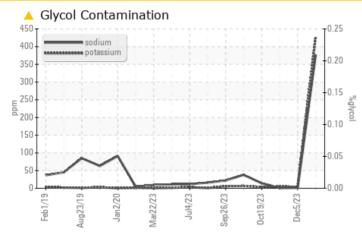


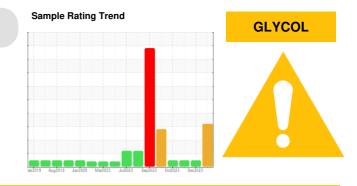
PROBLEM SUMMARY

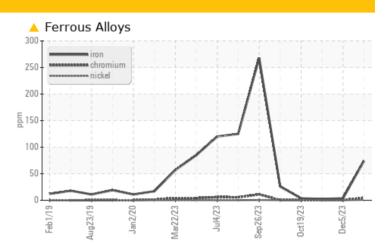
721024-361461

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

COMPONENT CONDITION SUMMARY







RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL	NORMAL	NORMAL		
Iron	ppm	ASTM D5185m	>100	<u> </u>	4	2		
Sodium	ppm	ASTM D5185m		A 377	1	<1		
Potassium	ppm	ASTM D5185m	>20	<u> </u>	4	5		

Customer Id: GFL821 Sample No.: GFL0090343 Lab Number: 06033303 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 jhester@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>

RECOMMENDED	ACTIONS			
Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.
Resample			?	We recommend an early resample to monitor this condition.
Check Glycol Access			?	We advise that you check for the source of the coolant leak.

HISTORICAL DIAGNOSIS



05 Dec 2023 Diag: Sean Felton

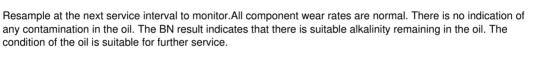
Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



view report



31 Oct 2023 Diag: Wes Davis



19 Oct 2023 Diag: Wes Davis

NORMAL

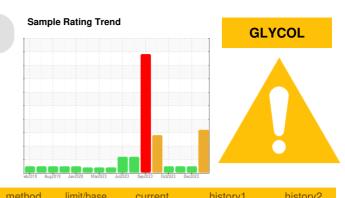


No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. Fuel content negligible. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT



Machine Id 721024-361461

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

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

A Wear

The iron level is marginal.

Contamination

Sodium and/or potassium levels are high.

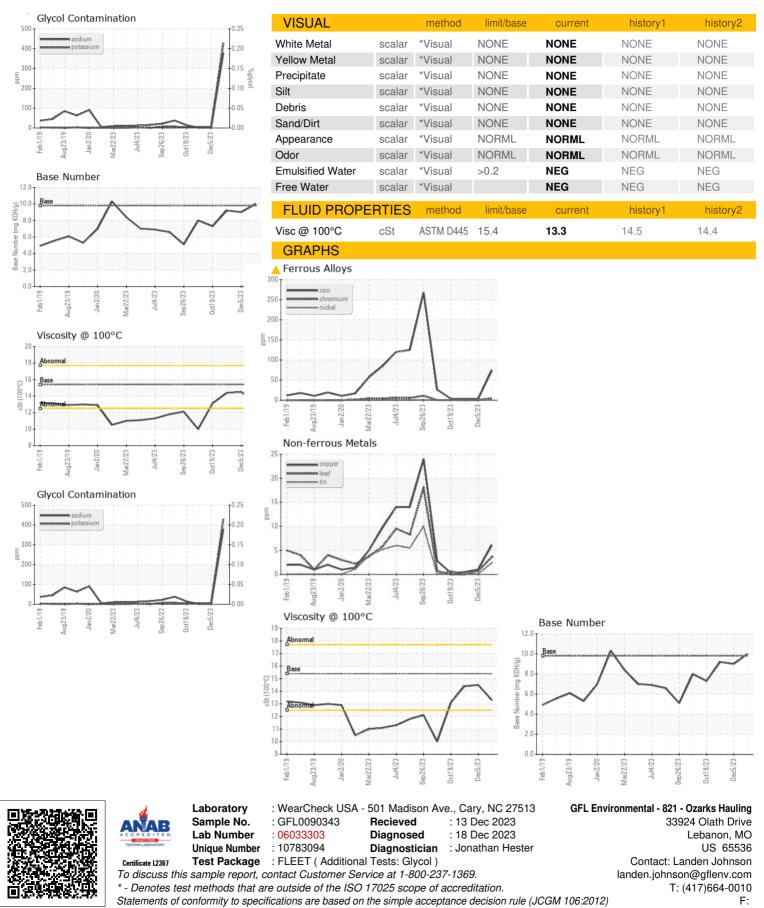
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

