

# **OIL ANALYSIS REPORT**

SAMPLE INFORMATION

### **NORMAL**

# GM Renton Dump Truck Shop [GM Renton Dump Truck Shop] S12-551

**Diesel Engine** 

CASTROL Vecton LD 10W30 (--- GAL)

# DIAGNOSIS

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

#### Wear

to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

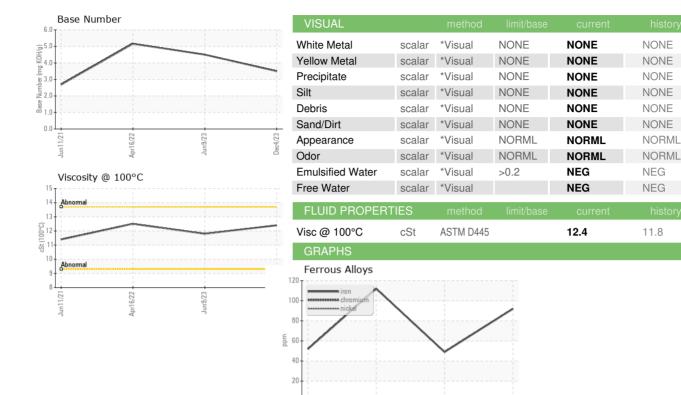
### **Fluid Condition**

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

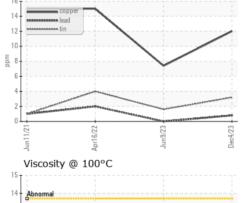
Sample Date         Client Info         04 Dec 2023         09 Jun 2023         16 Apr 2022           Machine Age         hrs         Client Info         1782         929         1852           Oil Age         hrs         Client Info         1782         929         1852           Oil Changed         Client Info         Changed         Not Changed         Not Changed         Changed         Not Changed         Changed         Not Changed         Changed         Normal         SeVERE           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >10         92         49         112           Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >3         0         <1         <1	Sample Number		Client Info		PE0002334	PE0001222	PE12290220
Oil Age         hrs         Client Info         1782         929         1852           Oil Changed         Client Info         Changed         Not Changed         Changed Changed         Not Changed         Changed Changed         NorMAL         SEVERE           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG         NEG           Ivariant         WEAR METALS         method         limit/base         current         history2           Iron         ppm         ASTM D5185m         >100         92         49         112           Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >20         1         <1         1           Aluminum         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >30         1         <1         <1           Co	Sample Date				04 Dec 2023	09 Jun 2023	16 Apr 2022
Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changed NORMAL         Changed SevERE           CONTAMINATION         method         limit/bass         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/bass         current         history1         history2           Iron         ppm         ASTM D5185m         >100         92         49         112           Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >3         0         <1         <1         <1           Aluminum         ppm         ASTM D5185m         >30         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1							
Sample Status	-	hrs					
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         92         49         112           Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >3         0         <1         <1           Nickel         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >30         9         7         49         <1           Lead         ppm         ASTM D5185m         >41         0         1         <1			Client Info				Ü
Fuel         WC Method Vec Method         >5         <1.0	Sample Status				NORMAL	NORMAL	SEVERE
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imitibase         ourrent         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         92         49         112           Chromium         ppm         ASTM D5185m         >4         <1         0         1           Nickel         ppm         ASTM D5185m         >4         <1         0         0           Silver         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >30         12         7         15           Itin         ppm         ASTM D5185m         >30         12         7         15           Tin         ppm         ASTM D5185m         <1         0         0         0           Vanadium         ppm         ASTM D5185m         <1         0         0         0	CONTAMINATION	N	method	limit/base	current	history1	history2
WEAR METALS         method         Imitibase         current         history1         history2           Iron         ppm         ASTM D5185m         >100         92         49         ▲ 112           Chromium         ppm         ASTM D5185m         >20         1         <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         92         49         ▲ 112           Chromium         ppm         ASTM D5185m         >20         1         <1         1           Nickel         ppm         ASTM D5185m         >20         1         <1         1           Silver         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >3         0         <1         <1           Aluminum         ppm         ASTM D5185m         >40         <1         0         2           Lead         ppm         ASTM D5185m         >40         <1         0         2           Copper         ppm         ASTM D5185m         >40         <1         0         2           Copper         ppm         ASTM D5185m         >15         3         2         4           Antimory         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0 <t< th=""><th>Water</th><th></th><th>WC Method</th><th>&gt;0.2</th><th>NEG</th><th>NEG</th><th>NEG</th></t<>	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         1         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >4         <1	Iron	ppm	ASTM D5185m	>100	92	49	<u> </u>
