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

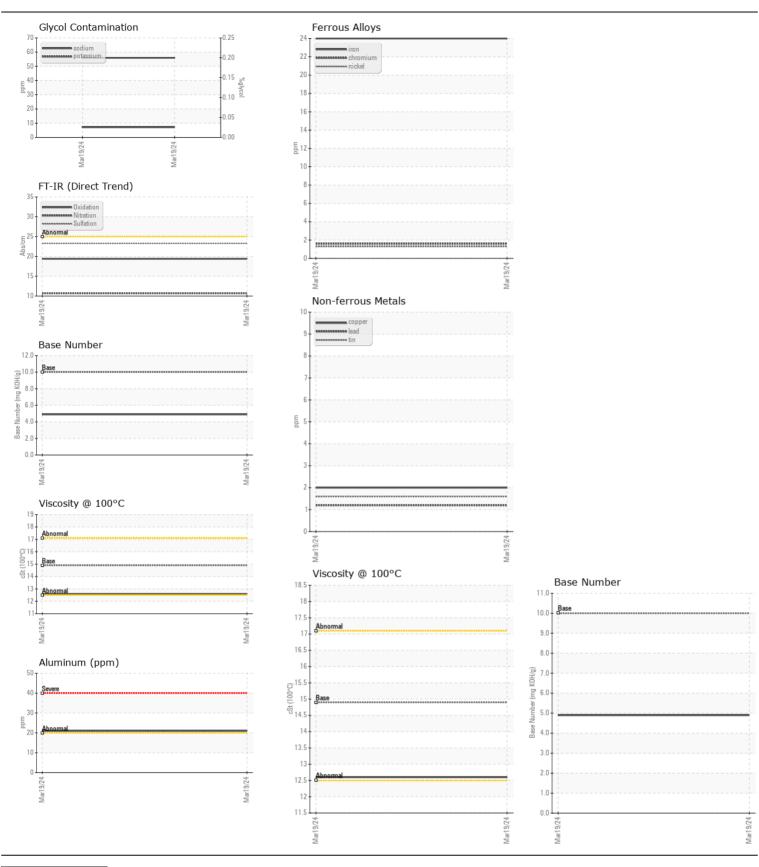
Machine Id

WESTERN STAR M152

Diesel Engine

SHELL Rotella T5 15W-40 (7 GAL)

