

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 914057 Component

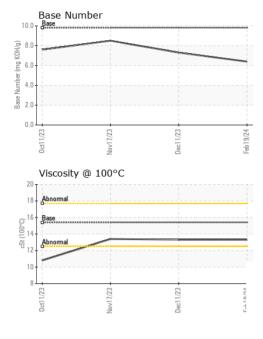
Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (25 GAL)

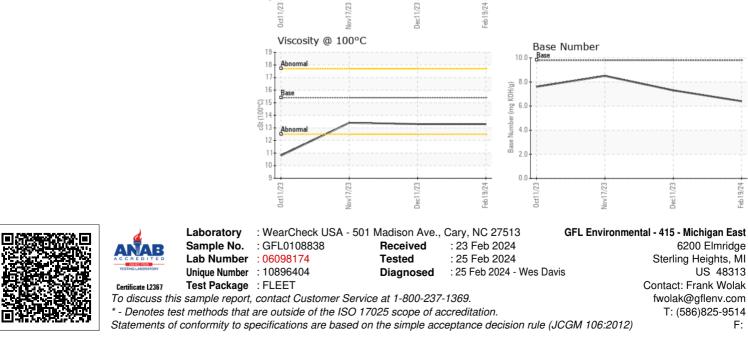
Economendation Sample Number Client Into GFL010838 GFL010589	DIAGNOSIS	SAMPLE INFORM	MATION	method	³ Novžoza		history1	history2
seample at the next service interval to montlor. Sample Date Client Info 19 Feb 2024 11 Doc 2023 17 Nov 2023 It component wear rates are normal. Oil Age hrs Client Info 1105 105 930 769 It component wear rates are normal. Oil Changed Client Info Changed Not	Recommendation							
Area of a constant wear rates are normal. contamination in the contaminatin the contamination in the contamination in the contaminat								
Decomponent wear rates are normal. Oil Age htts Client Info 769 930 769 Detail changed Client Info Changed Not Changed	Wear		hrs					
Outamination fore is in olicitation of any contamination in the it. Olicitanged Client Info Changed Not Changel Not Changel <th< th=""><th></th><th>-</th><th></th><th></th><th></th><th></th><th></th><th></th></th<>		-						
Sample Status NORMAL NORMAL NORMAL More is no indication of any contamination in the kill is suitable for further service. CONTAMINATION rendo imitbase current Hatory1 fibitory2 Fuel WO Method 3.0 <1.0 <1.0 <1.0 <1.0 Water WO Method 0.2 NEG NEG NEG Bits suitable for further service. WO Method 0.2 NEG NEG NEG Weak ppm ASTI/0515m >120 34 22 13 Ohromium ppm ASTI/0515m >2 <1 1 1 Nickel ppm ASTI/0515m >2 <1 1 1 Nickel ppm ASTI/0515m >2 <1 <1 2 Lead ppm ASTI/0515m >2 <1 <1 2 Lead ppm ASTI/0515m S0 <1 <1 <1 Auminum ppm ASTI/0515m S0		e e e e e e e e e e e e e e e e e e e						
CONTAMINATION method imitbase current history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WO Method >3.0 <1.0 <1.0 <1.0 Bit is suitable for further service. The condition of the file suitable for further service. NEG NEG NEG Water WO Method >0.2 NEG NEG NEG Tim ppm ASTM DISIGN >2.0 2.4 <1 1 Nickel ppm ASTM DISIGN >2.0 <1 <1 1 Nickel ppm ASTM DISIGN >2.0 <1 <1 1 Silver ppm ASTM DISIGN >2.0 <1 <1 2 Lead ppm ASTM DISIGN >2.0 <1 <1 2 Vanadium ppm ASTM DISIGN 0 0 <1 <1 Vanadium ppm ASTM DISIGN 0 0 <1 <1 <1<		-				•	Ű	
Lind Condition the DN result indicates that three is suitable kalinity remaining in the oil, The condition of the is suitable for further service. Fuel WC Method 0.2 NEG NEG NEG Water WC Method 0.2 NEG NEG NEG Giycol WC Method 0.2 NEG NEG NEG Water WC Method 0.2 NEG NEG NEG Giycol WC Method 0.2 34 22 13 Chromium ppm ASTM DSISts 20 41 41 Nickel ppm ASTM DSISts 52 2 41 1 Tranum ppm ASTM DSISts 20 61 21 21 Copper ppm ASTM DSISts 30 41 23 29 Tra< ppm ASTM DSISts 30 41 23 29 Tra< ppm ASTM DSISts 0 4 6 8 Copper ppm ASTM DSISts 0 0 21 21 Vanadium ppm ASTM DSISt	oil.		ION	method	limit/base			
Mater WC Method NEG NEG NEG NEG Nis suitable for lurther service. Water WC Method NEG NEG NEG Wear WC Method WC Method NEG NEG NEG NEG Wear method territod territod territod territod territod territod territod territod NEG NEG NEG NEG Vice ppm ASTM 05185n >22 C1 <1 1 c1 c2 c1 c1 <td< th=""><th>Fluid Condition</th><th>Fuel</th><th></th><th>WC Method</th><th>>3.0</th><th><10</th><th><1.0</th><th><10</th></td<>	Fluid Condition	Fuel		WC Method	>3.0	<10	<1.0	<10
Bits suitable for further service. Giycol WC Method NEG NEG NEG I'is suitable for further service. WEAR METALS method imit/base current history1 history1 I'on ppm ASTM 05186n >120 34 22 13 Chromium ppm ASTM 05186n >20 41 -1 1 Nickel ppm ASTM 05186n >22 -1 0 0 -1 Silver ppm ASTM 05186n >22 -1 0 0 -1 2 Lead ppm ASTM 05186n >20 -1 -1 2 2 2 0 0 -1 2 2 2 0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td>								
Iron ppm ASTM 05185m >120 34 22 13 Chromium ppm ASTM 05185m >20 <1	bil is suitable for further service.							