Sample Number Client Info GFL0990343 GFL0990330 GFL0090371 Sample Date I Client Info I1 Dec 2023 65 Dec 2023 61 Cot 2023 Machine Age hrs Client Info IC 7055 16414 6790 Ol Age hrs< Client Info Changed Not Changd Not Changd Sample Status I IC Image Not Changed Not Changed CONTAMINATION method 5 <1.0 Nistory Not Changed Fuel WC Method >5 <1.0 Nistory Not Changed Water WC Method >0 NEG NEG NEG Nickel ppm ASTM05185 >10 7 14 4 2 Trainum ppm ASTM05185 >20 5 <1 1 0 Silver ppm ASTM05185 >20 4 <1 0 0 Silver ppm ASTM05185 >10 4 <t< th=""><th>SAMPLE INFOR</th><th>MATION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Image of the second	Sample Number		Client Info		GFL0090343	GFL0090330	GFL0090171
Oil Age hrs Client Info 600 300 150 Oil Changed Client Info Changed Not Changd			Client Info		11 Dec 2023	05 Dec 2023	31 Oct 2023
Oil Changed Sample Status Client Info Changed ABNORMAL Not Changd NORMAL Not Changd NORMAL 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 >100 A74 4 2 Chromium ppm ASTM D5185m >20 5 <1.1 0 Nickel ppm ASTM D5185m >30 0 0 1 Aluminum ppm ASTM D5185m >30 0 0 0 Copper ppm ASTM D5185m >30 6 1 <1 0 Vanadium ppm ASTM D5185m >30 6 1 <1 0 Vanadium ppm ASTM D5185m >30 6 1 <1 1 Lead ppm ASTM D5185m 0 1 212 2 Barum ppm ASTM D5185m 0 11 0 4 <t< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>7055</th><th>16414</th><th>6790</th></t<>	Machine Age	hrs	Client Info		7055	16414	6790
Sample Status Image ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5.2 <1.0 <1.0 <1.0 Water WC Method >5.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165n >4.4 4 2 Chromium ppm ASTM D5165n >4 -1 0 <1 Nickel ppm ASTM D5165n >4 -1 0 <1 Silver ppm ASTM D5165n >40 4 <1 0 Cadmium ppm ASTM D5165n >40 4 <1 0 Cadmium ppm ASTM D5165n >15 2 <1 0 Cadmium ppm ASTM D5165n >16 1 <1 1 Cadmium	Oil Age	hrs	Client Info		600	300	150
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Fuel WC Method >5 <1.0	Sample Status				ABNORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 74 4 2 Chromium ppm ASTM D5185m >20 5 <1 <1 Nickel ppm ASTM D5185m >4 <1 0 <1 Silver ppm ASTM D5185m >3 0 0 <1 Aluminum ppm ASTM D5185m >30 6 1 <1 Lead ppm ASTM D5185m >330 6 1 <1 Vanadium ppm ASTM D5185m >15 2 <1 0 Vanadium ppm ASTM D5185m 0 11 212 2 Boron ppm ASTM D5185m 0 11 0 4 Molybdenum ppm ASTM D5185m 100 11 0 0 </th <th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINAT	ION	method	limit/base	current	history1	history2
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Titanium ppm ASTM D5185m <1	Chromium		ASTM D5185m	>20	5	<1	<1
Silver ppm ASTM D5185m >3 0 0 <1	Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Atuminum ppm ASTM D5185m >20 4 2 1 Lead ppm ASTM D5185m >40 4 <1 0 Copper ppm ASTM D5185m >330 6 1 <1 Tin ppm ASTM D5185m >15 2 <1 0 Vanadium ppm ASTM D5185m >15 2 <1 0 Cadmium ppm ASTM D5185m 0 1 <1 <1 ADDITIVES method 1mil/base current history1 history2 2 Boron ppm ASTM D5185m 0 1 0 4 Molybdenum ppm ASTM D5185m 0 110 0 0 Marganese ppm ASTM D5185m 1010 898 700 862 Calcium ppm ASTM D5185m 1100 898 717 898 Zinc ppm ASTM D5185m 120 11	Titanium	ppm			<1	11	0
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Copper ppm ASTM D5185m >330 6 1 <1	Aluminum	ppm	ASTM D5185m	>20	4	2	1
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Silicon ppm ASTM D5185m >25 11 4 5 Sodium ppm ASTM D5185m >20 377 1 <1	Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	1 898 1027 995	0 700 1507 771	0 862 994 898
Sodium ppm ASTM D5185m ▲ 377 1 <1	Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270	1 898 1027 995 1183	0 700 1507 771 862	0 862 994 898 1145