Sample Number Client Info PE0003333		Limit/Abn	Method	UOM	Test	ECOMMENDATION
All component wear rates are normal. All component wear rates are normal. All component wear rates are normal. Iron ppm ASTM D5185m >20 2	PE0003333		Client Info		Sample Number	Nil and filter about a state time of complian has been pated. Decomple
Machine Age hrs Client Info 545 Filter Age hrs Client Info 545 Filter Age hrs Client Info 545 Filter Age hrs Client Info 545 Client Info Changed Client Info Changed Filter Changed Filter Changed Filter Changed Filter Changed Filter Changed Filter Changed Filter Changed Filter Changed Filter Changed	19 Mar 2024		Client Info		Sample Date	
Filter Age	2740		Client Info	hrs	Machine Age	the next service interval to mornior.
Component wear rates are normal. Iron	545		Client Info	hrs	Oil Age	
Filter Changed Sample Status Client Info Changed NORMAL	545		Client Info	hrs	Filter Age	
VEAR	Changed		Client Info		Oil Changed	
Iron	Changed		Client Info		Filter Changed	
All component wear rates are normal. Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >4 1 Titanium ppm ASTM D5185m >3 <1 Aluminum ppm ASTM D5185m >20 21 Aluminum ppm ASTM D5185m >20 21 Lead ppm ASTM D5185m >20 21 Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >20 56 Valued NONE NONE Valued N	NORMAL				Sample Status	
All component wear rates are normal. Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >4 1 Titanium ppm ASTM D5185m >3 <1 Aluminum ppm ASTM D5185m >20 21 Aluminum ppm ASTM D5185m >20 21 Lead ppm ASTM D5185m >20 21 Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >40 1 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >20 56 Valued NONE NONE Valued N	100	400	AOTM DEADE		la a a	/EAD
All component wear rates are normal. Nickel ppm ASTM D5185m >4 1 Titanium ppm ASTM D5185m >3 <1 Aluminum ppm ASTM D5185m >20 21 Aluminum ppm ASTM D5185m >20 21 Lead ppm ASTM D5185m >40 1 Copper ppm ASTM D5185m >330 2 Tin ppm ASTM D5185m >15 2 Tin ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >15 2 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE Yellow Metal scala						/EAR
Nicket ppm ASTM D5185m <1 Silver ppm ASTM D5185m >3 <1 Aluminum ppm ASTM D5185m >3 <1 Aluminum ppm ASTM D5185m >20 21 Aluminum ppm ASTM D5185m >30 2 Copper ppm ASTM D5185m >330 2 Tin ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m <1 Vanadium ppm ASTM D5185m <1 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m >20 56 Vanadium ppm ASTM D5185m >25 6 Vanadium ppm ASTM D5185m >20 56 Vanadiu						Il component wear rates are normal.
Silver		>4				'
Aluminum ppm ASTM D5185m >20 21						
Lead						
Copper						
Tin						
Vanadium ppm ASTM D5185m < 1 White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE						
White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE		>15				
Yellow Metal scalar *Visual NONE NONE CONTAMINATION Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Silicon ppm ASTM D5185m >25 6 Potassium ppm ASTM D5185m >20 56 Fuel WC Method >5 <1.0 Water WC Method >0.2 NEG Glycol WC Method NEG Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7824 >20 10.7 Sulfation Abs/.1mm *ASTM D7415 >30 23.3						
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Silicon ppm ASTM D5185m >25 6 Potassium ppm ASTM D5185m >20 56 Fuel WC Method >5 <1.0 Water WC Method >0.2 NEG Glycol WC Method >0.2 NEG Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7844 >3 0.5 Sulfation Abs/cm *ASTM D7844 >3 0.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.3						
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Potassium ppm ASTM D5185m >20 56 Fuel WC Method >5 <1.0 Water WC Method >0.2 NEG Glycol WC Method NEG Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 10.7 Sulfation Abs/.1mm *ASTM D7415 >30 23.3	NONE NONE	NONE	*Visual	scalar	Yellow Metal	
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Potassium ppm ASTM D5185m >20 56 Fuel WC Method >5 <1.0 Water WC Method >0.2 NEG Glycol WC Method NEG Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 10.7 Sulfation Abs/.1mm *ASTM D7415 >30 23.3	25 6	- 25	ACTM DE10Em	nnm	Cilicon	ONTAMINATION
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Fuel WC Method >5						ONTAMINATION
your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil. Water WC Method >0.2 NEG Sold WC Method NEG Nitration Abs/cm *ASTM D7844 >3 0.5 Sulfation Abs/cm *ASTM D7844 >20 10.7 Sulfation Abs/cm *ASTM D7415 >30 23.3				ppiii		levated aluminum (AI) and/or lead (Pb) and potassium (K) levels in
Contaminants were detected in the oil. Glycol WC Method NEG Soot % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 10.7 Sulfation Abs/.1mm *ASTM D7415 >30 23.3						our metals analysis are likely a result of solder flux release into the
Soot %		>0.2				
Nitration Abs/cm *ASTM D7624 >20 10.7 Sulfation Abs/.1mm *ASTM D7415 >30 23.3		. 2		0/		ontaminants were detected in the oil.
Sulfation Abs/.1mm *ASTM D7415 >30 23.3						
		NONE	*Visual	scalar	Silt	
Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE						
Appearancescalar*VisualNORMLOdorscalar*VisualNORMLNORML						
Emulsified Water scalar *Visual >0.2 NEG						
Liliusilieu Water Scalar Visual >0.2 NEG		>0.2	Visuai	Scalai	Liliuisilleu watei	<u> </u>
FLUID CONDITION Sodium ppm ASTM D5185m 7	7		ASTM D5185m	ppm	Sodium	LUID CONDITION
Boron ppm ASTM D5185m 32	32					
The BN result indicates that there is suitable alkalinity remaining in the	<1		ASTM D5185m		Barium	
oil. The condition of the oil is acceptable for the time in service. Molybdenum ppm ASTM D5185m 86						ii. The condition of the oil is acceptable for the time in service.
Manganese ppm ASTM D5185m 2						
Magnesium ppm ASTM D5185m 20			ASTM D5185m		-	
Calcium ppm ASTM D5185m 2190					Calcium	
Phosphorus ppm ASTM D5185m 1112	1112		ASTM D5185m			
Zinc ppm ASTM D5185m 1202					Zinc	
Sulfur ppm ASTM D5185m 4309						
Oxidation		>25				
Base Number (BN) mg KOH/g ASTM D2896 10 4.9						
Visc @ 100°C cSt ASTM D445 14.9 12.6				0 0	(,	
					<u> </u>	





Certificate L2367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : PE0003333 Lab Number : 06152517

Unique Number: 10982595

Received : 17 Apr 2024 **Tested**

: 18 Apr 2024 Diagnosed

: 22 Apr 2024 - Don Baldridge

Test Package : CONST (Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN) To discuss this sample report, contact Customer Service at 1-800-237-1369.

110 Commerce St Aberdeen, WA US 98520 Contact: Sean McNealley smcnealley@petrocard.com

PetroCard - Aberdeen

* - 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)

T: F: