

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id **712044** 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.

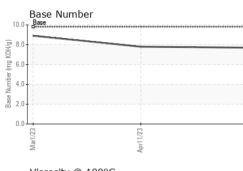
### Fluid Condition

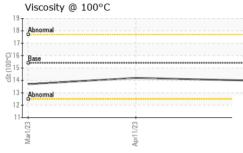
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0076888	GFL0076898	GFL0076882
Sample Date		Client Info		27 Jun 2023	11 Apr 2023	01 Mar 2023
Machine Age	hrs	Client Info		3376	2804	2482
Oil Age	hrs	Client Info		572	600	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron		ASTM D5185m	>80	19	8	8
Chromium	ppm	ASTM D5185m		<1	o <1	o <1
Nickel	ppm		>0	0	<1	<1
	ppm	ASTM D5185m	>_	u <1	<1	<1
Titanium Silver	ppm	ASTM D5185m	>3	<1 0	<1	< 1
	ppm	ASTM D5185m		6	2	5
Aluminum	ppm	ASTM D5185m			2	5
Lead	ppm	ASTM D5185m	>30	0 <1		
Copper	ppm	ASTM D5185m			<1	<1
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history 1	history 2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 6	history 1 11	31
	ppm ppm					
Boron		ASTM D5185m	0	6	11	31
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	6 0	11 0	31 2 66 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 59	11 0 57	31 2 66
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	6 0 59 <1	11 0 57 <1	31 2 66 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	6 0 59 <1 886	11 0 57 <1 855	31 2 66 <1 837
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	6 0 59 <1 886 1109	11 0 57 <1 855 1090	31 2 66 <1 837 1104
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	6 0 59 <1 886 1109 988	11 0 57 <1 855 1090 962	31 2 66 <1 837 1104 950
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	6 0 59 <1 886 1109 988 1217	11 0 57 <1 855 1090 962 1161	31 2 66 <1 837 1104 950 1123
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 1010 1070 1150 1270 2060 limit/base	6 0 59 <1 886 1109 988 1217 3193	11 0 57 <1 855 1090 962 1161 2809	31 2 66 <1 837 1104 950 1123 2933
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 1010 1070 1150 1270 2060 limit/base	6 0 59 <1 886 1109 988 1217 3193 current	11 0 57 <1 855 1090 962 1161 2809 history 1	31 2 66 <1 837 1104 950 1123 2933 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	0 0 60 1010 1070 1150 1270 2060 limit/base	6 0 59 <1 886 1109 988 1217 3193 current 3	11 0 57 <1 855 1090 962 1161 2809 history 1 2	31 2 66 <1 837 1104 950 1123 2933 history 2 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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	6 0 59 <1 886 1109 988 1217 3193 current 3 <	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2
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 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> >20	6 0 59 <1 886 1109 988 1217 3193 current 3 < 12	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >3	6 0 59 <1 886 1109 988 1217 3193 current 3 <1 12 2 current	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3 history 1	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 7 7 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20	6 0 59 <1 886 1109 988 1217 3193 <b>current</b> 3 <1 12 2 <b>current</b> 0.2	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3 history 1 0.3	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 7 7 history 2 0.3
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 imit/base >20 imit/base >3 >20	6 0 59 <1 886 1109 988 1217 3193 <u>current</u> 3 <1 12 12 0.2 8.5	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3 history 1 0.3 6.3	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 2 7 history 2 0.3 7.2
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 imit/base >20 imit/base >3 >20 s3 >20	6 0 59 <1 886 1109 988 1217 3193 <b>current</b> 3 <1 12 12 <b>current</b> 0.2 8.5 19.5	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3 history 1 0.3 6.3 17.0	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 7 history 2 0.3 7.2 19.6 history 2
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	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >30 imit/base	6 0 59 <1 886 1109 988 1217 3193 current 3 <1 12 current 0.2 8.5 19.5 current	11 0 57 <1 855 1090 962 1161 2809 history 1 2 <1 3 history 1 0.3 6.3 17.0 history 1	31 2 66 <1 837 1104 950 1123 2933 history 2 3 2 7 7 history 2 0.3 7.2 19.6



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White Metal Yellow Metal Precipitate Silt	scalar scalar	*Visual	NONE	NONE	NONE	NONE	
Yellow Metal Precipitate							
Precipitate		*Visual	NONE	NONE	NONE	NONE	
	scalar	*Visual	NONE	NONE	NONE	NONE	
Unt	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	history 1	history 2	
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.2	13.7	
GRAPHS							
Ferrous Alloys							
iron 1			1				
chromium		/					
o	/	/					
5-							
	en e		~				
flar1/2	or11/2		n27/2				
			ηn				
Non-ferrous Metals	5						
copper							
8 - tin							
6-							
4							
2-							
0	/23		/23				
Marl	Apr11		Jun27				
Viscosity @ 100°C			,				
9 <sub>1</sub>			10.0	Base Number			
8 - Abnormal							
7			(B/H	0			
Base			P 6.0	D-			
5			ther (r				
			- 4.1 2 00	D +			
<sup>3</sup> Abnormal			2.0	D-			
2							
33	/23			53	/23		
Marl,	Apr11		Jun27/	Mar1,	Apr11,		
GFL0076888 F	Received	<b>d</b> : 30 .	Jun 2023	3 GFL Env	vironmental - 411	- Kingsford H 1001 E Blv Kingsford, N	
	Ferrous Alloys	Ferrous Alloys	Ferrous Alloys	Ferrous Alloys	Ferrous Alloys Ferrous Alloys Ferrous Alloys Non-ferrous Metals Viscosity @ 100°C Copper Uiscosity @ 100°C Copper Command Copper Cop	Ferrous Alloys	

Contact: Service Manager



\* - 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)

Certificate L2367

Submitted By: TECHNICIAN ACCOUNT