

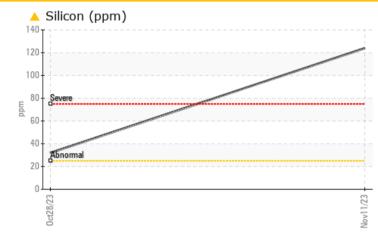
PROBLEM SUMMARY

WESTERN STAR WESTERN STAR Component

Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

PROBLEMATIC T	EST RE	SULTS				
Sample Status				ABNORMAL	ABNORMAL	
Silicon	ppm	ASTM D5185m	>25	<u> </u>	<u> </u>	

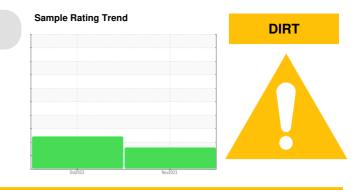
Customer Id: SHOQUI Sample No.: WC0838326 Lab Number: 06028314 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 <u>jhester@wearcheckusa.com</u>

To change component or sample information: Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>



RECOMMENDED ACTIONS					
Action	Status	Date	Done By	Description	
Change Fluid			?	Oil and filter change at the time of sampling has been noted.	
Change Filter			?	Oil and filter change at the time of sampling has been noted.	
Resample			?	We recommend an early resample to monitor this condition.	

HISTORICAL DIAGNOSIS





28 Oct 2023 Diag: Don Baldridge

We advise that you check the fuel injection system. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. Elemental level of silicon (Si) above normal. There is a moderate amount of fuel present in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil.





OIL ANALYSIS REPORT

WESTERN STAR WESTERN STAR

Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

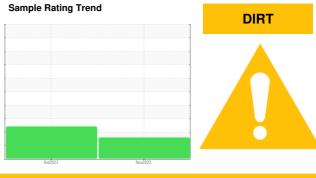
All component wear rates are normal.

Contamination

Elemental level of silicon (Si) above normal indicating ingress of seal material.

Fluid Condition

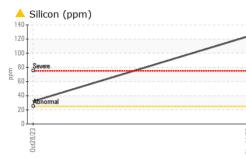
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

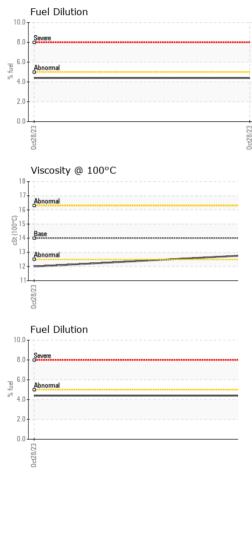


SAMPLE INFORM		method	limit/base	current	history1	history2
			IIIII/Dasc			
Sample Number		Client Info		WC0838326	WC0838329	
Sample Date		Client Info		11 Nov 2023	28 Oct 2023	
Machine Age	mls	Client Info		767492	764000	
Oil Age	mls	Client Info		0	0	
Oil Changed		Client Info		Changed	N/A	
Sample Status				ABNORMAL	ABNORMAL	
CONTAMINATION	N	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	9	35	
Chromium	ppm	ASTM D5185m	>20	<1	2	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		<1	<1	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	3	2	
Lead	ppm	ASTM D5185m	>40	0	2	
Copper	ppm	ASTM D5185m		<1	2	
Tin	ppm	ASTM D5185m	>15	<1	4	
Vanadium	ppm	ASTM D5185m	>15	0	0	
Cadmium		ASTM D5185m		0	0	
	ppm			0	0	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	138	43	
Barium	0.00	ACTM DE10Em	0	~	0	
Banam	ppm	ASTM D5185m	0	6	0	
	ppm	ASTM D5185m	0	6 129	0 40	
Molybdenum				-		
Molybdenum Manganese	ppm	ASTM D5185m		129	40	
Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m	0	129 0	40 1	
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	129 0 652	40 1 524	
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0	129 0 652 1259	40 1 524 1651	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0	129 0 652 1259 718	40 1 524 1651 771	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0	129 0 652 1259 718 839	40 1 524 1651 771 949	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 Iiiiii/base	129 0 652 1259 718 839 3494	40 1 524 1651 771 949 2501	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 Iiiiii/base	129 0 652 1259 718 839 3494 current	40 1 524 1651 771 949 2501 history1	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 Iiiiii/base	129 0 652 1259 718 839 3494 <u>current</u> ▲ 124	40 1 524 1651 771 949 2501 history1 ▲ 32	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 limit/base >25	129 0 652 1259 718 839 3494 <u>current</u> ▲ 124 <1	40 1 524 1651 771 949 2501 history1 ▲ 32 2	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sidium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 limit/base >25 >20	129 0 652 1259 718 839 3494 <u>current</u> ▲ 124 <1 2	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D3524	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	129 0 652 1259 718 839 3494 current 124 <1 2 <1 2 <1.0 <1.0	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D3524 method	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	129 0 652 1259 718 839 3494	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1 1.4	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	129 0 652 1259 718 839 3494 current 124 <1 2 <1.0 current 0.6 7.6	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1 1.4 7.2	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D584 *ASTM D7844 *ASTM D7624	0 0 1 2 25 20 20 25 1 imit/base 23 220 230	129 0 652 1259 718 839 3494	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1 1.4 7.2 24.2	 history2 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 ASTM D3524 ASTM D78444 *ASTM D7624 *ASTM D7615	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	129 0 652 1259 718 839 3494	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1 1.4 7.2 24.2 history1	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D584 *ASTM D7844 *ASTM D7624	0 0 1 2 25 20 20 25 1 1imit/base 20 30 20 30 1 1imit/base 25	129 0 652 1259 718 839 3494	40 1 524 1651 771 949 2501 history1 ▲ 32 2 <1 ▲ 4.4 history1 1.4 7.2 24.2	 history2 history2 history2



OIL ANALYSIS REPORT





VISUAL method limit/base current history1 h White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Odor scalar *Visual NORML NORML NORML	history2
Yellow Metal scalar *Visual NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML	
Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML	
Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML	
Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML	
Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML	
Appearance scalar *Visual NORML NORML NORML	
Appearance scalar *Visual NORML NORML NORML	
Odor scalar *Visual NORMI NORMI NORMI	
Emulsified Water scalar *Visual >0.2 NEG NEG	
Free Water scalar *Visual NEG NEG	
	nistory2
Visc @ 100°C cSt ASTM D445 14 12.8 12.0	115101 y Z
GRAPHS	
Ferrous Alloys	
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5	
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copper	
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Viscosity @ 100°C Base Number	
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Abnormal	
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3 Abnormal	
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12	
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atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 SHORTCUT TRUCK	ING LL
atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 e No. : WC0838326 Received : 07 Dec 2023 SHORTCUT TRUCK 192 CASTLEWOOD ESTA	ING LL ATES RI
atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 e No. : WC0838326 Received : 07 Dec 2023 SHORTCUT TRUCK umber : 06028314 Diagnosed : 11 Dec 2023 QUIT	ATES RI MAN, L
atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 e No. : WC0838326 mmber : 06028314 Number : 10778105 Diagnostician : Jonathan Hester U	ATES R MAN, L S 7126
atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 e No. : WC0838326 Received : 07 Dec 2023 SHORTCUT TRUCK umber : 06028314 Diagnosed : 11 Dec 2023 QUIT	ATES RI MAN, L S 7126 Freadwa

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 accentance decision rules.

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Certificate L2367