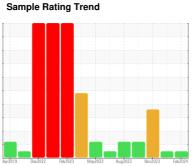


OIL ANALYSIS REPORT

T Š



NORMAL



Machine Id 928073-260342

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

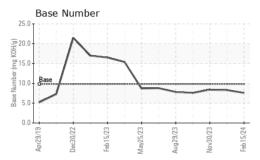
Fluid Condition

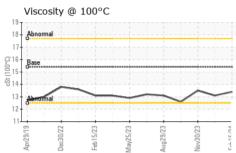
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/bass current history1 history2	GAL)		Apr2019	Dec2022 Feb2023	May2023 Aug2023 Nov2023	Feb2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 30733 131562 30480 Machine Age hrs Client Info 30733 131562 30480 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A NoRMAL NoRMAL ABNORMAL Sample Status method Imitibass current history1 history2 Fuel WC Method 55 <1.0	Sample Number		Client Info		GFL0104948	GFL0088131	GFL0088141
Oil Age hrs Client Info N/A Not Changd N/A Sample Status Client Info N/A NoRMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Glycol WC Method Image: NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 15 7 82 Chromium ppm ASTM D5185m >20 <1 0 4 Nickel ppm ASTM D5185m >30 0 0 0 Silver ppm ASTM D5185m >30 0 0 0 Lead ppm ASTM D5185m >40 0 0 0 Cappe			Client Info		15 Feb 2024	27 Dec 2023	30 Nov 2023
Oil Changed Sample Status Client Info N/A NoRMAL NORMAL N/A ABNORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5.5 <1.0	Machine Age	hrs	Client Info		30733	131562	30480
Sample Status	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		N/A	Not Changd	N/A
Fuel WC Method value >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 15 7 82 Chromium ppm ASTM D5185m >20 <1	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method Glycol NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 15 7 82 Chromium ppm ASTM D5185m >20 <1 0 4 Nickel ppm ASTM D5185m >4 0 0 1 Silver ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >40 0 0 0 Silver ppm ASTM D5185m >20 5 2 14 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 5<	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 15 7 82 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 15 7 82 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 0 4 Nickel ppm ASTM D5185m >4 0 0 1 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >40 0 0 0 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >40 0 0 0 Vanadium ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 <td>WEAR METAL</td> <td>.S</td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 0 0 1 Titanium ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>100	15	7	82
Titanium ppm ASTM D5185m <1 0 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 2 ▲ 14 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Chromium	ppm	ASTM D5185m	>20	<1	0	4
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 5 2 ▲ 14 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 0 3 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 41 0 1<	Nickel	ppm	ASTM D5185m	>4	0	0	1
Aluminum ppm ASTM D5185m >20 5 2 ▲ 14 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Titanium	ppm	ASTM D5185m		<1	0	<1
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 0 3 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 <1 0 <1 0 <1 Magnesium ppm ASTM D5185m 1070 964 1034 1086 0 1046 257 1235 1257<	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 <1 0 3 Tin ppm ASTM D5185m >15 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	5	2	1 4
Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 5 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 61 60 78 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 5 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 60 78 Manganese ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2270 1126 1257 1235 Sulfur ppm ASTM D5185m >225 8 5 313 Sodium ppm ASTM D5	Copper	ppm	ASTM D5185m	>330	<1	0	3
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 41 0 <1	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 60 78 Manganese ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 60 78 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 △ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base <td>Cadmium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 61 60 78 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 △ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/ba	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 61 60 78 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 △ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844	Boron	ppm	ASTM D5185m	0	0	0	5
Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 </td <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 888 984 940 Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION *ASTM D74	Molybdenum	ppm				60	
Calcium ppm ASTM D5185m 1070 964 1034 1086 Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 △ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/:m *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/:1mm	Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus ppm ASTM D5185m 1150 974 1031 1046 Zinc ppm ASTM D5185m 1270 1126 1257 1235 Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm		ppm					
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Sulfur ppm ASTM D5185m 2060 2745 3132 3709 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m 76 36 ▲ 568 Potassium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6		ppm			1126		
Silicon ppm ASTM D5185m >25 8 5 ▲ 31 Sodium ppm ASTM D5185m 76 36 ▲ 568 Potassium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6			ASTM D5185m	2060	2745	3132	3709
Sodium ppm ASTM D5185m 76 36 ▲ 568 Potassium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 1 27 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6				>25			
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6		ppm	ASTM D5185m		76	36	<u></u> ▲ 568
Soot % % *ASTM D7844 >3 0.5 0.4 0.2 Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	Potassium	ppm	ASTM D5185m	>20	1	1	27
Nitration Abs/cm *ASTM D7624 >20 9.3 8.4 5.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.9 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	Soot %	%	*ASTM D7844	>3	0.5	0.4	0.2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	Nitration	Abs/cm	*ASTM D7624	>20	9.3	8.4	5.9
Oxidation Abs/.1mm *ASTM D7414 >25 17.5 17.0 14.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.5	19.9	18.4
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.5	17.0	14.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.6	8.3	8.4



OIL ANALYSIS REPORT

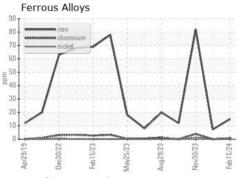


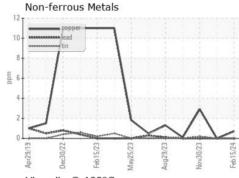


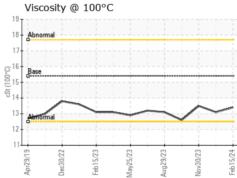
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

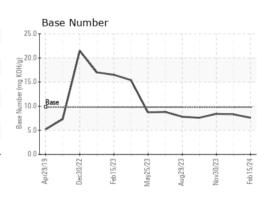
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.1	13.5

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number : 06099815

: GFL0104948

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

Tested Unique Number : 10898045 Diagnosed Test Package : FLEET

: 26 Feb 2024 : 27 Feb 2024 : 27 Feb 2024 - Wes Davis

GFL Environmental - 820 - Joplin Hauling 3700 West 7th Street

Joplin, MO US 64801

Contact: James Jarrett jjarrett@gflenv.com

T: (417)310-2802

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)

Received