

PROBLEM SUMMARY

Sample Rating Trend

GLYCOL



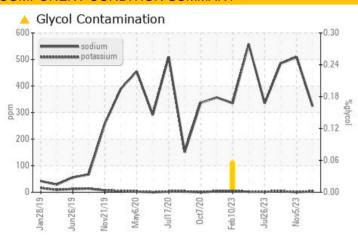


723034-303005

Component **Diesel Engine**

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. We recommend an early resample to monitor this condition.

PROBLEMATION	C TEST	FRESULT	S		
Sample Status			ABNORMAL	ABNORMAL	ABNORMAL
Sodium	ppm	ASTM D5185m	<u></u> 324	△ 509	<u>485</u>

Customer Id: GFL837 Sample No.: GFL0102545 Lab Number: 06028406 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 customerservice@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
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 Nov 2023 Diag: Jonathan Hester

GLYCOL



We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition. All component wear rates are normal. Sodium and/or potassium levels are high. The BN result indicates that there is suitable alkalinity remaining in the oil.



09 Oct 2023 Diag: Jonathan Hester

GLYCOL



We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition. All component wear rates are normal. Sodium and/or potassium levels are high. The BN result indicates that there is suitable alkalinity remaining in the oil.



26 Jul 2023 Diag: Jonathan Hester

GLYCOL



We advise that you check for possible 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.All component wear rates are normal. Sodium and/or potassium levels are high. The BN result indicates that there is suitable alkalinity remaining in the oil.





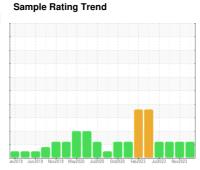
OIL ANALYSIS REPORT



723034-303005

Component **Diesel Engine**

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. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

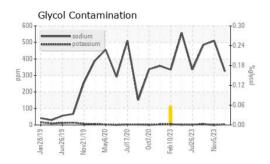
Fluid Condition

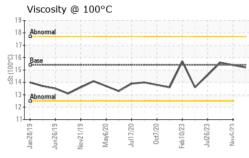
The BN result indicates that there is suitable alkalinity remaining in the oil.

