WEAR CONTAMINATION **FLUID CONDITION** **NORMAL NORMAL** NORMAL

Machine Id

CUMMINS 8.3

Starboard Diesel Engine

Test	DIESEL ENGINE OIL SAE 40 (GAL)							
No corrective action is recommended at this time. Resample at the next service interval to monitor. Sample Number Sample Date Client Into 1283 10 10 10 10 10 10 10 1	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
Name		Sample Number		Client Info		VPA058656		
Machine Age hrs Citent Info 10	·	Sample Date		Client Info		23 Apr 2024		
Filter Age		Machine Age	hrs	Client Info		1263		
Oil Changed Client Info Not Changed Sample Status Client Info Not Changed Sample Status Client Info Not Changed Sample Status Samp		Oil Age	hrs	Client Info		10		
Filter Changed Sample Status		Filter Age	hrs	Client Info		0		
Normat Norm		Oil Changed		Client Info		Not Changd		
Iron		Filter Changed		Client Info		Not Changd		
All component wear rates are normal. Chromium Spin. ASTM D6185m \$20 0 Titanium Spin. ASTM D6185m \$20 0 Titanium Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D		Sample Status				NORMAL		
All component wear rates are normal. Chromium Spin. ASTM D6185m \$20 0 Titanium Spin. ASTM D6185m \$20 0 Titanium Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 All component wear rates are normal. Silver Spin. ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D6185m \$20 0 ASTM D	WEAR	Iron	ppm	ASTM D5185m	>90	23		
Nickel ppm ASTM DSISSim >2 0 .								
Titanium ppm ASTM D8185m >2 0	All component wear rates are normal.							
Silver								
Aluminum ppm ASTM D5185m >20 2								
Lead								
Copper								
Tin								
Vanadium Vanadium								
White Metal Scalar *Visual NONE NO						-		
Vellow Metal Scalar Visual NONE NONE CONTAMINATION Potassium ppm ASTM D5185m >25 5 Potassium ppm ASTM D5185m >20 2 Visual NONE NONE					NONE			
Potassium ppm ASTM D5185m >20 2						_		
Potassium ppm ASTM D5185m >20 2	CONTAMINATION	Ciliaan		ACTM DE10E	05			
Fuel WC Method So.0 C1.0 So.0 C3.0 C4.0 So.0 So.0 C4.0 So.0 So.0 C4.0 So.0 So.0 So.0 C4.0 So.0 So.0 So.0 So.0 C4.0 So.0 So.0 So.0 So.0 C4.0 So.0 So.0 So.0 So.0 So.0 C4.0 So.0 So	CONTAMINATION							
Water WC Method Victor	There is no indication of any contamination in the oil.		ppm					
Glycol								
Soot %					>0.2			
Nitration Abs/cm *ASTM D7624 >20 7.8 Sulfation Abs/.tmm *ASTM D7415 >30 23.3 Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML NORML NORML Appearance scalar *Visual NORML			0/		0			
Sulfation Abs/.tim *ASTM D7145 >30 23.3								
Silt Scalar *Visual NONE NORML								
Debris Scalar *Visual NONE NORML								
Sand/Dirt Scalar *Visual NONE NORML NORML								
Appearance Scalar *Visual NORML NORML NORML Codor Scalar *Visual NORML N								
Codor Emulsified Water Scalar *Visual NORML NORML								
Emulsified Water scalar *Visual >0.2 NEG								
Sodium ppm ASTM D5185m >216 <1 Boron ppm ASTM D5185m 250 360 Barium ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 10 0 Manganese ppm ASTM D5185m 100 117 Manganese ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOHg ASTM D2896 8.5 8.2								
Boron ppm ASTM D5185m 250 360 Barium ppm ASTM D5185m 10 0 0 Molybdenum ppm ASTM D5185m 100 117 Magnesium ppm ASTM D5185m 100 117 Magnesium ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Sulfur ppm ASTM D5185m 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2			Scalal	VISUAI	>0.2			
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service. Barium ppm ASTM D5185m 10 117 Molybdenum ppm ASTM D5185m 100 117 Manganese ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2	FLUID CONDITION		ppm					
oil. The condition of the oil is suitable for further service. Molybdenum ppm ASTM D5185m 100 117 Manganese ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2	The BN result indicates that there is suitable alkalinity remaining in the							
Molybdenum ppm ASIM D5185m 100 117 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2								
Magnesium ppm ASTM D5185m 450 637 Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2			ppm		100			
Calcium ppm ASTM D5185m 3000 1936 Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2								
Phosphorus ppm ASTM D5185m 1150 1036 Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2		•						
Zinc ppm ASTM D5185m 1350 1289 Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2			ppm					
Sulfur ppm ASTM D5185m 4250 4036 Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2			ppm					
Oxidation Abs/.1mm *ASTM D7414 >25 17.6 Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2								
Base Number (BN) mg KOH/g ASTM D2896 8.5 8.2			ppm					
Visc @ 100°C cSt ASTM D445 14.4 \ 14.1 \								
VISC & 100 0 000 70111 Detail 14.1		Visc @ 100°C	cSt	ASTM D445	14.4	14.1		







Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06158671

: VPA058656

Received **Tested** Unique Number : 10994094

Diagnosed

: 24 Apr 2024 : 25 Apr 2024

: 25 Apr 2024 - Sean Felton

BILL VANDIVER 490 LOCKSLEY DR PANAMA CITY BEACH, FL US 32407

Contact: BILL VANDIVER

T: (850)625-8004

Test Package : MOB 1 (Additional Tests: TBN) Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)