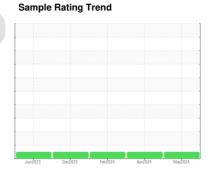


# **OIL ANALYSIS REPORT**



Machine Id **MACK 413064** Diesel Engine MOBIL DELVAC ELITE 15W40 (--- GAL)





## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

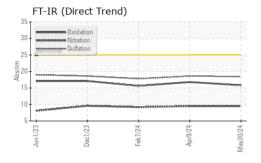
## **Fluid Condition**

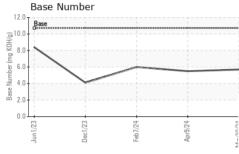
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

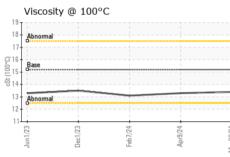
Sample Date	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         4109         3726         3262           Oil Age         hrs         Client Info         383         0         0           Oil Changed         Client Info         Changed         <	Sample Number		Client Info		GFL0111325	GFL0111257	GFL0111339
Oil Age         hrs         Client Info         383         0         0           Oil Changed Sample Status         Client Info         Changed Changed Changed Changed NORMAL         Changed Changed NORMAL         Changed Changed Changed NORMAL         NORMAL NORM	Sample Date		Client Info		30 May 2024	09 Apr 2024	07 Feb 2024
Client Info   Changed   Changed   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		4109	3726	3262
Oil Changed Sample Status         Client Info         Changed NORMAL         Change As Indicated Normal No	Oil Age	hrs	Client Info		383	0	0
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   mini/base   current   history1   history2			Client Info		Changed	Changed	Changed
Fuel	Sample Status						
Water Glycol         WC Method WC Method         >0.2         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         3         4         5           Chromium         ppm         ASTM D5185m         >20         0         <1         2           Nickel         ppm         ASTM D5185m         >5         0         <1         2           Silver         ppm         ASTM D5185m         >2         0         <1         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         3         7         3           Lead         ppm         ASTM D5185m         >40         <1         <1         0           Copper         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         <1	CONTAMINATIO	NC	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
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         0         <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium         ppm         ASTM D5185m         >20         0         <1         <1           Nickel         ppm         ASTM D5185m         >5         0         <1	Iron	ppm	ASTM D5185m	>120	3	4	5
Nickel			ASTM D5185m	>20	0	<1	<1
Description   Description			ASTM D5185m	>5	0	<1	2
Silver			ASTM D5185m	>2	0	<1	0
Aluminum							
Lead							
Copper         ppm         ASTM D5185m         >330         2         2         1           Tin         ppm         ASTM D5185m         >15         0         <1							
Tin							
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         72         78         101           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         129         130         115           Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         701         704         657           Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         >25         3         5         4           CONTAMINANTS         method         limit/base         current         history1							
Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         72         78         101           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         129         130         115           Manganese         ppm         ASTM D5185m         <1				>10			
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         72         78         101           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         129         130         115           Manganese         ppm         ASTM D5185m         <1							
Boron   ppm   ASTM D5185m   72   78   101		ррпп		line it the same			
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         129         130         115           Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         701         704         657           Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >4 </th <th>ADDITIVES</th> <th></th> <th>metnoa</th> <th>ilmit/base</th> <th></th> <th></th> <th></th>	ADDITIVES		metnoa	ilmit/base			
Molybdenum         ppm         ASTM D5185m         129         130         115           Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         701         704         657           Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         25         3         5         4           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844 <th< td=""><td>Boron</td><td>ppm</td><td></td><td></td><th></th><td></td><td></td></th<>	Boron	ppm					
Manganese         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         701         704         657           Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration	Barium	ppm	ASTM D5185m		0	0	-
Magnesium         ppm         ASTM D5185m         701         704         657           Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         % ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation	Molybdenum	ppm	ASTM D5185m		129	130	
Calcium         ppm         ASTM D5185m         1304         1326         1249           Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2 </td <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>&lt;1</th> <td>&lt;1</td> <td>0</td>	Manganese	ppm	ASTM D5185m		<1	<1	0
Phosphorus         ppm         ASTM D5185m         826         777         714           Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1	Magnesium	ppm	ASTM D5185m		701	704	657
Zinc         ppm         ASTM D5185m         905         881         805           Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>1304</th> <td>1326</td> <td>1249</td>	Calcium	ppm	ASTM D5185m		1304	1326	1249
Sulfur         ppm         ASTM D5185m         4114         3584         3179           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Phosphorus	ppm	ASTM D5185m		826	777	714
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Zinc	ppm	ASTM D5185m		905	881	805
Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Sulfur	ppm	ASTM D5185m		4114	3584	3179
Sodium         ppm         ASTM D5185m         3         2         2           Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         4         16         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Silicon	ppm	ASTM D5185m	>25	3	5	4
INFRA-RED	Sodium	ppm	ASTM D5185m		3	2	2
Soot %         %         *ASTM D7844 >4         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624 >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         18.4         18.6         17.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.8         16.8         15.6	Potassium	ppm	ASTM D5185m	>20	4	16	3
Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.5         9.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Soot %	%	*ASTM D7844	>4	0.1	0.1	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.4         18.6         17.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.8         15.6	Nitration	Abs/cm	*ASTM D7624	>20	9.5	9.5	9.2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.8</b> 16.8 15.6							17.8
	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.8	16.8	15.6
			ASTM D2896	10.7	5.7	5.5	6.0



# **OIL ANALYSIS REPORT**



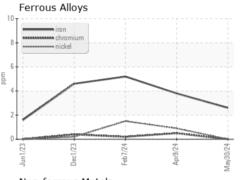


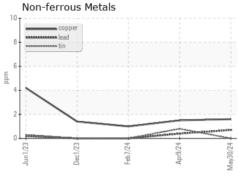


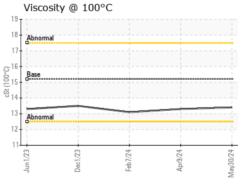
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

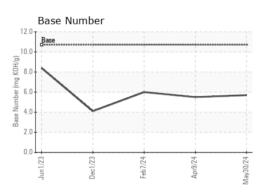
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.2	13.4	13.3	13.1

## **GRAPHS**













Certificate 12367

Laboratory

Sample No. Lab Number : 06231204 Unique Number : 11114697

Test Package : FLEET

: GFL0111325

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received **Tested** Diagnosed

: 09 Jul 2024 : 10 Jul 2024 : 10 Jul 2024 - Wes Davis

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)