Ohromium ppm ASTM D3186m >20 <1 <1 <1 Nickel ppm ASTM D5186m >5 2 <1		WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTA D5185m >5 2 <1 1 Titanium ppm ASTA D5185m >2 0 0 <1		Iron	ppm	ASTM D5185m	>120	34	22	13
Titanium ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >20 <1		Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >22 <1 0 0 Aluminum ppm ASTM D5185m >20 <1		Nickel	ppm	ASTM D5185m	>5	2	<1	1
Atuminum ppm ASTM D5165m >20 <1		Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead ppm ASTM D5165m >>40 0 <1 <1 Copper ppm ASTM D5165m >>330 41 23 29 Tin ppm ASTM D5165m >15 2 0 <1 Variadium ppm ASTM D5165m 15 2 0 <1 ADDITIVES method Imit/base current history1 history2 Boron ppm ASTM D5155m 0 0 4 6 8 Barium ppm ASTM D5155m 0 0 0 9 0 Molybdenum ppm ASTM D5155m 0 0 1 1 1 Magnesium ppm ASTM D5155m 0 3 66 58 66 62 Calcum ppm ASTM D5155m 0 4 1 1 1 Magnesium ppm ASTM D5155m 1010 844 978 864 Calcum </td <td></td> <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <th><1</th> <td>0</td> <td>0</td>		Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5/85m >330 41 23 29 Tin ppm ASTM D5/85m >15 2 0 <1		Aluminum	ppm	ASTM D5185m	>20	<1	<1	2
Tin ppm ASTM D5185m >15 2 0 <1		Lead	ppm	ASTM D5185m	>40	0	<1	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1		Copper	ppm	ASTM D5185m	>330	41	23	29
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 8 Barium ppm ASTM D5185m 0 0 9 0 9 Molybdenum ppm ASTM D5185m 0 58 56 62 Magnesiew ppm ASTM D5185m 0 41 <1		Tin	ppm	ASTM D5185m	>15	2	0	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 8 Barium ppm ASTM D5185m 0 0 0 9 Molybdenum ppm ASTM D5185m 60 58 56 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1070 1022 1085 1077 Phosphorus ppm ASTM D5185m 1270 1069 1145 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >260 2155 2814 3119 Potassium ppm ASTM D5185m		Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 4 6 8 Barium ppm ASTM D5185m 0 0 0 9 Molybdenum ppm ASTM D5185m 60 58 56 62 Manganese ppm ASTM D5185m 0 <1		Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0 0 0 9 Molybdenum ppm ASTM D5185m 60 58 56 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1070 1022 1085 1077 Phosphorus ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 9 Sodium ppm ASTM D5185m >20 0 <11 3 INFRA-RED method limit/base		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 58 56 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1070 1022 1085 1077 Phosphorus ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method imit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 <1 3 Odatism pm ASTM D5185m >20 0 <1 3 Potassium pm ASTM D5185m >20 0 <1 3 NFRA-RED method imit/base current history1 history2 Soot % % *ASTM D5185m >20 0.8 8.2 6.6 Sulfation Abs/.m *ASTM		Boron	ppm	ASTM D5185m	0	4	6	8
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 844 978 864 Calcium ppm ASTM D5185m 1070 1022 1085 1077 Phosphorus ppm ASTM D5185m 1150 856 1019 936 Zinc ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 <1		Barium	ppm	ASTM D5185m	0	0	0	9
Magnesium ppm ASTM D5185n 1010 844 978 864 Calcium ppm ASTM D5185n 1070 1022 1085 1077 Phosphorus ppm ASTM D5185n 1150 856 1019 936 Zinc ppm ASTM D5185n 1270 1069 1208 1145 Sulfur ppm ASTM D5185n 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185n >25 7 7 9 Sodium ppm ASTM D5185n >20 0 <11 1 Potassium ppm ASTM D5185n >20 0 <1 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.4 0.3 Nitration Abs/m *ASTM D7844 >4 0.8 0.4 0.3 Sulfation Abs/1m <t< th=""><th></th><th>Molybdenum</th><th>ppm</th><th>ASTM D5185m</th><th>60</th><th>58</th><th>56</th><th>62</th></t<>		Molybdenum	ppm	ASTM D5185m	60	58	56	62
