

OIL ANALYSIS REPORT

(DQY489) 10558

Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 GAL)

Sample Rating Trend **GLYCOL**

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels remain high. Test for glycol is negative.

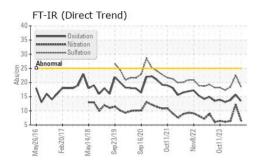
Fluid Condition

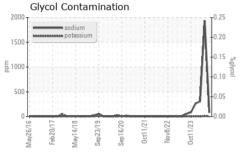
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

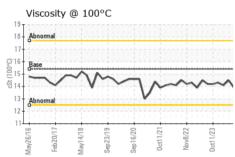
Sample Number Client Info GFL0072164 2 Jun 2024 22 Mar 2024 18 Dec 2023 Machine Age hrs Client Info 26 Jun 2024 25 Jun 2024 22 Mar 2024 18 Dec 2023 60 dec 2018 dec 2023 60 dec 2018 dec 2023 60 dec 2018 dec 2023 60 dec 2023 dec 2023 dec 2018 dec 2023 de	AL)		y2016 Feb20	17 May2018 Sep2019	Sep2020 Oct2021 Nov2022	0ct2023	
Sample Date Client Info 26 Jun 2024 22 Mar 2024 18 Dec 2023 Machine Age hrs Client Info 26440 25642 25036 Oil Age hrs Client Info 798 600 600 Oil Changed Client Info Not Changed Changed Changed ABNORMAL ABNORMAL </th <th>SAMPLE INFOR</th> <th>MATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 26 Jun 2024 22 Mar 2024 18 Dec 2023 Machine Age hrs Client Info 26440 25642 25036 Oil Age hrs Client Info 798 600 600 Oil Changed Client Info Not Changed Changed ABNORMAL ABNORMAL ABNORMAL Sample Status WC Method >3.0 <1.0	Sample Number		Client Info		GFL0072164	GFL0072071	GFL0072031
Oil Age hrs Client Info 798 600 600 Oil Changed Sample Status Client Info Not Changed Changed Changed Changed Changed Changed Changed ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL CONTAMINATION Changed	Sample Date		Client Info		26 Jun 2024	22 Mar 2024	18 Dec 2023
Cilient Info Not Changed Changed ATTENTION ABNORMAL A	Machine Age	hrs	Client Info		26440	25642	25036
ATTENTION	Oil Age	hrs	Client Info		798	600	600
ATTENTION	•		Client Info		Not Changd	Changed	Changed
Fuel WC Method S3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 liron ppm ASTM D5185m >5 1 2 <1 <1 0 <1 <1 0 <1 <1	Sample Status				ATTENTION	ABNORMAL	ABNORMAL
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 11 48 10 Chromium ppm ASTM D5185m >5 1 2 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 11 48 10 Chromium ppm ASTM D5185m >5 1 2 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 1 2 <1 Nickel ppm ASTM D5185m >4 <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>75	11	48	10
Titanium	Chromium	ppm	ASTM D5185m	>5	1	2	<1
Silver	Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Aluminum ppm ASTM D5185m >15 3 8 2 Lead ppm ASTM D5185m >25 <1	Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Lead ppm ASTM D5185m >25 <1 3 0 Copper ppm ASTM D5185m >100 5 4 93 <1 Tin ppm ASTM D5185m >4 <1 0 0 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 21 6 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 0 0 Mangaesium ppm ASTM D5185m 0 <1 <1 0 0 Calcium ppm ASTM D5185m 100 1066 1175 1102 Phosphorus ppm ASTM D5185m 1270 117	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5185m >100 5 ♠ 93 <1 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>15	3	8	2
Tin ppm ASTM D5185m >4 <1 0 0 0 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 21 6 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 10 0 <1 0 0 Magnesium ppm ASTM D5185m 10 0 41 0 0 Magnesium ppm ASTM D5185m 10 0 894 979 1022 Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 6 △45 8 Sodium ppm ASTM D5185m 20 3 △13 <1 Glycol % "ASTM D5185m >20 3 △13 <1 SURGULO % "ASTM D5185m >20 6.7 12.2 6.4 Sulfation Abs/:lmm "ASTM D7814 >20 6.7 12.2 6.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/:lmm "ASTM D7414 >25 13.5 15.7 13.8	Lead	ppm	ASTM D5185m	>25	<1	3	0
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 21 6 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 66 117 68 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 894 979 1022 Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>100	5	<u></u> 93	<1
Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 21 6 Barium ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>4	<1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 66 117 68 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 894 979 1022 Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1 Glycol % *ASTM D2882 NEG NEG NEG INFRA-RED method limit/base curre	Boron	ppm	ASTM D5185m	0	4	21	6
Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 894 979 1022 Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1 Glycol *ASTM D5185m >20 3 13 <1 Glycol *ASTM D5185m >20 3 13 <1 Reg NEG NEG NEG NEG <tr< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th><1</th><td>0</td><td>0</td></tr<>	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium ppm ASTM D5185m 1010 894 979 1022 Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1	Molybdenum	ppm	ASTM D5185m	60	66	117	68
Calcium ppm ASTM D5185m 1070 1066 1175 1102 Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus ppm ASTM D5185m 1150 975 1063 1066 Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1	Magnesium	ppm	ASTM D5185m	1010	894	979	1022
Zinc ppm ASTM D5185m 1270 1176 1297 1313 Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 45 8 Sodium ppm ASTM D5185m >20 3 13 <1 Potassium ppm ASTM D5185m >20 3 13 <1 Glycol % *ASTM D5185m >20 3 13 <1 Glycol % *ASTM D5185m >20 3 13 <1 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5	Calcium	ppm	ASTM D5185m	1070	1066	1175	1102
Sulfur ppm ASTM D5185m 2060 2676 3857 3301 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 ▲ 45 8 Sodium ppm ASTM D5185m >20 3 ▲ 1935 ▲ 305 Potassium ppm ASTM D5185m >20 3 ▲ 13 <1	Phosphorus	ppm	ASTM D5185m	1150	975	1063	1066
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 ▲ 45 8 Sodium ppm ASTM D5185m ● 81 ▲ 1935 ▲ 305 Potassium ppm ASTM D5185m >20 3 ▲ 13 <1	Zinc	ppm	ASTM D5185m	1270	1176	1297	1313
Silicon ppm ASTM D5185m >25 6 ▲ 45 8 Sodium ppm ASTM D5185m ● 81 ▲ 1935 ▲ 305 Potassium ppm ASTM D5185m >20 3 ▲ 13 <1 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.4 0.1 Nitration Abs/cm *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Sulfur	ppm	ASTM D5185m	2060	2676	3857	3301
Sodium ppm ASTM D5185m ■ 81 ▲ 1935 ▲ 305 Potassium ppm ASTM D5185m >20 3 ▲ 13 <1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 ▲ 13 <1 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.4 0.1 Nitration Abs/cm *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Silicon	ppm	ASTM D5185m	>25	6	<u>45</u>	8
NEG NEG	Sodium	ppm	ASTM D5185m		81	△ 1935	<u></u> 305
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.4 0.1 Nitration Abs/cm *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Potassium	ppm	ASTM D5185m	>20	3	<u> </u>	<1
Soot % % *ASTM D7844 >6 0.4 0.1 Nitration Abs/cm *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 6.7 12.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Soot %	%	*ASTM D7844	>6	0.4	0.4	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 18.5 22.6 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Nitration	Abs/cm	*ASTM D7624	>20	6.7	12.2	6.4
Oxidation Abs/.1mm *ASTM D7414 >25 13.5 15.7 13.8	Sulfation	Abs/.1mm	*ASTM D7415	>30		22.6	
	FLUID DEGRAI	OITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	15.7	13.8
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.6	13.6	9.6