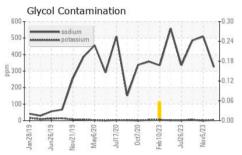
SAMPLE INFORMATION method limit/base current history1 history2							
Sample Date Client Info 27 Nov 2023 05 Nov 2023 09 Oct 2023 Machine Age hrs Client Info 21913 21770 21642 Oil Age hrs Client Info 0 0 0 0 Oil Changed Sample Status Client Info Not Changd ABNORMAL	SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 21913 21770 21642 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info Not Changd N/A Not Changd ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Sample Number		Client Info		GFL0102545	GFL0098648	GFL0093722
Oil Age hrs Client Info Not Changd Not Changd ABNORMAL N/A Not Changd ABNORMAL Sample Status Client Info Not Changd ABNORMAL N/A ABNORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 <2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 2 3 3 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 2 3 3 75 Chromium ppm ASTM D5185m >30 3 5 5 5 2 8 8 8 <t< td=""><td>Sample Date</td><td></td><td>Client Info</td><td></td><th>27 Nov 2023</th><td>05 Nov 2023</td><td>09 Oct 2023</td></t<>	Sample Date		Client Info		27 Nov 2023	05 Nov 2023	09 Oct 2023
Oil Changed Sample Status Client Info Not Changd ABNORMAL ABNO	Machine Age	hrs	Client Info		21913	21770	21642
Sample Status Method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Not Changd	N/A	Not Changd
Fuel WC Method S5	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
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WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 51 83 75 Chromium ppm ASTM D5185m >2 3 3 Nickel ppm ASTM D5185m >2 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
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Titanium	Chromium	ppm	ASTM D5185m	>5	2	3	3
Titanium	Nickel	ppm	ASTM D5185m	>2	<1	<1	1
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Zinc ppm ASTM D5185m 1270 1424 1620 1505 Sulfur ppm ASTM D5185m 2060 3203 3181 3096 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 13 18 18 Sodium ppm ASTM D5185m >20 4 509 485 Potassium ppm ASTM D5185m >20 4 0 5 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	11 6 85 0 1109	19 0 91 <1 1246	14 12 90 1 1189
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CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 13 18 18 Sodium ppm ASTM D5185m >20 4 509 485 Potassium ppm ASTM D5185m >20 4 0 5 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	11 6 85 0 1109 1309 1189	19 0 91 <1 1246 1372 1352	14 12 90 1 1189 1322 1234
Silicon ppm ASTM D5185m >20 13 18 18 Sodium ppm ASTM D5185m ≥20 4 509 485 Potassium ppm ASTM D5185m >20 4 0 5 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	11 6 85 0 1109 1309 1189	19 0 91 <1 1246 1372 1352 1620	14 12 90 1 1189 1322 1234 1505
Sodium ppm ASTM D5185m ▲ 324 ▲ 509 ▲ 485 Potassium ppm ASTM D5185m >20 4 0 5 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	11 6 85 0 1109 1309 1189	19 0 91 <1 1246 1372 1352 1620	14 12 90 1 1189 1322 1234 1505
Potassium ppm ASTM D5185m >20 4 0 5 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	11 6 85 0 1109 1309 1189 1424 3203	19 0 91 <1 1246 1372 1352 1620 3181	14 12 90 1 1189 1322 1234 1505 3096 history2
Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	11 6 85 0 1109 1309 1189 1424 3203 current	19 0 91 <1 1246 1372 1352 1620 3181 history1	14 12 90 1 1189 1322 1234 1505 3096 history2 18
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Soot % % *ASTM D7844 >3 0.9 2.3 2.5 Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 509	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5
Nitration Abs/cm *ASTM D7624 >20 11.0 14.6 14.4 Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 ▲ 509 0	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5
Sulfation Abs/.1mm *ASTM D7415 >30 24.5 29.7 28.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4 NEG	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 509 0 NEG	14 12 90 1 1189 1322 1234 1505 3096 history2 18 485 5 NEG
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.5 23.2	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol INFRA-RED	ppm	ASTM D5185m *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	11 6 85 0 1109 1309 1189 1424 3203	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 ▲ 509 0 NEG history1	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5 NEG history2
Oxidation	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m ASTM D5185m *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4 NEG current 0.9	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 ▲ 509 0 NEG history1 2.3	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5 NEG history2 2.5
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D7844 *ASTM D7844	0 0 60 0 1010 1150 1270 2060 limit/base >20 >20	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4 NEG current 0.9 11.0	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 ▲ 509 0 NEG history1 2.3 14.6	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5 NEG history2 2.5 14.4
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 0 0 1010 1070 1150 1270 2060 limit/base >20 >20 	11 6 85 0 1109 1309 1189 1424 3203	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 ▲ 509 0 NEG history1 2.3 14.6 29.7	14 12 90 1 1189 1322 1234 1505 3096 history2 18 ▲ 485 5 NEG history2 2.5 14.4 28.8
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm	ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 limit/base >20 >20 limit/base >3 >20 >3 limit/base	11 6 85 0 1109 1309 1189 1424 3203 current 13 324 4 NEG current 0.9 11.0 24.5 current	19 0 91 <1 1246 1372 1352 1620 3181 history1 18 509 0 NEG history1 2.3 14.6 29.7 history1	14 12 90 1 1189 1322 1234 1505 3096 history2 18 485 5 NEG history2 2.5 14.4 28.8 history2

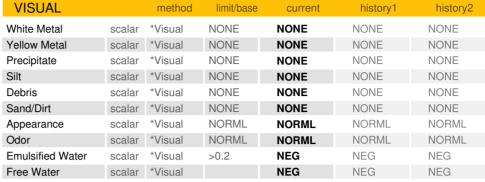


OIL ANALYSIS REPORT



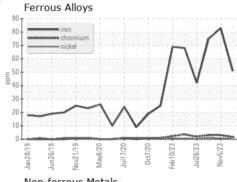


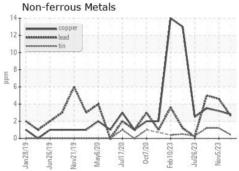


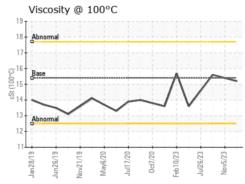


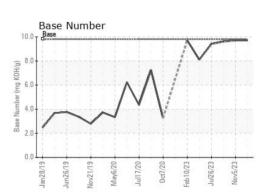
FLUID PROPI	EHILES	method	iiiiii/base	current	riistory i	HIStory
Visc @ 100°C	cSt	ASTM D445	15.4	15.2	15.4	15.6

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: GFL0102545 : 06028406

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

Received Diagnosed Diagnostician

: 07 Dec 2023 : 11 Dec 2023 : Jonathan Hester

: 10778197 Test Package : FLEET (Additional Tests: Glycol)

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

GFL Environmental - 837 - Harrison TS

22820 S State Route 291 Harrisonville, MO US 64701

Contact: BRYAN SWANSON

bryanswanson@gflenv.com

T: F:

Contact/Location: BRYAN SWANSON - GFL837