

## Machine Id **501060** Component **Diesel Engine** Filuid **PETRO CANADA DURON SHP 15W40 (--- GAL)**

## RECOMMENDATION

Check for low coolant level. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

WEAR	

All component wear rates are normal.

## CONTAMINATION

Water treatment chemicals present, indicating slow coolant leak. Test for glycol is negative. There is no indication of any contamination in the oil.

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The condition of the oil is acceptable for the time in service (see recommendation).

Sample NumberClient InfoGFL0107341GFL0061865GFL00Sample DateClient Info18 Apr 202418 Nov 202230 MaMachine AgehrsClient Info000Filter AgehrsClient Info000Oil AgehrsClient Info0000Filter ChangedClient InfoChangedChangedChangedChangedFilter ChangedIClient InfoChangedChangedChangedSample StatusClient InfoChangedChangedChangedChangedSample StatusASTM DS185(m)>165541842ChromiumppmASTM DS185(m)>20<10NickelppmASTM DS185(m)>20<10SilverppmASTM DS185(m)>2014666LeadppmASTM DS185(m)>201466VanadiumppmASTM DS185(m)>5013<12VanadiumppmASTM DS185(m)>5013<18FuelWC Method>3.0<1.0<1.00.00SiliconppmASTM DS185(m)>351186PotassiumppmASTM DS185(m)>2013.448FuelWC Method>3.0<1.0<1.00.00NitrationAbs/rmASTM D7822*0.0NEGN </th <th>)</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	)						
Sample DateClient Info18 Apr 202418 Nov 202230 MatMachine AgehrsClient Info0000Filter AgehrsClient Info0000Filter AgehrsClient InfoChangedChangedChangedChangedFilter ChangedClient InfoChangedChangedChangedChangedSample StatusClient InfoATTENTIONNORMALABNCSample StatusASTM05185(m)>165541842ChromiumppmASTM05185(m)>20<11NickelppmASTM05185(m)>20<11NickelppmASTM05185(m)>20<11SilverppmASTM05185(m)>20<12CopperppmASTM05185(m)>50<1<2VanadiumppmASTM05185(m)>50<1<1PotassiumppmASTM05185(m)>31186FuelWC Method>3.0<1.0<1.00.00Soto %%ASTM D785(m)>3028.70.0NEGNSoto %%ASTM D785(m)>3028.728.288Glopol%ASTM D7865(m)>30<1.0<0.000WanduimppmASTM05185(m)>3028.70.00.000Soto %% <th>Test</th> <th>UOM</th> <th>Method</th> <th>Limit/Abn</th> <th>Current</th> <th>History1</th> <th>History2</th>	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age         hrs         Client Info         B33178         787602         787602           Oil Age         hrs         Client Info         0         0         0         0           Filter Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         Changed         Ch	Sample Number		Client Info		GFL0107341	GFL0061856	GFL0050986
Oil Age Filter AgehrsClient InfoOOOOFilter AgehrsClient InfoChangedChangedChangedChangedChangedOil ChangedClient InfoCChangedChangedChangedChangedChangedFilter Changed0Client InfoCChangedChangedChangedChangedSample StatusClient InfoATTENTIONNORIMALABNCIronppmASTMD5/85(m)>165541844ChromiumppmASTMD5/85(m)>20<111NickelppmASTMD5/85(m)>20<1466LeadppmASTMD5/85(m)>201466<2AluminumppmASTMD5/85(m)>13<1220<2CopperppmASTMD5/85(m)>5013<12200<2VanadiumppmASTMD5/85(m)>351186000 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>18 Apr 2024</th> <th>18 Nov 2022</th> <th>30 May 2022</th>	Sample Date		Client Info		18 Apr 2024	18 Nov 2022	30 May 2022
Filter Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         Changed         Calina         Calina	Machine Age	hrs	Client Info		833178	787602	780566
Oil ChangedClient InfoChangedChangedChangedChangedFilter ChangedClient InfoChangedChangedChangedChangedChangedSample StatusATTENTIONNORMALABMCIronppmASTMD5185(m)>165541842ChromiumppmASTMD5185(m)>542<111NickelppmASTMD5185(m)>220<110SilverppmASTMD5185(m)>2014666LeadppmASTMD5185(m)>15013<122CopperppmASTMD5185(m)>550<1<1TinppmASTMD5185(m)>550<1<1SiliconppmASTMD5185(m)>3011886PotassiumppmASTMD5185(m)>301348FuelWC Method>3.0<1.0<1.00.00Soto %%ASTMD7844>7.50.500NitrationAbs/rmASTMD7844>.2NEGNEGNEGSodiumppmASTMD5185(m)028.724.22710BariumppmASTMD5185(m)00000MolybelenumppmASTMD5185(m)011<1<1BariumppmASTMD5185(m)01322.710BariumppmASTMD5185(m)00 <th>Oil Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Oil Age	hrs	Client Info		0	0	0
Filter Changed Sample Status         Client Info         Knaged ATTENTION         Changed NORMAL         Changed ABDC           Iron         ppm         ASTM D5185(m)         >165         54         18         42           Chromium         ppm         ASTM D5185(m)         >56         2         <1         1           Nickel         ppm         ASTM D5185(m)         >4         <1         <1         <1           Nickel         ppm         ASTM D5185(m)         >22         0         <1         0           Silver         ppm         ASTM D5185(m)         >22         0         <1         2           Copper         ppm         ASTM D5185(m)         >20         14         6         6           Lead         ppm         ASTM D5185(m)         >55         0         <1         <1           Vanadium         ppm         ASTM D5185(m)         >35         11         8         6           Potassium         ppm         ASTM D5185(m)         >30         <1.0         0.0         0           Silicon         ppm         ASTM D5185(m)         >30         <1.0         <1.0         0.0           Glycol         %         ASTM D5185(m) <td< th=""><th>Filter Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></td<>	Filter Age	hrs	Client Info		0	0	0
Sample Status         ATTENTION         NORMAL         ABNO           Iron         ppm         ASTM D5185(m)         >165         54         18         42           Chromium         ppm         ASTM D5185(m)         >2         <1         1           Nickel         ppm         ASTM D5185(m)         >2         0         <1         0           Silver         ppm         ASTM D5185(m)         >2         0         <1         0           Silver         ppm         ASTM D5185(m)         >2         0         <1         0           Aluminum         ppm         ASTM D5185(m)         >2         0         <14         6         6           Lead         ppm         ASTM D5185(m)         >13         <1         2         2           Copper         ppm         ASTM D5185(m)         >5         0         <1         <            Vanadium         ppm         ASTM D5185(m)         >30         11         8         6           Potassium         ppm         ASTM D5185(m)         >30         113         4         8           Fuel         WC Method         >0.2         NEG         NEG         N	Oil Changed		Client Info		Changed	Changed	Changed
Iron         ppm         ASTM D5185(m)         >165         54         18         42           Chromium         ppm         ASTM D5185(m)         >5         2         <1         1           Nickel         ppm         ASTM D5185(m)         >4         <1         <1         <1           Nickel         ppm         ASTM D5185(m)         >2         0         <1         0           Silver         ppm         ASTM D5185(m)         >2         0         <1         0           Aluminum         ppm         ASTM D5185(m)         >2         0         <14         6         6           Lead         ppm         ASTM D5185(m)         >150         13         <1         2           Copper         ppm         ASTM D5185(m)         >50         0         <1         <           Vanadium         ppm         ASTM D5185(m)         >35         11         8         6           Potassium         ppm         ASTM D5185(m)         >30         <1.0         0         0           Silicon         ppm         ASTM D5185(m)         >30         <1.0         <1.0         0           Karel         WC Method         >.0.2	Filter Changed		Client Info		Changed	Changed	Changed
Chromium         ppm         ASTM D5185(m)         >5         2         <1	Sample Status				ATTENTION	NORMAL	ABNORMAL
Nickel         ppm         ASTM D5185(m)         >4         <1	Iron	ppm	ASTM D5185(m)	>165	54	18	42
Titanium         ppm         ASTM D5185(m)         >2         0         <1	Chromium	ppm	ASTM D5185(m)	>5	2	<1	1
Silver         ppm         ASTM D5185(m)         >2         0         0         <	Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Aluminum         ppm         ASTM D5185(m)         >20         14         6         6           Lead         ppm         ASTM D5185(m)         >150         13         <1         2           Copper         ppm         ASTM D5185(m)         >90         5         3         7           Tin         ppm         ASTM D5185(m)         >5         0         <1         <1           Vanadium         ppm         ASTM D5185(m)         >5         0         <1         <1           Vanadium         ppm         ASTM D5185(m)         >5         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         <10         0	Titanium	ppm	ASTM D5185(m)	>2	0	<1	0
Lead         ppm         ASTM D5185(m)         >150         13         <1	Silver	ppm	ASTM D5185(m)	>2	0	0	<1
Copper         ppm         ASTM D5185(m)         >90         5         3         7           Tin         ppm         ASTM D5185(m)         >5         0         <1         <           Vanadium         ppm         ASTM D5185(m)         >5         0         <1         <           Silicon         ppm         ASTM D5185(m)         >35         11         8         6           Potassium         ppm         ASTM D5185(m)         >20         13         4         8           Fuel         WC Method         >3.0         <1.0         <1.0         0.0           Water         WC Method         >0.2         NEG         N         So           Glycol         %         ASTM D7922*         0.0         N         EG         N           Soot %         %         ASTM D7924*         >20         12.6         8.2         8           Sulfation         Abs/cm         ASTM D71624*         >20         183         6         9           Boron         ppm         ASTM D5185(m)         0         0         0         0         0           Maganese         ppm         ASTM D5185(m)         0         23         227	Aluminum	ppm	ASTM D5185(m)	>20	14	6	6
Tin         ppm         ASTM D5185(m)         >5         0         <1	Lead	ppm	ASTM D5185(m)	>150	13	<1	2
Vanadium         ppm         ASTM D5185(m)         0         0         0           Silicon         ppm         ASTM D5185(m)         >35         11         8         6           Potassium         ppm         ASTM D5185(m)         >20         13         4         8           Fuel         WC Method         >3.0         <1.0         <1.0         0.0           Water         WC Method         >0.2         NEG         NEG         N           Glycol         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7844*         >7.5         0.5         0         0           Nitration         Abs/cm         ASTM D7624*         >20         12.6         8.2         8           Sulfation         Abs/.1mm         ASTM D715*         >30         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         23         227         10           Barium         ppm         ASTM D5185(m)         0         0         0         0         0	Copper	ppm	ASTM D5185(m)	>90	5	3	7
Silicon         ppm         ASTM D5185(m)         >35         11         8         6           Potassium         ppm         ASTM D5185(m)         >20         13         4         8           Fuel         WC Method         >3.0         <1.0	Tin	ppm	ASTM D5185(m)	>5	0	<1	<1
Potassium         ppm         ASTM D5185(m)         >20         13         4         8           Fuel         WC Method         >3.0         <1.0         <1.0         0.0           Water         WC Method         >0.2         NEG         NEG         N           Glycol         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7624*         >20         12.6         8.2         8.3           Sulfation         Abs/.tmm         ASTM D7158*         >30         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         N         9           Boron         ppm         ASTM D5185(m)         0         23         227         <	Vanadium	ppm	ASTM D5185(m)		0	0	0
Potassium         ppm         ASTM D5185(m)         >20         13         4         8           Fuel         WC Method         >3.0         <1.0         <1.0         0.0           Water         WC Method         >0.2         NEG         NEG         N           Glycol         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7624*         >20         12.6         8.2         8.3           Sulfation         Abs/.tmm         ASTM D7158*         >30         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         N         9           Boron         ppm         ASTM D5185(m)         0         23         227         <	Silioon			. 95		0	G
Fuel         WC Method         >3.0         <1.0			( )				
Water         WC Method         >0.2         NEG         NEG         N           Glycol         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7844*         >7.5         0.5         0         0           Nitration         Abs/cm         ASTM D7624*         >20         12.6         8.2         8.3           Sulfation         Abs/.1mm         ASTM D7624*         >0.2         NEG         NEG         N           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         233         2277         100           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Magnesium         ppm         ASTM D5185(m)         1010         982         709         100           Calcium         ppm         ASTM D5185(m)         107		ppm			-		0.5
Glycol         %         ASTM D7922*         0.0         NEG         N           Soot %         %         ASTM D7844*         >7.5         0.5         0         0           Nitration         Abs/cm         ASTM D7624*         >20         12.6         8.2         8.2           Sulfation         Abs/cm         ASTM D7624*         >20         12.6         8.2         8.2           Sulfation         Abs/.1mm         ASTM D715*         >30         28.7         24.2         2.2           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         23         2277         10           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Manganese         ppm         ASTM D5185(m)         0         99         1100         63           Magnesium         ppm         ASTM D5185(m)         1010         982         709         10           Calcium         ppm         ASTM D5185(m)         1070         1489         1421         17           Phosphorus         ppm         AS							NEG
Soot %         %         ASTM D7844*         >7.5         0.5         0         0           Nitration         Abs/cm         ASTM D7624*         >20         12.6         8.2         8.2           Sulfation         Abs/.1mm         ASTM D7624*         >20         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         23         227         10           Boron         ppm         ASTM D5185(m)         0         0         0         0         0           Barium         ppm         ASTM D5185(m)         0         <11         <11         <11           Manganese         ppm         ASTM D5185(m)         0         <11         <11         <11           Magnesium         ppm         ASTM D5185(m)         1010         982         709         10           Calcium         ppm         ASTM D5185(m)         1070         1489         1421         11           Phosphorus         ppm         ASTM D5185(m)         1150         1027         783         11           Zinc         ppm </th <th></th> <th>%</th> <th></th> <th></th> <th>-</th> <th></th> <th>NEG</th>		%			-		NEG
