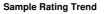


OIL ANALYSIS REPORT



WEAR

Machine Id 228022-1115

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

🔺 Wear

The chromium level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

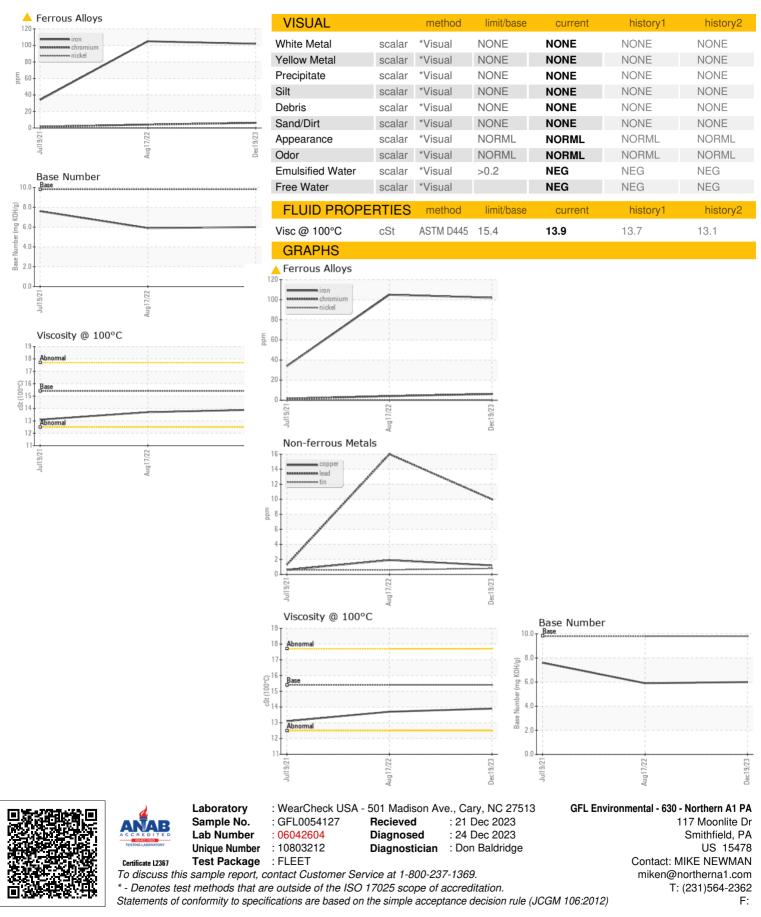
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0054127 GFL0054127 GFL0054135 GFL00254135 GFL0054127 Instant Instant <thinstant< th=""> <thinstant< th=""> <thi< th=""><th>AL)</th><th></th><th>Ju</th><th>2021</th><th>Aug2022 Dec20</th><th>23</th><th></th></thi<></thinstant<></thinstant<>	AL)		Ju	2021	Aug2022 Dec20	23	
Sample Date Client Info 19 Dec 2023 17 Aug 2022 19 Jul 2021 Machine Age hrs Client Info 11163 0 600 Oil Age hrs Client Info 0 0 600 Sample Status Client Info Changed NORMAL NORMAL <th>SAMPLE INFORM</th> <th>IATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info I1163 0 600 DI Age hrs Client Info C Changed 600 600 DI Age Lient Info C Changed Changed Changed Changed NORMAL NOR	Sample Number		Client Info		GFL0054127	GFL0054135	GFL0029266
Dil Age hrs Client Info 0 0 600 Dil Changed Client Info Changed Changed Changed Sample Status Imit Mase current history1 history1 CONTAMINATION method Imit/base current history1 history1 Supple Status WC Method So <1.0	Sample Date		Client Info		19 Dec 2023	17 Aug 2022	19 Jul 2021
Dil Changed Client Info Changed Changed Changed Changed Changed NORMAL Sample Status Imit base current history1 history1 history1 CONTAMINATION wC Method >5 <1.0	Aachine Age	hrs	Client Info		11163	0	600
Sample Status Method Imit/base Current NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 Suel WC Method >5.5 <1.0	Dil Age	hrs	Client Info		0	0	600
CONTAMINATION method limit/base current history1 history1 Suel WC Method >5 <1.0	Dil Changed		Client Info		Changed	Changed	Changed
Superior WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Slycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185n >4 A 6 4 2 Uickel ppm ASTM D5185n >2 0 0 0 Itenium ppm ASTM D5185n >2 0 <1	Sample Status				ABNORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Blycol WC Method Imit/base current history1 history1 version ppm ASTM D5185m >110 102 105 34 Chromium ppm ASTM D5185m >4 A 6 4 2 Vickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
Bilycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >4 6 4 2 Chromium ppm ASTM D5185m >2 0 0 0 Chromium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 -1 0 Muminum ppm ASTM D5185m >2 8 7 0 Lead ppm ASTM D5185m >4 -1 -1 1 Astmanium ppm ASTM D5185m >4 -1 -1 1 Adamadium ppm ASTM D5185m -4 -1 -1 <	uel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >110 102 105 34 Chromium ppm ASTM D5185m >4 6 4 2 Vickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m >2 0 <1	Vater		WC Method	>0.2	NEG	NEG	NEG
ron ppm ASTM D5185m >110 102 105 34 Chromium ppm ASTM D5185m >4 A 6 4 2 Vickel ppm ASTM D5185m >2 0 0 0 Citanium ppm ASTM D5185m >2 0 <1	Glycol		WC Method		NEG	NEG	NEG
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Titanium ppm ASTM D5185m <1 <1 <1 3 Silver ppm ASTM D5185m >2 0 <1	Chromium	ppm	ASTM D5185m	>4		4	2
