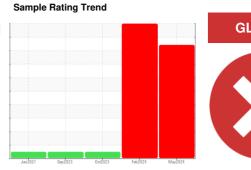


# **OIL ANALYSIS REPORT**



Machine Id 186487

**Diesel Engine** 

PETRO CANADA DURON SHP 10W30 (--- G

### **DIAGNOSIS**

### Recommendation

We advise that you check for the source of the coolant leak. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

Metal levels are typical for a new component breaking in.

### Contamination

Test for glycol is positive. There is a high concentration of glycol present in the oil.

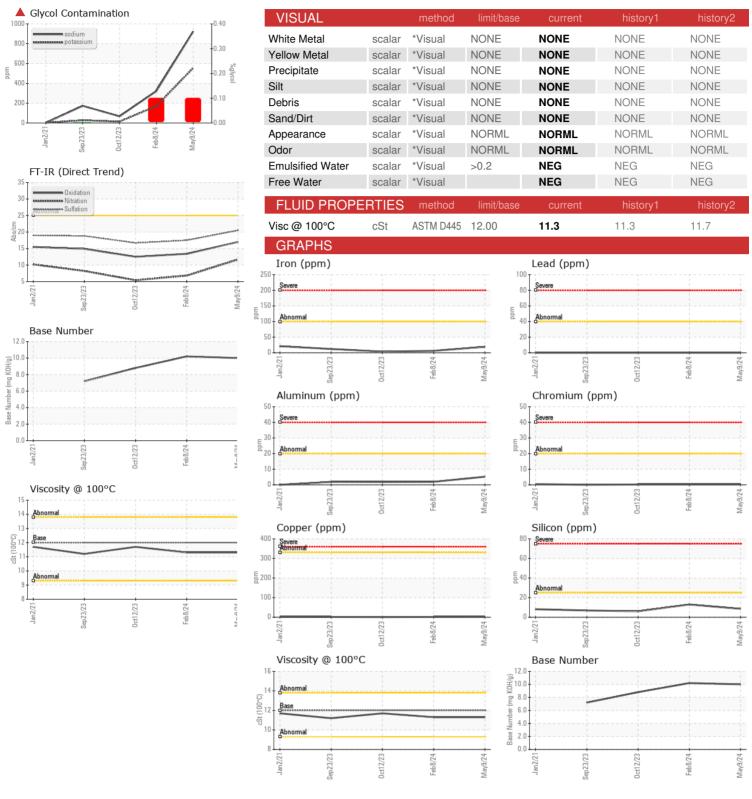
### Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Machine Age         mls         Client Info         2784         50004         47332           Oil Age         mls         Client Info         2784         0         47332           Oil Changed         Client Info         Changed         Not Changed         Changed	GAL)		Jan 2021	Sep2023	Oct2023 Feb 2024	May2024	
Sample Date   Client Info   2784   50004   12 Oct 2023     Machine Age   mls   Client Info   2784   50004   47332     Oil Age   mls   Client Info   2784   0	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date         Client Info         09 May 2024         08 Feb 2024         12 Oct 2023           Machine Age         mis         Client Info         2784         50004         47332           Oil Age         mis         Client Info         2784         0         47332           Oil Changed         Client Info         Changed         Not Changed         Changed NoRMAL           Sample Status         Control         Imitibase         current         Instory1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0           WEAR METALS         method         Imitibase         current         history1         history2           Iron         ppm         ASTM D5185m         >10         <1.0         <1.0         <1.0           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1         <1           Iron         ppm         ASTM D5185m         >4         <1         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Sample Number		Client Info		PCA0125240	PCA0114583	PCA0108388
Machine Age         mls         Client Info         2784         50004         47332           Oil Age         mls         Client Info         2784         0         47332           Oil Changed         Client Info         Changed         Not Changed         Not Changed         Not Changed           Sample Status         SEVERE         SEVERE         SEVERE         Not Changed         Not Changed <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>09 May 2024</th> <td>08 Feb 2024</td> <td>12 Oct 2023</td>	Sample Date		Client Info		09 May 2024	08 Feb 2024	12 Oct 2023
Client Info	Machine Age	mls	Client Info		-	50004	47332
SEVERE   SEVERE   NORMAL	Oil Age	mls	Client Info		2784	0	47332
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <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         >100         19         6         4           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         <1         0         <1         <1           Silver         ppm         ASTM D5185m         >4         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >33         <1         0         0         0           Copper         ppm         ASTM D5185m         >40         0         0         0         0           Vanadium         ppm         ASTM D5185m         >15         <1         0         0         0           Vanadium         ppm </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Changed</th> <th>Not Changd</th> <th>Changed</th>	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel   WC Method   S5	Sample Status				SEVERE	SEVERE	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         6         4           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         <1         0         <1           Silver         ppm         ASTM D5185m         >3         <1         0         0           Aluminum         ppm         ASTM D5185m         >30         <1         0         0           Aluminum         ppm         ASTM D5185m         >30         2         1         <1         1           Lead         ppm         ASTM D5185m         >40         0         0         0         0           Copper         ppm         ASTM D5185m         >15         <1         0         0         0           Caddmium         ppm         ASTM D5185m         0         2         2         4         1         1         1         1         1         1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         6         4           Chromium         ppm         ASTM D5185m         >20         <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Irron	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	19	6	4
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver         ppm         ASTM D5185m         >3         <1         0         0           Aluminum         ppm         ASTM D5185m         >20         5         2         2           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         2         1         <1           Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         <1         0         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         42         11           Boron         ppm         ASTM D5185m         0         2         <1         0           Boron         ppm         ASTM D5185m         0         2         <1         0           Molybdenum         ppm         ASTM D5185m         0         122         86         60<	Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Aluminum         ppm         ASTM D5185m         >20         5         2         2           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         2         1         <1	Titanium	ppm	ASTM D5185m		15	23	<1
Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         2         1         <1           Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         <1         0         0         0           Cadmium         ppm         ASTM D5185m         0         2         1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         22         42         11           Barium         ppm         ASTM D5185m         0         2         -1         0           Molybdenum         ppm         ASTM D5185m         50         122         86         60           Mangarese         ppm         ASTM D5185m         0         -1         0         0           Magnesium         ppm         ASTM D5185m         050         809         1133         783           Calcium         ppm         ASTM D5185m         050         1105 </td <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;3</td> <th>&lt;1</th> <td>0</td> <td>0</td>	Silver	ppm	ASTM D5185m	>3	<1	0	0
Copper         ppm         ASTM D5185m         >330         2         1         <1           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	5	2	2
Tin ppm ASTM D5185m > 1.5 < 1 0 0 0  Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	0	0	0
Tin	Copper		ASTM D5185m	>330	2	1	<1
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         22         42         11           Barium         ppm         ASTM D5185m         0         2         <1         0           Molybdenum         ppm         ASTM D5185m         50         122         86         60           Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         950         809         1133         783           Calcium         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         <	• •		ASTM D5185m	>15	<1	0	0
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         2         22         42         11           Barium         ppm         ASTM D5185m         0         2         <1         0           Molybdenum         ppm         ASTM D5185m         50         122         86         60           Manganese         ppm         ASTM D5185m         50         122         86         60           Magnesium         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         1005         1301         990           Zinc         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1 </td <td>Vanadium</td> <td></td> <td>ASTM D5185m</td> <td></td> <th>&lt;1</th> <td>0</td> <td>0</td>	Vanadium		ASTM D5185m		<1	0	0
Boron	Cadmium		ASTM D5185m		0	0	
Barium         ppm         ASTM D5185m         0         2         <1         0           Molybdenum         ppm         ASTM D5185m         50         122         86         60           Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         950         809         1133         783           Calcium         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         995         1066         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         5555         170         14           Glycol         "ASTM D5185m         >2	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         50         122         86         60           Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         950         809         1133         783           Calcium         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         555         170         14           Glycol         "ASTM D5185m	Boron	ppm	ASTM D5185m	2	22	42	11
Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         950         809         1133         783           Calcium         ppm         ASTM D5185m         950         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         \$555         170         14           Glycol         % *ASTM D5185m         >20         \$555         170         14           Glycol         *ASTM D5185m         >3 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>2</th> <td>&lt;1</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	2	<1	0
Magnesium         ppm         ASTM D5185m         950         809         1133         783           Calcium         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         555         170         14           Glycol         %         *ASTM D5185m         >20         555         170         14           Glycol         %         *ASTM D5185m         >20         10.10         NEG           INFRA-RED         method         limit/base	Molybdenum	ppm	ASTM D5185m	50	122	86	60
Calcium         ppm         ASTM D5185m         1050         1115         1499         1174           Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D5185m         >3         0.4         0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844 <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>&lt;1</th> <td>0</td> <td>0</td>	Manganese	ppm	ASTM D5185m	0	<1	0	0
Phosphorus         ppm         ASTM D5185m         995         1005         1301         990           Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D2982          0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415	Magnesium	ppm	ASTM D5185m	950	809	1133	783
Zinc         ppm         ASTM D5185m         1180         1166         1615         1181           Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         >20         322         67           Potassium         ppm         ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION         method         limit/base </td <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1050</td> <th>1115</th> <td>1499</td> <td>1174</td>	Calcium	ppm	ASTM D5185m	1050	1115	1499	1174
Sulfur         ppm         ASTM D5185m         2600         3691         4658         3481           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         924         322         67           Potassium         ppm         ASTM D5185m         >20         555         170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 <t< td=""><td>Phosphorus</td><td>ppm</td><td>ASTM D5185m</td><td>995</td><th>1005</th><td>1301</td><td>990</td></t<>	Phosphorus	ppm	ASTM D5185m	995	1005	1301	990
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         9         13         6           Sodium         ppm         ASTM D5185m         924         322         67           Potassium         ppm         ASTM D5185m         >20         5555         170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Zinc	ppm	ASTM D5185m	1180	1166	1615	1181
Silicon       ppm       ASTM D5185m       >25       9       13       6         Sodium       ppm       ASTM D5185m       924       322       67         Potassium       ppm       ASTM D5185m       >20       555       170       14         Glycol       %       *ASTM D2982       0.10       10       NEG         INFRA-RED       method       limit/base       current       history1       history2         Soot %       %       *ASTM D7844       >3       0.4       0.1       0.1         Nitration       Abs/cm       *ASTM D7624       >20       11.7       6.8       5.4         Sulfation       Abs/.1mm       *ASTM D7415       >30       20.5       17.5       history2         Oxidation       Abs/.1mm       *ASTM D7414       >25       17.0       13.4       12.5	Sulfur	ppm	ASTM D5185m	2600	3691	4658	3481
Sodium         ppm         ASTM D5185m         924         322         67           Potassium         ppm         ASTM D5185m         >20         ▲ 555         ▲ 170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         555         ▲ 170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Silicon	ppm	ASTM D5185m	>25	9	13	6
Potassium         ppm         ASTM D5185m         >20         555         ▲ 170         14           Glycol         %         *ASTM D2982         ▲ 0.10         ▲ 0.10         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Sodium	ppm	ASTM D5185m		924	322	67
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Potassium		ASTM D5185m	>20	<b>555</b>	<u> </u>	14
Soot %         %         *ASTM D7844 >3         0.4         0.1         0.1           Nitration         Abs/cm         *ASTM D7624 >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         17.0         13.4         12.5	Glycol	%	*ASTM D2982		▲ 0.10	▲ 0.10	NEG
Nitration         Abs/cm         *ASTM D7624         >20         11.7         6.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Soot %	%	*ASTM D7844	>3	0.4	0.1	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.5         17.5         16.7           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.0         13.4         12.5	Nitration	Abs/cm	*ASTM D7624	>20	11.7	6.8	5.4
Oxidation Abs/.1mm *ASTM D7414 >25 <b>17.0</b> 13.4 12.5	Sulfation	Abs/.1mm	*ASTM D7415	>30			
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.0	13.4	12.5
	Base Number (BN)	mg KOH/g	ASTM D2896		10.0	10.2	



## **OIL ANALYSIS REPORT**







Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06195256

: PCA0125240 Unique Number : 11057379

Received Tested Diagnosed

: 30 May 2024 : 31 May 2024

: 31 May 2024 - Wes Davis Test Package : MOB 1 ( Additional Tests: TBN )

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

 $^st$  - 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)

**MILLER TRUCK LEASING #118** 

2196 BENNETT ROAD PHILADELPHIA, PA US 19116

Contact: ROSTY VITER rviter@millertransgroup.com T: (215)552-9832

F: (215)552-9892 Contact/Location: ROSTY VITER - MILPHINE