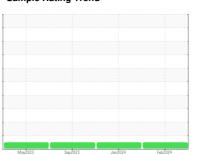


## **OIL ANALYSIS REPORT**

## **Sample Rating Trend**









# MACK 129059-SW8904

Component

Diesel Engine

**MOBIL DELVAC ELITE 15W40 (--- GAL)** 

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil

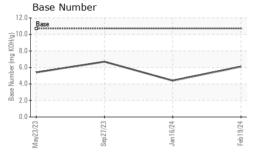
## **Fluid Condition**

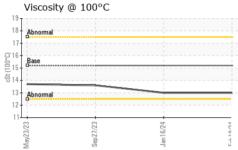
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sample Number   Client Info   GFL0111276   GFL0095473   GFL0095445   Sample Date   Client Info   19 Feb 2024   16 Jan 2024   27 Sep 2023   16 Jan 2024   17 Sep 2023   17 Jan 2024   18 Jan 2024   1	15W40 ( GAI	L)	May202	3 Sep2023	Jan 2024 Fr	b2024	
Sample Date	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age   hrs	Sample Number		Client Info		GFL0111276	GFL0095473	GFL0095443
Oil Age	Sample Date		Client Info		19 Feb 2024	16 Jan 2024	27 Sep 2023
Contained   Client Info   Changed   NoRMAL   N	Machine Age	hrs	Client Info		10438	10224	9613
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2   water   WC Method   >3.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0   <1.0	Oil Age	hrs	Client Info		0	500	500
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imitibase         Current         history1         history2           WEAR METALS         method         limitibase         current         history1         history2           Iron         ppm         ASTM D5185m         >120         2         4         <1	CONTAMINAT	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	2	4	<1
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>5	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper         ppm         ASTM D5185m         >330         <1         <1         0           Tin         ppm         ASTM D5185m         >15         0         <1	Aluminum	ppm	ASTM D5185m	>20	3	3	3
Tin	Lead	ppm	ASTM D5185m	>40	0	0	<1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         105         56         108           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         120         125         114           Manganese         ppm         ASTM D5185m         0         0         <1           Magnesium         ppm         ASTM D5185m         670         620         628           Calcium         ppm         ASTM D5185m         1249         1157         1161           Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         25         4         4         4           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>330	<1	<1	0
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         105         56         108           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         120         125         114           Manganese         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         120         125         114           Manganese         ppm         ASTM D5185m         0         0         <1           Magnesium         ppm         ASTM D5185m         670         620         628           Calcium         ppm         ASTM D5185m         1249         1157         1161           Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/:nm	Boron	ppm	ASTM D5185m		105	56	108
Manganese         ppm         ASTM D5185m         0         <1           Magnesium         ppm         ASTM D5185m         670         620         628           Calcium         ppm         ASTM D5185m         1249         1157         1161           Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         5         3           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/am	Barium	ppm	ASTM D5185m		0	0	0
Magnesium         ppm         ASTM D5185m         670         620         628           Calcium         ppm         ASTM D5185m         1249         1157         1161           Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         25         4         4         4           Sodium         ppm         ASTM D5185m         20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7	Molybdenum	ppm	ASTM D5185m		120	125	114
Calcium         ppm         ASTM D5185m         1249         1157         1161           Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         25         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7      <	Manganese	ppm	ASTM D5185m		0	0	<1
Phosphorus         ppm         ASTM D5185m         717         668         685           Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1	Magnesium	ppm	ASTM D5185m		670	620	628
Zinc         ppm         ASTM D5185m         820         786         833           Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0	Calcium	ppm	ASTM D5185m		1249	1157	1161
Sulfur         ppm         ASTM D5185m         3186         3095         3160           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Phosphorus	ppm	ASTM D5185m		717	668	685
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Zinc	ppm	ASTM D5185m		820	786	833
Silicon         ppm         ASTM D5185m         >25         4         4         4         4           Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Sulfur	ppm	ASTM D5185m		3186	3095	3160
Sodium         ppm         ASTM D5185m         2         0         2           Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         5         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Silicon	ppm	ASTM D5185m	>25	4	4	4
INFRA-RED	Sodium	ppm	ASTM D5185m		2	0	2
Soot %         *ASTM D7844         >4         0.1         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Potassium	ppm	ASTM D5185m	>20	2	5	3
Nitration         Abs/cm         *ASTM D7624         >20         8.8         10.2         8.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.9         20.1         17.7           FLUID DEGRADATION method limit/base current         bistory1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.0         17.7         14.2	Soot %	%	*ASTM D7844	>4	0.1	0.2	0.1
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 15.0 17.7 14.2	Nitration	Abs/cm	*ASTM D7624	>20	8.8	10.2	8.0
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.0</b> 17.7 14.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9	20.1	17.7
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN)   mg KOH/g   ASTM D2896   10.7   6.1   4.4   6.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.0	17.7	14.2
	Base Number (BN)	mg KOH/g	ASTM D2896	10.7	6.1	4.4	6.7



## **OIL ANALYSIS REPORT**

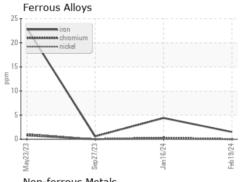


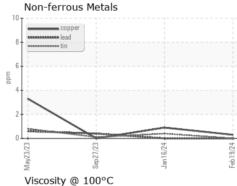


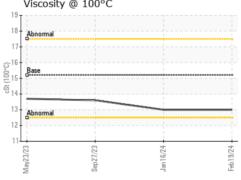
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

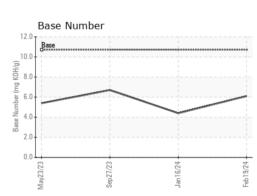
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.2	13.0	13.0	13.6	

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

: GFL0111276 Lab Number : 06101350 Unique Number : 10899580 Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 27 Feb 2024 **Tested** : 28 Feb 2024

Diagnosed : 28 Feb 2024 - Don Baldridge

GFL Environmental - 981 - Port Arthur Hauling

1000 S Business Park Dr Port Arthur, TX

US 77640 Contact: MICHAEL KAY

mkay@gflenv.com T: (336)660-9331

\* - 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)

Report Id: GFL981 [WUSCAR] 06101350 (Generated: 02/28/2024 17:11:41) Rev: 1

Submitted By: MICHAEL KAY