Bilver ppm ASTM D5185m >2 0 <1 0 Numinum ppm ASTM D5185m >25 8 7 0 Lead ppm ASTM D5185m >45 10 16 1 Copper ppm ASTM D5185m >44 <1	lickel	ppm	ASTM D5185m	>2	0	0	
Numinum ppm ASTM D5185m >25 8 7 0 Lead ppm ASTM D5185m >45 10 16 1 Copper ppm ASTM D5185m >45 1 2 <1	Titanium	ppm	ASTM D5185m		<1	<1	3
e.ead ppm ASTM D5185m >45 10 16 1 Copper ppm ASTM D5185m >85 1 2 <1	Silver	ppm	ASTM D5185m	>2	0	<1	0
Deprint ASTM D5185m >85 1 2 <1 Copper ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>25	8	7	0
Tin ppm ASTM D5185m >4 <1 <1 <1 Antimony ppm ASTM D5185m 0 0 0 <1	ead	ppm	ASTM D5185m	>45	10	16	1
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ADDITIVESmethodlimit/basecurrenthistory1history1BoronppmASTM D5185m0446BariumppmASTM D5185m00000MolybdenumppmASTM D5185m6068666363MagnesseppmASTM D5185m011<1	/anadium	ppm	ASTM D5185m		0	0	<1
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Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 68 66 63 Manganese ppm ASTM D5185m 0 1 1 <1	ADDITIVES		method	limit/base	current	history1	history2
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Aanganese ppm ASTM D5185m 0 1 1 <1 Magnesium ppm ASTM D5185m 1010 873 994 934 Calcium ppm ASTM D5185m 1070 1359 1175 1074 Phosphorus ppm ASTM D5185m 1150 1117 1022 1011 Cinc ppm ASTM D5185m 1270 1402 1289 1174 Sulfur ppm ASTM D5185m 2060 2945 2759 2476 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Sulfation Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	0
Aagnesium ppm ASTM D5185m 1010 873 994 934 Calcium ppm ASTM D5185m 1070 1359 1175 1074 Phosphorus ppm ASTM D5185m 1150 1117 1022 1011 Zinc ppm ASTM D5185m 1270 1402 1289 1174 Sulfur ppm ASTM D5185m 2060 2945 2759 2476 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Intration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Soot % % *ASTM D7624	Nolybdenum	ppm	ASTM D5185m	60	68	66	63
Calcium ppm ASTM D5185m 1070 1359 1175 1074 Phosphorus ppm ASTM D5185m 1150 1117 1022 1011 Zinc ppm ASTM D5185m 1270 1402 1289 1174 Sulfur ppm ASTM D5185m 2060 2945 2759 2476 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Soutfation Abs/cm *ASTM D7624 <t< td=""><td><i>l</i>langanese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><td>1</td><td>1</td><td><1</td></t<>	<i>l</i> langanese	ppm	ASTM D5185m	0	1	1	<1
Phosphorus ppm ASTM D5185m 1150 1117 1022 1011 Zinc ppm ASTM D5185m 1270 1402 1289 1174 Sulfur ppm ASTM D5185m 2060 2945 2759 2476 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Intration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Soot % % *ASTM D7814 >30	<i>l</i> agnesium	ppm	ASTM D5185m	1010	873	994	934
Zinc ppm ASTM D5185m 1270 1402 1289 1174 Sulfur ppm ASTM D5185m 2060 2945 2759 2476 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >30 9 8 5 Godium ppm ASTM D5185m >30 9 10 1 5 Potassium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Iltration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Sulfation Abs/timm *ASTM D7415 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm	Calcium	ppm	ASTM D5185m	1070	1359	1175	1074
SulfurppmASTM D5185m2060294527592476CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>30985SodiumppmASTM D5185m>30985PotassiumppmASTM D5185m>209126INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>31.21.30.6NitrationAbs/cm*ASTM D7624>2014.115.112SulfationAbs/tmm*ASTM D7624>3029.032.524.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/time*ASTM D7414>2524.628.419.1	Phosphorus	ppm	ASTM D5185m	1150	1117	1022	1011
CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>30985SodiumppmASTM D5185m1015PotassiumppmASTM D5185m>209126INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>31.21.30.6NitrationAbs/cm*ASTM D7624>2014.115.112SoulfationAbs/tmm*ASTM D7624>3029.032.524.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1DxidationAbs/tmm*ASTM D7414>2524.628.419.1	Zinc	ppm	ASTM D5185m	1270	1402	1289	1174
Silicon ppm ASTM D5185m >30 9 8 5 Sodium ppm ASTM D5185m 10 1 5 Potassium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Nitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Soulfation Abs/rm *ASTM D7624 >20 14.1 15.1 12 FLUID DEGRADATION method limit/base current history1 history1 Dxidation Abs/tmm *ASTM D7414 >25 24.6 28.4 19.1	Sulfur	ppm	ASTM D5185m	2060	2945	2759	2476
Sodium ppm ASTM D5185m 10 1 5 Potassium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Nitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Sulfation Abs/.1mm *ASTM D7415 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	CONTAMINAN	ΓS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 9 12 6 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Mitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Sulfation Abs/.1mm *ASTM D7415 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	Silicon	ppm	ASTM D5185m	>30	9	8	5
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Nitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Soulfation Abs/cm *ASTM D7624 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/imm *ASTM D7414 >25 24.6 28.4 19.1	Sodium	ppm	ASTM D5185m		10	1	5
Soot % % *ASTM D7844 >3 1.2 1.3 0.6 Nitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Sulfation Abs/.1mm *ASTM D7415 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	Potassium	ppm	ASTM D5185m	>20	9	12	6
Nitration Abs/cm *ASTM D7624 >20 14.1 15.1 12 Sulfation Abs/.1mm *ASTM D7624 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history1 Dxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	INFRA-RED		method	limit/base	current	history1	history2
Bulfation Abs/.1mm *ASTM D7415 >30 29.0 32.5 24.1 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	Soot %	%	*ASTM D7844	>3	1.2	1.3	0.6
FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	Vitration	Abs/cm	*ASTM D7624	>20	14.1	15.1	12
Dxidation Abs/.1mm *ASTM D7414 >25 24.6 28.4 19.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	29.0	32.5	24.1
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 6.0 5.9 7.6	Dxidation	Abs/.1mm	*ASTM D7414	>25	24.6	28.4	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.0	5.9	7.6

Submitted By: ? MOB2FLEET



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Page 2 of 2