Titanium	Chromium	ppm	ASTM D5185m	>20	1	<1	1
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	1
Aluminum         ppm         ASTM D5185m         >20         9         7         49           Lead         ppm         ASTM D5185m         >40         <1         0         2           Copper         ppm         ASTM D5185m         >330         12         7         15           Tin         ppm         ASTM D5185m         >15         3         2         4           Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         7         6         42           Magnesium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         98	Titanium	ppm	ASTM D5185m		<1	0	0
Lead         ppm         ASTM D5185m         >40         <1	Silver	ppm		>3			
Copper         ppm         ASTM D5185m         >330         12         7         15           Tin         ppm         ASTM D5185m         >15         3         2         4           Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104		ppm			-		•
Tin         ppm         ASTM D5185m         >15         3         2         4           Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m           0         0           Cadmium         ppm         ASTM D5185m         0         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         11							
Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m         <1		ppm					
Vanadium         ppm         ASTM D5185m         <1				>15			
Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         22         21	•						
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21           Sodium         ppm         ASTM D5185m         >							
Boron         ppm         ASTM D5185m         21         24         22           Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844	Cadmium	ppm	ASTM D5185m		0	0	
Barium         ppm         ASTM D5185m         1         0         1           Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21           Sodium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D78							
Molybdenum         ppm         ASTM D5185m         7         6         42           Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21           Sodium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         A	ADDITIVES		method	limit/base	current	history1	history2
Manganese         ppm         ASTM D5185m         2         2            Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         △         21           Sodium         ppm         ASTM D5185m         >20         18         12         ● 116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         "ASTM D7415         >30         31.4         26.4		ppm		limit/base			
Magnesium         ppm         ASTM D5185m         463         572         1025           Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21           Sodium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         "ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         "ASTM D7415         >30         31.4         26.4 <t< th=""><th>Boron</th><th></th><th>ASTM D5185m</th><th>limit/base</th><th>21</th><th>24</th><th>22</th></t<>	Boron		ASTM D5185m	limit/base	21	24	22
Calcium         ppm         ASTM D5185m         1841         1792         1240           Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         △         21           Sodium         ppm         ASTM D5185m         >20         18         12         ♠ 116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current	Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	21 1	24	22 1
Phosphorus         ppm         ASTM D5185m         984         892         962           Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         △         21           Sodium         ppm         ASTM D5185m         >20         18         12         ♠ 116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 1 7 2	24 0 6	22 1 42
Zinc         ppm         ASTM D5185m         1119         1104         1144           Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         21           Sodium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 1 7 2 463	24 0 6 2 572	22 1 42  1025
Sulfur         ppm         ASTM D5185m         3101         4009            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         ≥21           Sodium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 1 7 2 463 1841	24 0 6 2 572 1792	22 1 42  1025 1240