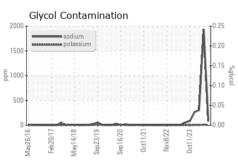


OIL ANALYSIS REPORT





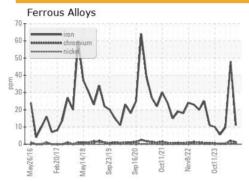




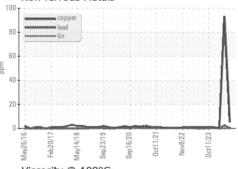
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

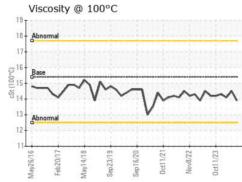
FLUID PROP	ERTIES					
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.5	14.1

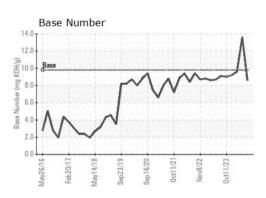
GRAPHS















Certificate 12367

Laboratory Sample No.

Lab Number : 06226015 Unique Number : 11109508

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0072164 Received

Test Package : FLEET (Additional Tests: Glycol)

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

Tested Diagnosed

: 02 Jul 2024 : 05 Jul 2024 : 05 Jul 2024 - Jonathan Hester

2097 Buchanan Highway

Cedartown, GA US 30125 Contact: WILLIAM FOSTER

william.foster@gflenv.com T: (800)207-6618

GFL Environmental - 094 - Cedartown

* - 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)

Report Id: GFL094 [WUSCAR] 06226015 (Generated: 07/05/2024 10:56:54) Rev: 1

Submitted By: Darrell Welch