Calcium ppm ASTM D5185m 1070 1022 1085 1077 Phosphorus ppm ASTM D5185m 1150 856 1019 936 Zinc ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 9 Sodium ppm ASTM D5185m >20 0 <11 1 Potassium ppm ASTM D5185m >20 0 <1 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.4 0.3 Nitration Abs/rm *ASTM D7824 >20 9.0 8.2 6.6 Sulfation Abs/rm *ASTM D7844 >4 0.8 0.4 0.3 Nitration Abs/rm		Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 856 1019 936 Zinc ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 9 Sodium ppm ASTM D5185m >25 7 7 9 Sodium ppm ASTM D5185m >20 0 <11		Magnesium	ppm	ASTM D5185m	1010	844	978	864
Zinc ppm ASTM D5185m 1270 1069 1208 1145 Sulfur ppm ASTM D5185m 2060 2155 2814 3119 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 7 9 Sodium ppm ASTM D5185m >20 0 <1 1 Potassium ppm ASTM D5185m >20 0 <1 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.0 8.2 6.6 Sulfation Abs/limm *ASTM D7415 >30 21.1 20.4 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/limm *ASTM D7414 >25 16.9 17.4 15.2		Calcium	ppm	ASTM D5185m	1070	1022	1085	1077
SulfurppmASTM D5185m2060215528143119CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25779SodiumppmASTM D5185m>20411PotassiumppmASTM D5185m>200<13INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.80.40.3NitrationAbs/cm*ASTM D7824>209.08.26.6SulfationÅbs/tm*ASTM D7415>3021.120.419.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationÅbs/tm*ASTM D7414>2516.917.415.2		Phosphorus	ppm	ASTM D5185m	1150	856	1019	936
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25779SodiumppmASTM D5185m>20411PotassiumppmASTM D5185m>200<13INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.80.40.3NitrationAbs/cm*ASTM D7624>209.08.26.6SulfationAbs/tmm*ASTM D7415>3021.120.419.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/tmm*ASTM D7414>2516.917.415.2		Zinc	ppm	ASTM D5185m	1270	1069	1208	1145
SiliconppmASTM D5185m>25779SodiumppmASTM D5185m20411PotassiumppmASTM D5185m>200<1		Sulfur	ppm	ASTM D5185m	2060	2155	2814	3119
SodiumppmASTM D5185m411PotassiumppmASTM D5185m>200<13INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.80.40.3NitrationAbs/cm*ASTM D7624>209.08.26.6SulfationAbs/.1mm*ASTM D7415>3021.120.419.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.917.415.2		CONTAMINAN	TS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>200<1		Silicon	ppm		>25	7	7	9
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.80.40.3NitrationAbs/cm*ASTM D7624>209.08.26.6SulfationAbs/.tmm*ASTM D7415>3021.120.419.4FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D7414>2516.917.415.2		Sodium	ppm	ASTM D5185m		4	1	1
Soot % % *ASTM D7844 >4 0.8 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.0 8.2 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 21.1 20.4 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.9 17.4 15.2		Potassium	ppm	ASTM D5185m	>20	0	<1	3
Nitration Abs/cm *ASTM D7624 >20 9.0 8.2 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 21.1 20.4 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.9 17.4 15.2		INFRA-RED		method	limit/base	current	history1	history2
SulfationAbs/.1mm*ASTM D7415>3021.120.419.4FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.917.415.2		Soot %	%	*ASTM D7844	>4	0.8	0.4	0.3
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.917.415.2		Nitration	Abs/cm	*ASTM D7624	>20	9.0	8.2	6.6
Oxidation Abs/.1mm *ASTM D7414 >25 16.9 17.4 15.2		Sulfation	Abs/.1mm	*ASTM D7415	>30	21.1	20.4	19.4
		FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 64 7.3 8.5		Oxidation	Abs/.1mm	*ASTM D7414	>25	16.9	17.4	15.2
		Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.4	7.3	8.5



OIL ANALYSIS REPORT



VISUAL						
		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.3	13.4
GRAPHS						
GRAPHS Ferrous Alloys		Deci1/23	teb 1924			



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