

## **OIL ANALYSIS REPORT**

### Area {UNASSIGNED} 411025

## Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (10 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

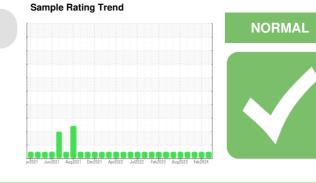
All component wear rates are normal.

#### 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.



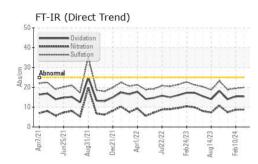
SAMPLE INFORM	<i>I</i> IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0115981	GFL0090055	GFL0080519
Sample Date		Client Info		21 May 2024	10 Feb 2024	13 Oct 2023
Machine Age	hrs	Client Info		0	1328	1328
Oil Age	hrs	Client Info		0	600	1328
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI		method	limit/base			history2
	UN	method	limit/base	current	history1	
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	11	10	10
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	7	4	0
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	1. 1	No III Do Iooiii		U	0	0
ADDITIVES	le le	method	limit/base	current	history1	history2
	ppm	method	limit/base			-
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m	0	current 0	history1 2	history2 <1
ADDITIVES Boron	ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 0 0	history1 2 0	history2 <1 2
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 0 0 64	history1 2 0 60	history2 <1 2 60
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 0 0 64 0	history1 2 0 60 0	history2 <1 2 60 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 0 0 64 0 1015	history1 2 0 60 0 929	history2 <1 2 60 <1 834
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 0 0 64 0 1015 1219	history1 2 0 60 0 929 1059	history2 <1 2 60 <1 834 1025
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 0 0 64 0 1015 1219 1103	history1 2 0 60 0 929 1059 970	history2           <1           2           60           <1           834           1025           962
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 0 0 64 0 1015 1219 1103 1367	history1 2 0 60 0 929 1059 970 1199	history2           <1           2           60           <1           834           1025           962           1117
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	Current 0 0 64 0 1015 1219 1103 1367 3630	history1 2 0 60 0 929 1059 970 1199 2961	<1         2         60         <1         834         1025         962         1117         2886
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current           0           0           64           0           1015           1219           1103           1367           3630           current           3	history1 2 0 60 929 1059 970 1199 2961 history1	history2 <1 2 60 <1 834 1025 962 1117 2886 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	Current 0 0 64 0 1015 1219 1103 1367 3630 Current	history1         2         0         60         0         929         1059         970         1199         2961         history1         4	<1         2         60         <1         834         1025         962         1117         2886         history2         2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current           0           0           64           0           1015           1219           1103           1367           3630           current           3           9	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         4	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 	current         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         4         7         history1	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur Silicon Sodium Potassium INFRA-RED Soot %	ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current         0         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current         0.8	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         4         7         history1         0.8	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2         0.6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 	current         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         4         7         history1	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >20 <b>imit/base</b> >6 >20	current         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current         0.8         8.8         19.9	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         7         history1         0.8         8.7         19.5	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2         0.6         7.4         18.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >6 >20	current         0         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current         0.8         8.8         19.9         current	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         4         7         history1         0.8         8.7         19.5         history1	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2         0.6         7.4         18.9         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >20 <b>imit/base</b> >6 >20	current         0         64         0         1015         1219         1103         1367         3630         current         3         9         20         current         0.8         8.8         19.9	history1         2         0         60         0         929         1059         970         1199         2961         history1         4         7         history1         0.8         8.7         19.5	<1         2         60         <1         834         1025         962         1117         2886         history2         2         <1         6         history2         0.6         7.4         18.9

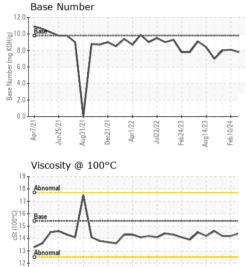


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# **OIL ANALYSIS REPORT**





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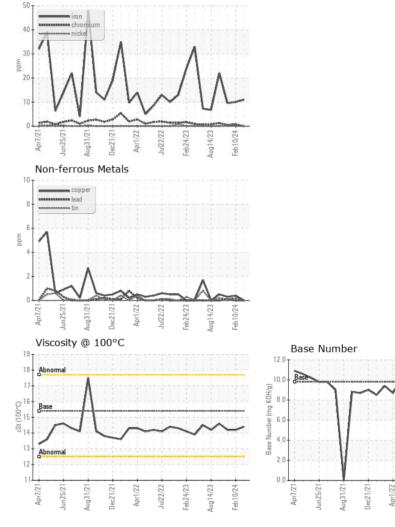
Aug14/23 -

eb10/24

eb24/23

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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.4	14.2	14.2
GRAPHS						

Ferrous Alloys



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 018 - Fayetteville Sample No. : GFL0115981 Received : 22 May 2024 4621 Marracco Drive Lab Number : 06187472 Tested : 23 May 2024 Hope Mills, NC Unique Number : 11044224 Diagnosed : 23 May 2024 - Wes Davis US 28348 Test Package : FLEET Contact: Robert Carter Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. robert.carter@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (910)596-1170 F:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: GFL018 [WUSCAR] 06187472 (Generated: 05/23/2024 17:31:07) Rev: 1

Submitted By: CHRIS HALL

Feb24/23 Aug 14/23 Feb 10/24