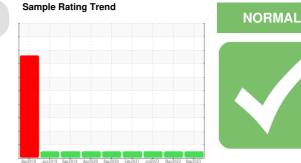


# **OIL ANALYSIS REPORT**





**CONSTRUCTORS, INC** Machine Id MACK MP8 DPF 025067 Component **Diesel Engine** 

MOBIL DELVAC 1300 SUPER 10W30 ( ~ ~ • • •

Sample Number         Client Info         SBP0001908         SBP0002103         SBP0001           Sample Date         I         Client Info         29 Sep 2023         14 Nov 2022         08 Jul 202           Machine Age         hrs         Client Info         6373         5781         5175           Oil Age         hrs         Client Info         592         606         544           Oil Changed         Client Info         Changed         NORMAL	UPER 10W30 (	- GAL)	AprŽ018 Ju	2019 Sep2019 Apr2020	Sep2020 Feb2021 Jul2022 Nov20	122 Sep2023	
Sample Date         Client Info         29 Spp 2023         14 Nov 2022         08 Jul 203           Machine Age         hrs         Client Info         6373         5781         5175           Oil Age         hrs         Client Info         592         606         544           Oil Changed         Client Info         Changed         Changed         Changed         NORMAL         NORMAL         NORMAL           COUTAMINATION         method         imit/base         current         history1         history1         history1           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Glycol         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Glycol         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Chromium         ppm         ASTM D5185m         >2.0         <1         <1         <1           Norkel         ppm         ASTM D5185m         >2.0         <1         <1         <1           Norkel         ppm         ASTM D5185m         >2.0         <1         <1         <1         <1         <1         <1         <1 <th>SAMPLE INFORM</th> <th>IATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>histor</th>	SAMPLE INFORM	IATION	method	limit/base	current	history1	histor
Machine Age         hrs         Client Info         6373         5781         5175           Oil Age         hrs         Client Info         592         606         544           Oil Changed         Changed         Changed         Changed         Changed         Changed           Sample Status         Imit Vor Method         >3.0         <1.0	Sample Number		Client Info		SBP0004908	SBP0002103	SBP00012
Oil Age         Inrs         Client Info         592         606         544           Oil Changed         Client Info         Changed         Changed         Changed         Changed         Changed         Changed         Changed         NoRMAL	Sample Date		Client Info		29 Sep 2023	14 Nov 2022	08 Jul 202
Oil Changed Sample Status         Client Info         Changed NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL           CONTAMINATION         method         limit/base         current         history1         history1           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Glycol         method         limit/base         current         history1         history1           VEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >20         <1         <1         <1           Iron         ppm         ASTM D5185m         >2         0         <1         <1           Aluminum         ppm         ASTM D5185m         >2         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <2         <	Machine Age	hrs	Client Info		6373	5781	5175
Sample Status         Image: More that status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         imit/base         current         history1         history1           Fuel         WC Method         >3.0         <1.0	Oil Age	hrs	Client Info		592	606	544
CONTAMINATION         method         imit/base         current         history1         history1           Fuel         WC Method         >3.0         <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel         WC Method         >3.0         <1.0         <1.0         <1.0           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         Imit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >20         <1         <1         <1           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >20         <1         <1         <1           Silver         ppm         ASTM D5185m         >20         0         <1         <1         <1           Aluminum         ppm         ASTM D5185m         >20         0         21         31           Lead         ppm         ASTM D5185m         >40         3         3         6           Tin         ppm         ASTM D5185m         >15         1         1         1         1           Vanadium         ppm         ASTM D5185m         <1         31         25           Boron         ppm         ASTM D5185m         58         42         30           Magne	Sample Status				NORMAL	NORMAL	NORMAL
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >20         <1	CONTAMINATIO	۷	method	limit/base	current	history1	histor
WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >120         10         12         17           Chromium         ppm         ASTM D5185m         >20         <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Iron         ppm         ASTM D5185m         >120         10         12         17           Chromium         ppm         ASTM D5185m         >20         <1	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >5         0         <1	WEAR METALS		method	limit/base	current	history1	histor
Nickel         ppm         ASTM D5185m         >5         0         <1         <1           Titanium         ppm         ASTM D5185m         >2         0         <1	Iron	ppm	ASTM D5185m	>120	10	12	17
Titanium         ppm         ASTM D5185m         >2         0         <1         <1           Silver         ppm         ASTM D5185m         >2         0         <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver         ppm         ASTM D5185m         >2         0         <1         <1           Aluminum         ppm         ASTM D5185m         >20         0         2         3           Lead         ppm         ASTM D5185m         >330         8         3         4           Copper         ppm         ASTM D5185m         >330         8         3         6           Tin         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m         <1	Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Atuminum         ppm         ASTM D5185m         >20         0         2         3           Lead         ppm         ASTM D5185m         >40         3         3         4           Copper         ppm         ASTM D5185m         >330         8         3         6           Tin         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m         <1	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead         ppm         ASTM D5185m         >40         3         3         4           Copper         ppm         ASTM D5185m         >330         8         3         6           Tin         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m          <1	Silver	ppm	ASTM D5185m	>2	0	<1	<1
Copper         ppm         ASTM D5185m         >330         8         3         6           Tin         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m          <1	Aluminum	ppm	ASTM D5185m	>20	0	2	3
Tin         ppm         ASTM D5185m         >15         1         1         1           Vanadium         ppm         ASTM D5185m         <1	Lead	ppm	ASTM D5185m	>40	3	3	4
Vanadium         ppm         ASTM D5185m         <1         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         0         <1	Copper	ppm	ASTM D5185m	>330	8	3	6
Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         <1	Tin	ppm	ASTM D5185m	>15	1	1	1
ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         <1	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron         ppm         ASTM D5185m         <1         13         25           Barium         ppm         ASTM D5185m         0         0         <1	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium         ppm         ASTM D5185m         0         0         <1	ADDITIVES		method	limit/base	current	history1	histor
Molybdenum         ppm         ASTM D5185m         58         42         30           Manganese         ppm         ASTM D5185m         <	Boron	ppm	ASTM D5185m		<1	13	25
Manganese         ppm         ASTM D5185m         <1         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         951         711         604           Calcium         ppm         ASTM D5185m         951         711         604           Calcium         ppm         ASTM D5185m         992         884         760           Phosphorus         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         992         884         760           Sulfur         ppm         ASTM D5185m         2959         3222         3358           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m<>25         6         6         6         6           Sodium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m		0	0	<1
Magnesium         ppm         ASTM D5185m         951         711         604           Calcium         ppm         ASTM D5185m         1130         1318         1750           Phosphorus         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         992         884         760           Sulfur         ppm         ASTM D5185m         992         3222         3358           CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >25         6         6         6           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m		58	42	30
Calcium         ppm         ASTM D5185m         1130         1318         1750           Phosphorus         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         1229         1036         960           Sulfur         ppm         ASTM D5185m         2959         3222         3358           CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >25         6         6         6           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus         ppm         ASTM D5185m         992         884         760           Zinc         ppm         ASTM D5185m         1229         1036         960           Sulfur         ppm         ASTM D5185m         2959         3222         3358           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         6         5         6         6         6         5         6         6         6         5         6         6         5<	Magnesium	ppm	ASTM D5185m		951	711	604
Zinc         ppm         ASTM D5185m         1229         1036         960           Sulfur         ppm         ASTM D5185m         2959         3222         3358           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         6         6         6         6         6         6         6         6         6         6         7	Calcium	ppm	ASTM D5185m		1130	1318	1750
SulfurppmASTM D5185m295932223358CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>25666SodiumppmASTM D5185m>20<1	Phosphorus	ppm	ASTM D5185m		992	884	760
CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         6         6         6         6           Sodium         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m		1229	1036	960
Silicon         ppm         ASTM D5185m         >25         6         6         6           Sodium         ppm         ASTM D5185m         >20         <1	Sulfur	ppm	ASTM D5185m		2959	3222	3358
Sodium         ppm         ASTM D5185m         6         8         6           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINANTS		method	limit/base	current	history1	histor
Potassium         ppm         ASTM D5185m         >20         <1         2         3           Chlorine         ppm         ASTM D5185m         >20         <1         2         3           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         10.6         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Silicon	ppm	ASTM D5185m	>25	6	6	6
Chlorine         ppm         ASTM D5185m              INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         10.6         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Sodium	ppm	ASTM D5185m		6	8	6
INFRA-RED         method         limit/base         current         history1         histor           Soot %         %         *ASTM D7844         >4         0.3         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         10.6         11.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         histor           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Potassium	ppm	ASTM D5185m	>20	<1	2	3
Soot %         %         *ASTM D7844         >4         0.3         0.3         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         10.6         11.1           Sulfation         Abs/.1mm         *ASTM D7615         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         histor           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Chlorine	ppm	ASTM D5185m				
Nitration         Abs/cm         *ASTM D7624         >20         8.7         10.6         11.1           Sulfation         Abs/.1mm         *ASTM D7615         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	INFRA-RED		method	limit/base	current	history1	histor
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.9         22.7         23.0           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Soot %	%	*ASTM D7844	>4	0.3	0.3	0.3
FLUID DEGRADATION         method         limit/base         current         history1         histor           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Nitration	Abs/cm	*ASTM D7624	>20	8.7	10.6	11.1
Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         19.4         21.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.9	22.7	23.0
	FLUID DEGRADA	TION	method	limit/base	current	history1	histor
Base Number (BN) mg KOH/g ASTM D2896 10.5 7.1 8.4 7.9	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.1	19.4	21.4
	Base Number (BN)	mg KOH/g	ASTM D2896	10.5	7.1	8.4	7.9

## Recommendation

Resample at the next service interval to monitor.

Fluid

### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

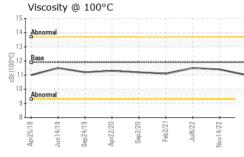
## Fluid Condition

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

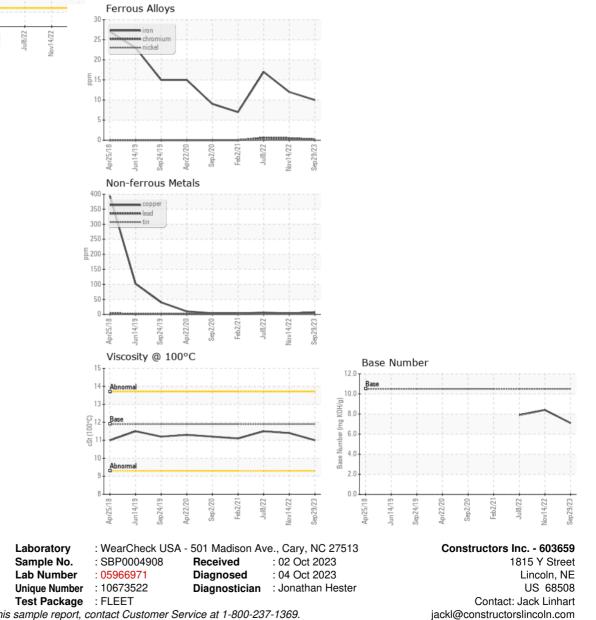


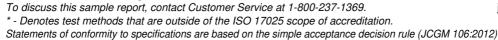
# **OIL ANALYSIS REPORT**

Base Number 12.0 10.0 10.0 4.0 4.0 0.0 12.0 4.0 10.



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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	11.9	11.0	11.4	11.5
GRAPHS						





T: (402)434-2157

F:

Certificate L2367