# **PROBLEM SUMMARY**



Machine Id DR-101 Component Diesel Engine Fluid MOBIL 15W40 (--- GAL)

## COMPONENT CONDITION SUMMARY



#### RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status			ATTENTION ATTENTION NORMAL					
Visc @ 100°C	cSt	ASTM D445		<u> </u>	<u> </u>	12.7		

Customer Id: ECPROA Sample No.: WC0705197 Lab Number: 05900981 Test Package: FLEET



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*To discuss the diagnosis or test data:* Don Baldridge +1 <u>don.b505@comcast.net</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.		

HISTORICAL DIAGNOSIS



### 14 Feb 2023 Diag: Don Baldridge

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. Fuel content negligible. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



view report

#### 02 Mar 2021 Diag: Jonathan Hester



 $\checkmark$ 

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

#### 18 Dec 2019 Diag: Don Baldridge





Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.







## **OIL ANALYSIS REPORT**

Sample Rating Trend



un2003 Dec2019 Mar2021 Eeb2023 Mar202

SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0705197	WC0705174	WC0534243
Sample Date		Client Info		26 May 2023	14 Feb 2023	02 Mar 2021
Machine Age	hrs	Client Info		1833	1627	1154
Oil Age	hrs	Client Info		250	500	250
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	ATTENTION	NORMAL
CONTAMINATIO	N	method	limit/base	current	historv1	historv2
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	historv1	historv2
Iron	nnm	ASTM D5185m	>100	15	14	8
Chromium	nnm	ASTM D5185m	>20	~1	1	<1
Nickel	nnm	ASTM D5185m	~4	0	0	<1
Titanium	nnm	ASTM D5185m		-1	0	<1
Silver	nnm	ASTM D5185m	>3	0	0	0
Aluminum	nnm	ASTM D5185m	>20	3	2	2
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	1	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Antimony	ppm	ASTM D5185m	- 10			0
Vanadium	nnm	ASTM D5185m		-1	0	0
Cadmium	mag	ASTM D5185m		0	0	0
		mothod	limit/bass	ourropt	history	biotony2
ADDITES						
-				current	Thistory I	
Boron	ppm	ASTM D5185m		10	11	101
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m		10 0	11 0	101 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		10 0 65	11 0 59	101 0 50
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		10 0 65 <1	11 0 59 0	101 0 50 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		10 0 65 <1 974	11 0 59 0 814	101 0 50 <1 511
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		10 0 65 <1 974 1285	11 0 59 0 814 1186	101 0 50 <1 511 1814
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		10 0 65 <1 974 1285 1071	11 0 59 0 814 1186 1018	101 0 50 <1 511 1814 989
Boron Barium 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 ASTM D5185m ASTM D5185m		10 0 65 <1 974 1285 1071 1306	11 0 59 0 814 1186 1018 1200	101 0 50 <1 511 1814 989 1142
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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		10 0 65 <1 974 1285 1071 1306 3860	11 0 59 0 814 1186 1018 1200 3233	101 0 50 <1 511 1814 989 1142 2787
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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 D5185m	limit/base	10 0 65 <1 974 1285 1071 1306 3860 current	11 0 59 0 814 1186 1018 1200 3233 history1	101 0 50 <1 511 1814 989 1142 2787 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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 <b>method</b> ASTM D5185m	limit/base	10 0 65 <1 974 1285 1071 1306 3860 current 3	11 0 59 0 814 1186 1018 1200 3233 history1 4	101 0 50 <1 511 1814 989 1142 2787 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25 >118	10   0   65   <1   974   1285   1071   1306   3860   current   3   2	11 0 59 0 814 1186 1018 1200 3233 history1 4 0	101 0 50 <1 511 1814 989 1142 2787 history2 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >118 >20	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   2	11 0 59 0 814 1186 1018 1200 3233 history1 4 0 5	101 0 50 <1 511 1814 989 1142 2787 history2 3 2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >118 >20 >5	10 0 65 <1 974 1285 1071 1306 3860 current 3 2 2 2 0.3	11 0 59 0 814 1186 1018 1200 3233 history1 4 0 5 1.0	101 0 50 <1 511 1814 989 1142 2787 history2 3 2 6 <
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5284	limit/base >25 >118 >20 >5 limit/base	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current	11 0 59 0 814 1186 1018 1200 3233 history1 4 0 5 1.0 history1	101 0 50 <1 511 1814 989 1142 2787 history2 3 2 6 <1.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D51854	limit/base >25 >118 >20 >5 limit/base >3	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current   0.2	11 0 59 0 814 1186 1018 1200 3233 history1 4 0 5 1.0 history1 0.3	101   0   50   <1
Boron Barium 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 D5185m	limit/base >25 >118 >20 >5 limit/base >3 >20	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current   0.2   7.8	11 0 59 0 814 1186 1018 1200 3233 history1 4 0 5 1.0 5 1.0 history1 0.3 7.5	101   0   50   <1
Boron Barium 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 ppm	ASTM D5185m ASTM D5185m	limit/base >25 >118 >20 >5 limit/base >3 >20 >30	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current   0.2   7.8   19.9	11   0   59   0   814   1186   1018   1200   3233   history1   4   0   5   1.0   history1   0.3   7.5   19.0	101   0   50   <1   511   1814   989   1142   2787   history2   3   2   6   <1.0   history2   0.2   6.5   21.4
Boron Barium 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 ppm	ASTM D5185m ASTM D5185m	limit/base >25 >118 >20 >5 limit/base >3 >20 >30 limit/base	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current   0.2   7.8   19.9   current	11   0   59   0   814   1186   1018   1200   3233   history1   4   0   5   1.0   history1   0.3   7.5   19.0   history1	101   0   50   <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m   *ASTM D7844   *ASTM D7415   method   *ASTM D7414	limit/base >25 >118 >20 >5 limit/base >3 >20 >30 limit/base >25	10   0   65   <1   974   1285   1071   1306   3860   current   3   2   0.3   current   0.2   7.8   19.9   current   15.6	11   0   59   0   814   1186   1018   1200   3233   history1   4   0   5   1.0   history1   0.3   7.5   19.0   history1   14.0	101   0   50   <1

Machine Id DR-101 Component Diesel Engine Fluid MOBIL 15W40 (--- GAL)

#### DIAGNOSIS

#### A Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

#### Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



# **OIL ANALYSIS REPORT**





		VISUAL		method	limit/base	current	nistory i	nistory2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
May26/23	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPER	TIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		<b>11.3</b>	▲ 10.8	12.7
		GRAPHS						
		Ferrous Alloys						
		iron		1				
		25- mickel						
		20						
		<u>ة</u> 15						
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			-	æ	Ma			
21	- 23		IIS					
Mar2	Feb 14,	8 - copper lead						
		6-						
		y						
			5/21	/23	123			
		Jun19 Dec18	Mar2	Feb14	May26			
		▲ Viscosity @ 100°	С		-	Baso Numbor	-	
		<sup>18</sup>		 I I	10.			
		Abnormal			- 8.	0		
		15			B/HO)			
		014			B 6.	0-		
		ಕ್ಷ <sup>13</sup> Abnormal			uper 4	0		
		12			Se Nu			
		11			<sup>20</sup> 2.	0-		
		9				0		
		9/03	2/21-	ł/23 -	3/23	3/03	2/21-	4/23 -
		Jun1: Dec18	Mar	Feb14	May2I	Jun1: Dec18	Mar	Feb1 <sup>4</sup> May26
	Laboratorv	: WearCheck USA -	501 Madi	son Ave Ca	ary, NC 2751:	3	F	E.C. PACE CO.
	Sample No.	: WC0705197	Receive	d :18	Jul 2023		1811	HOLLINS RD.
C C R E D I T E D	Lab Number	: 05900981	Diagnos	ed : 19	Jul 2023		I	ROANOKE, VA
TESTING LABORATORY	Unique Number	: 10562337	Diagnos	tician : Doi	n Baldridge		<b>A</b> • • •	US 24012
Certificate L2367	Iest Package	: FLEET (Additional	I ests: Fu	LeiDilution, P	ercent⊢uel, F a	PriCount )	Contact	ECPACE COM
- Denotes te	st methods that a	are outside of the ISO	17025 sci	one of accred	J. ditation		L3L00@	(276)266-5849
tatements of	conformity to spec	cifications are based on	the simple	acceptance	decision rule (	JCGM 106:2012	?) F:	(540)343-6909

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Contact/Location: EDDIE SECO - ECPROA