Sulfation         Abs/.1mm         ASTM D7415*         >30         28.7         24.2         27           Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         ●         183         6         9           Boron         ppm         ASTM D5185(m)         0         23         227         10           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Malganese         ppm         ASTM D5185(m)         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         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         1         1         <1 <td< th=""><th></th><th></th><th>ASTM D7844*</th><th>&gt;7.5</th><th>0.5</th><th>0</th><th>0.1</th></td<>			ASTM D7844*	>7.5	0.5	0	0.1
Emulsified Water         scalar         Visual*         >0.2         NEG         NEG         N           Sodium         ppm         ASTM D5185(m)         0         23         227         10           Boron         ppm         ASTM D5185(m)         0         0         23         227         10           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Molybdenum         ppm         ASTM D5185(m)         0         0         10         63           Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1           Magnesium         ppm         ASTM D5185(m)         1010         982         709         10           Calcium         ppm         ASTM D5185(m)         1070         1489         1421         11           Phosphorus         ppm         ASTM D5185(m)         1150         1027         783         11           Zinc         ppm         ASTM D5185(m)         1270         1227         844         12           Sulfur         ppm         ASTM D5185(m)         2600         2404         2141         27           Oxidation	Nitration	Abs/cm	ASTM D7624*	>20	12.6	8.2	8.1
Sodium         ppm         ASTM D5185(m)         183         6         9           Boron         ppm         ASTM D5185(m)         0         23         227         10           Barium         ppm         ASTM D5185(m)         0         0         0         0         0           Malybdenum         ppm         ASTM D5185(m)         0	Sulfation	Abs/.1mm	ASTM D7415*	>30	28.7	24.2	21.4
Boron         ppm         ASTM D5185(m)         0         23         227         10           Barium         ppm         ASTM D5185(m)         0	Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Barium         ppm         ASTM D5185(m)         0	Sodium	ppm	ASTM D5185(m)		<b>183</b>	6	9
Molybdenum         ppm         ASTM D5185(m)         60         99         110         63           Manganese         ppm         ASTM D5185(m)         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         <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         <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         1         <1         1         1	Boron	ppm	ASTM D5185(m)	0	23	227	0 10
Manganese         ppm         ASTM D5185(m)         0         <1	Barium	ppm	ASTM D5185(m)	0	0	0	0
Magnesium         ppm         ASTM D5185(m)         1010         982         709         100           Calcium         ppm         ASTM D5185(m)         1070         1489         1421         142	Molybdenum	ppm	ASTM D5185(m)	60	99	110	63
Calcium         ppm         ASTM D5185(m)         1070         1489         1421         1           Phosphorus         ppm         ASTM D5185(m)         1150         1027         783         1           Zinc         ppm         ASTM D5185(m)         1270         1227         844         12           Sulfur         ppm         ASTM D5185(m)         2060         2404         2141         27           Oxidation         Abs/.1mm         ASTM D7414*         >25         24.7         17.2         14	Manganese	ppm	ASTM D5185(m)	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185(m)         1150         1027         783         117           Zinc         ppm         ASTM D5185(m)         1270         1227         844         122           Sulfur         ppm         ASTM D5185(m)         2060         2404         2141         27           Oxidation         Abs/.1mm         ASTM D7141*         >25         24.7         17.2         14	Magnesium	ppm	ASTM D5185(m)	1010	982	709	030
Zinc         ppm         ASTM D5185(m)         1270 <b>1227</b> 844         12           Sulfur         ppm         ASTM D5185(m)         2060 <b>2404</b> 2141         27           Oxidation         Abs/.1mm         ASTM D7414*         >25 <b>24.7</b> 17.2         14	Calcium	ppm	ASTM D5185(m)	1070	1489	1421	1116
Sulfur         ppm         ASTM D5185(m)         2060         2404         2141         27           Oxidation         Abs/.1mm         ASTM D7414*         >25         24.7         17.2         14	Phosphorus	ppm	ASTM D5185(m)	1150	1027	783	1132
Oxidation         Abs/.1mm         ASTM D7414*         >25         24.7         17.2         14	Zinc	ppm	ASTM D5185(m)	1270	1227	844	1291
	Sulfur	ppm	ASTM D5185(m)	2060	2404	2141	2791
Visc @ 100°C cSt ASTM D7279(m) 15.4 15.2 13.1 🔺 11	Oxidation	Abs/.1mm	ASTM D7414*	>25	24.7	17.2	14.9
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	15.2	13.1	<b>1</b> 1.3

Contact/Location: Amanda Cipollone - GFL252