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         21         18         ▲ 21           Sodium         ppm         ASTM D5185m         >20         18         12         ■ 116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	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	limit/base	21 1 7 2 463 1841 984	24 0 6 2 572 1792 892	22 1 42  1025 1240 962
Silicon         ppm         ASTM D5185m         >25         21         18         △ 21           Sodium         ppm         ASTM D5185m         11         3         13           Potassium         ppm         ASTM D5185m         >20         18         12         ♠ 116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	21 1 7 2 463 1841 984 1119	24 0 6 2 572 1792 892 1104	22 1 42  1025 1240 962
Sodium         ppm         ASTM D5185m         11         3         13           Potassium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium 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 ASTM D5185m		21 1 7 2 463 1841 984 1119	24 0 6 2 572 1792 892 1104	22 1 42  1025 1240 962 1144
Potassium         ppm         ASTM D5185m         >20         18         12         116           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	21 1 7 2 463 1841 984 1119 3101	24 0 6 2 572 1792 892 1104 4009	22 1 42  1025 1240 962 1144
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base	21 1 7 2 463 1841 984 1119 3101 current	24 0 6 2 572 1792 892 1104 4009 history1	22 1 42 1025 1240 962 1144 history2
Soot %         %         *ASTM D7844         >3         0.8         0.5         0.6           Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25	21 1 7 2 463 1841 984 1119 3101 current 21	24 0 6 2 572 1792 892 1104 4009 history1 18 3	22 1 42 1025 1240 962 1144 history2  21 13
Nitration         Abs/cm         *ASTM D7624         >20         13.0         10.8         15           Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	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	21 1 7 2 463 1841 984 1119 3101 current 21	24 0 6 2 572 1792 892 1104 4009 history1 18 3	22 1 42 1025 1240 962 1144 history2  21 13
Sulfation         Abs/.1mm         *ASTM D7415         >30         31.4         26.4            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         28.7         22.6         32	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25 >20	21 1 7 2 463 1841 984 1119 3101 current 21 11 18	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12	22 1 42 1025 1240 962 1144 history2  21 13 116
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2528.722.632	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	limit/base >25 >20 limit/base	21 1 7 2 463 1841 984 1119 3101 current 21 11 18 current	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12 history1	22 1 42 1025 1240 962 1144 history2  13 116 history2
Oxidation	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m	limit/base >25 >20 limit/base >3	21 1 7 2 463 1841 984 1119 3101 current 21 11 18 current	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12 history1 0.5	22 1 42 1025 1240 962 1144 history2  13 116 history2 0.6
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  method  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	21 1 7 2 463 1841 984 1119 3101 current 21 11 18 current 0.8 13.0	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12 history1 0.5 10.8	22 1 42 1025 1240 962 1144 history2  13 116 history2 0.6 15
Base Number (BN)         mg KOH/g         ASTM D2896         3.5         4.5         5.16	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  Method ASTM D5185m  Method *ASTM D7844 *ASTM D7624 *ASTM D76145	limit/base >25 >20 limit/base >3 >20 >30	21 1 7 2 463 1841 984 1119 3101 current 21 11 18 current 0.8 13.0 31.4	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12 history1 0.5 10.8 26.4	22 1 42 1025 1240 962 1144 history2  13 116 history2 0.6 15
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m  METHOD  *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m  METHOD  *ASTM D7844  *ASTM D7624  *ASTM D7615  METHOD	limit/base >25 >20 limit/base >3 >20 >30 limit/base	21 1 7 2 463 1841 984 1119 3101 current 21 11 18 current 0.8 13.0 31.4 current	24 0 6 2 572 1792 892 1104 4009 history1 18 3 12 history1 0.5 10.8 26.4 history1	22 1 42 1025 1240 962 1144 history2  13 116 history2 0.6 15 history2

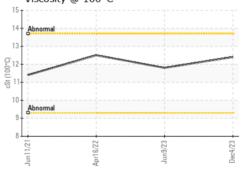


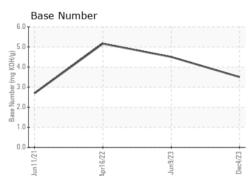
## **OIL ANALYSIS REPORT**



Non-ferrous Metals











Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** 

: PE0002334 : 06060121 : 10831503

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 12 Jan 2024

Diagnosed : 16 Jan 2024 Diagnostician : Doug Bogart Test Package : CONST (Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN)

9125 10TH AVE SOUTH SEATTLE, WA

> Contact: Zack oilsamples@gmccinc.com T:

**12.5** 

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 acceptance decision rule (JCGM 106:2012)

Gary Merlino Construction - Off Road Shop

US 98108

F: