

## **OIL ANALYSIS REPORT**



Machine Id

### 821081

#### Component Diesel Engine

Fluid 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.

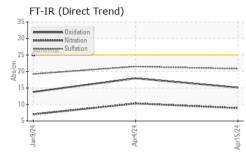
#### Fluid Condition

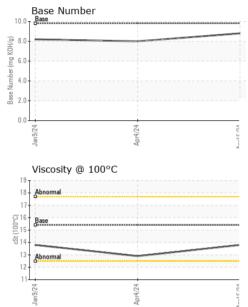
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0118495	GFL0118487	GFL0095332
Sample Date		Client Info		15 Apr 2024	04 Apr 2024	09 Jan 2024
Machine Age	hrs	Client Info		0	0	7646
Oil Age	hrs	Client Info		0	0	650
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	68	50	16
Chromium	ppm	ASTM D5185m	>20	2	2	0
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	49	7	2
Lead	ppm	ASTM D5185m	>40	<1	<1	0
Copper	ppm	ASTM D5185m	>330	2	10	<1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 0	history2 <1
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	0	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 88	0 0 65	<1 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 88 <1	0 0 65 <1	<1 0 61 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 88 <1 1366	0 0 65 <1 921	<1 0 61 0 939
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 88 <1 1366 1572	0 0 65 <1 921 1074	<1 0 61 0 939 1022
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 88 <1 1366 1572 1658	0 0 65 <1 921 1074 966	<1 0 61 0 939 1022 964
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm 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 1270	2 0 88 <1 1366 1572 1658 1859	0 0 65 <1 921 1074 966 1145	<1 0 61 0 939 1022 964 1264
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	0 0 60 0 1010 1070 1150 1270 2060	2 0 88 <1 1366 1572 1658 1859 4426	0 0 65 <1 921 1074 966 1145 3193	<1 0 61 0 939 1022 964 1264 2946
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 88 <1 1366 1572 1658 1859 4426 current	0 0 65 <1 921 1074 966 1145 3193 history1	<1 0 61 0 939 1022 964 1264 2946 kistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11	0 0 65 <1 921 1074 966 1145 3193 history1 17	<1 0 61 0 939 1022 964 1264 2946 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m 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 2060 <b>limit/base</b>	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11 5	0 0 65 <1 921 1074 966 1145 3193 history1 17 49	<1 0 61 0 939 1022 964 1264 2946 <b>history2</b> 3 3 31
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11 5 76	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31	<1 0 61 0 939 1022 964 1264 2946 history2 3 3 31 33
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11 5 76 <u>current</u>	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31 history1	<1 0 61 0 939 1022 964 1264 2946 <b>history2</b> 3 31 33 33 <b>history2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	2 0 88 <1 1366 1572 1658 1859 4426 <i>current</i> 11 5 76 <i>current</i> 1.2	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31 history1 0.5	<1 0 61 0 939 1022 964 1264 2946 <b>history2</b> 3 31 33 31 33 <b>history2</b> 0.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >22 20	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11 5 76 <u>current</u> 1.2 8.9	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31 17 49 31 bistory1 0.5 10.3	<1 0 61 0 939 1022 964 1264 2946 history2 3 3 31 33 33 history2 0.9 7.0
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	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 88 <1 1366 1572 1658 1859 4426 <i>current</i> 11 5 76 <i>current</i> 1.2 8.9 20.8 <i>current</i>	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31 17 49 31 0.5 10.3 21.5 history1	<1 0 61 0 939 1022 964 1264 2946 bistory2 3 3 31 33 bistory2 0.9 7.0 19.2 bistory2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 88 <1 1366 1572 1658 1859 4426 <u>current</u> 11 5 76 <u>current</u> 1.2 8.9 20.8	0 0 65 <1 921 1074 966 1145 3193 history1 17 49 31 17 49 31 0.5 10.3 21.5	<1 0 61 0 939 1022 964 1264 2946 <b>history2</b> 3 31 33 <b>31</b> 33 <b>history2</b> 0.9 7.0 19.2



# **OIL ANALYSIS REPORT**





		method				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 Wat		*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PRO		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	12.9	13.8
GRAPHS						
Ferrous Alloy	S		_			
60 - iron	1					
50 - nickel						
40						
40 30						
20						
10						
			1			
Jan 9/24	Apr4/24 -		124			
Jang	Apré		Apr15/24			
Non-ferrous	Metals					
	$\wedge$					
8 - copper						
o tin						
	/					
= 6						
4						
4 2						
2						
2	14/24		15/24			
2-	Apri/24		Apr15/24			
Viscosity @ 1				Base Number		
Viscosity @ 1				Base Number		
Viscosity @ 1			10.	Base	-	
Viscosity @ 1			10.	Base	-	
Viscosity @ 1			10.	0 - Base	-	
Viscosity @ 1			10.	0 - Base 0		
Viscosity @ 1			10. (6)(HO)X 60. Mumi part Norman Sec	0 - Base	-	
Viscosity @ 1			10. (6,HOX 6. jaq	0 - Base	-	
Viscosity @ 1 Abnormal Abnormal Abnormal	.00°C		10. (0)HOY 80. ) Jaquur 4. 88 2.	0		
Viscosity @ 1 Abnormal Abnormal Abnormal	.00°C		10. (0)HOY 80. ) Jaquur 4. 88 2.	0		
Viscosity @ 1			10. (0)HOX 00 900 Jon 10 900 Jon	0 - Base	Apr4/24	
Viscosity @ 1	Poologian Appleter		10. 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	0 - Base	Apr4/24	
Viscosity @ 1	.00°C		10. (b)(HOX KU) Jaquer HZ/S1/Judy 4. 0. (0. (0.) (0.) (0.) (0.) (0.) (0.) (	0 - Base	hzuyory yironmental - 893 -	
Viscosity @ 1	Poologian Appleter	ived : 17	10. 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9.	0 - Base	hzuyory yironmental - 893 -	OK East Haul 2100 Lilly Str Seminole,



Contact: Roger Barlow rbarlow@gflenv.com T: (405)204-6183 F:

Report Id: GFL893 [WUSCAR] 06151784 (Generated: 04/19/2024 20:59:30) Rev: 1

Certificate 12367

Test Package : FLEET

Contact/Location: Roger Barlow - GFL893