Sodium ppm ASTM D5185m ▲ 377 1 <1	Maganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060	1 898 1027 995 1183 3242	0 700 1507 771 862 3068	0 862 994 898 1145 3192
Glycol%*ASTM D2982NEGNEGINFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>31.30.10.1NitrationAbs/cm*ASTM D7624>2011.24.14.2SulfationAbs/.1mm*ASTM D7415>3021.317.317.5FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2517.012.712.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 1010 1070 1150 1270 2060 limit/base	1 898 1027 995 1183 3242 current	0 700 1507 771 862 3068 history1	0 862 994 898 1145 3192 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.3 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.2 4.1 4.2 Sulfation Abs/.tmm *ASTM D7415 >30 21.3 17.3 17.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 17.0 12.7 12.9	Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	1 898 1027 995 1183 3242 current 11	0 700 1507 771 862 3068 history1 4	0 862 994 898 1145 3192 history2 5
Soot % % *ASTM D7844 >3 1.3 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 11.2 4.1 4.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 17.3 17.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.0 12.7 12.9	Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	1 898 1027 995 1183 3242 current 11 ▲ 377	0 700 1507 771 862 3068 history1 4 1	0 862 994 898 1145 3192 history2 5 <1
Nitration Abs/cm *ASTM D7624 >20 11.2 4.1 4.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 17.3 17.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.0 12.7 12.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	1 898 1027 995 1183 3242 <u>current</u> 11 ▲ 377 ▲ 427	0 700 1507 771 862 3068 history1 4 1 4	0 862 994 898 1145 3192 history2 5 < <1 5
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FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.0 12.7 12.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982	0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	1 898 1027 995 1183 3242 current 11 ▲ 377 ▲ 427 NEG current	0 700 1507 771 862 3068 history1 4 1 4 1 4 NEG history1	0 862 994 898 1145 3192 history2 5 <1 5 <1 5 NEG NEG
Oxidation Abs/.1mm *ASTM D7414 >25 17.0 12.7 12.9	Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 *ASTM D2982	0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	1 898 1027 995 1183 3242 current 11 ▲ 377 ▲ 427 NEG current 1.3	0 700 1507 771 862 3068 history1 4 1 4 1 4 NEG history1 0.1	0 862 994 898 1145 3192 history2 5 <1 5 <1 5 NEG history2 0.1
	Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 *ASTM D2982 anethod *ASTM D7844 *ASTM D7844	0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	1 898 1027 995 1183 3242 current 11 ▲ 377 ▲ 427 NEG current 1.3 11.2	0 700 1507 771 862 3068 history1 4 1 4 1 4 NEG history1 0.1 0.1 4.1	0 862 994 898 1145 3192 history2 5 <1 5 <1 5 NEG NEG 0.1 4.2
Base Number (BN) mg KOH/g ASTM D2896 9.8 10.0 9.0 9.2	Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 *ASTM D2982 *ASTM D7844 *ASTM D7624	0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30	1 898 1027 995 1183 3242 current 11 ▲ 377 ▲ 427 NEG current 1.3 11.2 21.3	0 700 1507 771 862 3068 history1 4 1 4 1 4 NEG history1 0.1 4.1 17.3	0 862 994 898 1145 3192 history2 5 <1 5 <1 5 NEG history2 0.1 4.2 17.5
	Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7624 *ASTM D7624	0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base	1 898 1027 995 1183 3242 current 11 ▲ 377 ▲ 427 NEG current 1.3 11.2 21.3 current	0 700 1507 771 862 3068 history1 4 1 4 NEG history1 0.1 4.1 17.3 history1	0 862 994 898 1145 3192 history2 5 <1 5 <1 5 NEG NEG 0.1 4.2 17.5 history2



OIL ANALYSIS REPORT



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