppm ASTM D5165m >2 0 <1 0 Nickel ppm ASTM D5165m >2 0 <1 0 Silver ppm ASTM D5165m >15 2 3 3 1 Copper ppm ASTM D5165m >18 0 <1 2 0 Vanadum ppm ASTM D5165m >14 0 <1 0 <1 0 Vanadum ppm ASTM D5165m >20 <1	Test	UOM	Method	Limit/Abn	Current	History1	History2	
Machine Age hrs Client Info 32136 30953 28683 Oil Age hrs Client Info 1183 1211 1222 Filter Age hrs Client Info Changed Changed Changed Oil Changed Client Info Changed Changed Changed Changed Filter Changed Client Info Changed Changed Changed Changed Sample Status Client Info Changed Changed Changed Changed Iron ppm ASTM D5185m >2 0 <1 0 Nickel ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >15 2 3 3 Lead ppm ASTM D5185m >18 0 <1 0 Vanadium ppm ASTM D5185m >20 <1 0 1 Vellow Metal scalar "Visual NONE NONE NONE	Sample Number		Client Info		MW0071263	MW0048203	MW0048153	
Oil Age hrs Client Info 1183 1211 1222 Filter Age hrs Client Info 1183 1211 1222 Oil Changed Client Info Changed Changed Changed Changed Changed Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL Iron ppm ASTM D5185m >75 9 8 6 Chromium ppm ASTM D5185m >2 0 <1 0 Nickel ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >15 2 3 3 Lead ppm ASTM D5185m >16 0 <1 0 Vanadium ppm ASTM D5185m >80 <1 2 0 Tin ppm ASTM D5185m >20 4 6 5 Vanadium ppm ASTM D5185m >20 <1 0	Sample Date		Client Info		07 Jun 2024	11 Apr 2024	13 Dec 2023	
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Oil Changed Filter Changed Client InfoChanged Changed Changed Changed Changed Changed Changed Changed NORMAL <br< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>1183</th><th>1211</th><th>1222</th></br<>	Oil Age	hrs	Client Info		1183	1211	1222	
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Chromium ppm ASTM DS188m >8 0 <1	Sample Status				NORMAL	NORMAL	NORMAL	
Chromium ppm ASTM DS188m >8 0 <1								
Nickel ppm ASTM D5185m >2 0 <1		ppm			-			
Titanium ppm ASTM D5185m >3 <1		ppm			-			
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >15 2 3 3 Lead ppm ASTM D5185m >18 0 <1		ppm			-			
Aluminum ppm ASTM D5185m >15 2 3 3 Lead ppm ASTM D5185m >18 0 <1 <1 <1 Copper ppm ASTM D5185m >80 <1 2 0 Tin ppm ASTM D5185m >14 0 <1 0 Vanadium ppm ASTM D5185m >14 0 <1 0 Wite Metal scalar *Visual NONE NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE Silicon ppm ASTM D5185m >20 <1 2 <1 Fuel WC Method >4.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.1 NEG NEG NEG Soot % % *ASTM D7844 0.7 0.8 0.6 Nitration Abs/(nm< *ASTM D7624<>20 6		ppm	ASTM D5185m	>3		<1		
Lead ppm ASTM D5185m >18 0 <1		ppm			-			
Copper ppm ASTM D5185m >80 <1		ppm			_			
Tin ppm ASTM D5185m >14 0 <1					-			
Vanadium ppm ASTM D5185m 0 <1		ppm					-	
White Metal scalar *Visual NONE NOR NONE NEG NONE				>14	-	<1		
Yellow Metal scalar *Visual NONE NONE NONE NONE Silicon ppm ASTM D5185m >20 <1 2 <1 Potassium ppm ASTM D5185m >20 <1 2 <1 Fuel WC Method >4.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.1 NEG NEG NEG NEG Glycol WC Method >0.1 NEG NEG NEG NEG Soot % % *ASTM D7844 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 6.9 7.5 7.5 Sulfation Abs/cm *ASTM D7644 >00 PONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NORML		ppm			-		-	
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Sodium ppm ASTM D5185m >158 1 <1								
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Barium ppm ASTM D5185m 10 0 <1	Sodium	ppm	ASTM D5185m	>158	1	<1	<1	
Barium ppm ASTM D5185m 10 0 <1	Boron		ASTM D5185m	250	342	411	313	
Manganese ppm ASTM D5185m 0 <1	Barium		ASTM D5185m	10	0	<1	0	
Manganese ppm ASTM D5185m 0 <1	Molybdenum	ppm	ASTM D5185m	100	99	142	130	
Calcium ppm ASTM D5185m 3000 1900 1632 1543 Phosphorus ppm ASTM D5185m 1150 1126 863 755 Zinc ppm ASTM D5185m 1350 1398 924 858 Sulfur ppm ASTM D5185m 4250 4305 2989 2464 Oxidation Abs/.1mm *ASTM D7144 >25 14.6 15.3 17.0 Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Manganese		ASTM D5185m		0	<1	<1	
Phosphorus ppm ASTM D5185m 1150 1126 863 755 Zinc ppm ASTM D5185m 1350 1398 924 858 Sulfur ppm ASTM D5185m 4250 4305 2989 2464 Oxidation Abs.1mm *ASTM D7414 >25 14.6 15.3 17.0 Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Magnesium	ppm	ASTM D5185m	450	543	678	689	
Zinc ppm ASTM D5185m 1350 1398 924 858 Sulfur ppm ASTM D5185m 4250 4305 2989 2464 Oxidation Abs.1mm *ASTM D7414 >25 14.6 15.3 17.0 Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Calcium		ASTM D5185m	3000	1900	1632	1543	
Zinc ppm ASTM D5185m 1350 1398 924 858 Sulfur ppm ASTM D5185m 4250 4305 2989 2464 Oxidation Abs/.1mm *ASTM D7414 >25 14.6 15.3 17.0 Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Phosphorus	ppm	ASTM D5185m	1150	1126	863	755	
Oxidation Abs/.1mm *ASTM D7414 >25 14.6 15.3 17.0 Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Zinc	ppm	ASTM D5185m	1350		924	858	
Base Number (BN) mg KOH/g ASTM D2896 8.5 7.4 8.2 8.6	Sulfur	ppm	ASTM D5185m	4250	4305	2989	2464	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.6	15.3	17.0	
Visc @ 100°C cSt ASTM D445 14.4 (13.5) 13.5 13.4	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	7.4	8.2	8.6	
	Visc @ 100°C	cSt	ASTM D445	14.4	13.5	13.5	13.4	



Contact/Location: JOE FLOYD - ARTMTV Page 2 of 2