

OIL ANALYSIS REPORT

Sample Rating Trend



725016-1354

Component Diesel Engine Fluid

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Sample only) $% \label{eq:commutative}$

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

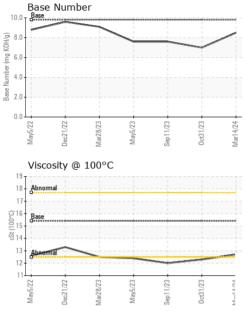
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116262	GFL0088304	GFL0088282
Sample Date		Client Info		14 Mar 2024	31 Oct 2023	11 Sep 2023
Machine Age	hrs	Client Info		36871	36424	36334
Oil Age	hrs	Client Info		478	432	342
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	ATTENTION	ABNORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>2.0	<1.0	0.3	2 .1
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	31	37	31
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	4	4
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	2	2	2
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 12	history1 8	history2 7
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	12	8	7
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60	12 0	8 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	12 0 56 <1 790	8 0 56 <1 823	7 0 59 <1 856
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	12 0 56 <1 790 1245	8 0 56 <1	7 0 59 <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 1070 1150	12 0 56 <1 790 1245 953	8 0 56 <1 823 938 904	7 0 59 <1 856 979 910
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	12 0 56 <1 790 1245 953 1123	8 0 56 <1 823 938 904 1075	7 0 59 <1 856 979 910 1066
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	12 0 56 <1 790 1245 953	8 0 56 <1 823 938 904	7 0 59 <1 856 979 910
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	12 0 56 <1 790 1245 953 1123	8 0 56 <1 823 938 904 1075	7 0 59 <1 856 979 910 1066
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	12 0 56 <1 790 1245 953 1123 3417	8 0 56 <1 823 938 904 1075 2606	7 0 59 <1 856 979 910 1066 3119
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	12 0 56 <1 790 1245 953 1123 3417 current	8 0 56 <1 823 938 904 1075 2606 history1	7 0 59 <1 856 979 910 1066 3119 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060 limit/base	12 0 56 <1 790 1245 953 1123 3417 current 5	8 0 56 <1 823 938 904 1075 2606 history1 4	7 0 59 <1 856 979 910 1066 3119 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m 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	12 0 56 <1 790 1245 953 1123 3417 current 5 4	8 0 56 <1 823 938 904 1075 2606 history1 4 <1	7 0 59 <1 856 979 910 1066 3119 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	12 0 56 <1 790 1245 953 1123 3417 current 5 4 4 <1	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	12 0 56 <1 790 1245 953 1123 3417 current 5 4 <1 <urrent< th=""><th>8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1</th><th>7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2</th></urrent<>	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	12 0 56 <1 790 1245 953 1123 3417 current 5 4 <1	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1 2.2	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2 1.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	12 0 56 <1 790 1245 953 1123 3417 <i>current</i> 5 4 <1 <i>current</i> 1.1 6.5	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1 2.2 7.5	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2 1.7 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 D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	12 0 56 <1 790 1245 953 1123 3417 <u>current</u> 5 4 <1 < <u>current</u> 1.1 6.5 19.7	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1 2.2 7.5 21.5	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2 1.7 7.0 20.8
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 imit/base >3 >20	12 0 56 <1 790 1245 953 1123 3417 <i>current</i> 5 4 <1 <i>current</i> 1.1 6.5 19.7	8 0 56 <1 823 938 904 1075 2606 history1 4 <1 0 history1 2.2 7.5 21.5 history1	7 0 59 <1 856 979 910 1066 3119 history2 4 3 0 history2 1.7 7.0 20.8 history2



OIL ANALYSIS REPORT

VISUAL



waaaaaaaaaa		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		
May5/23 Sep11/23	0ct31/23 Mar14/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
≥ Se	ŭ W	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			limit/base	current	history1	history2	
****		Visc @ 100°C	cSt	ASTM D445	15.4	12.7	12.3	12.0	
		GRAPHS							
		Ferrous Alloys							
5/23 -	1/23	iron							
May5/23 Sep11/23	0ct31/23 M-11/24	40 - nickel	1	\wedge					
		30							
		20							
		10							
		/22	/23	123	/24				
		May5/22 Dec21/22 Mar28/23	May5/23	Sep11/23 Oct31/23	Mar14/24				
	Non-ferrous Meta	ls		-					
	18 T								
	16 - copper								
	14 tin 12								
		E ¹⁰ 8							
		6							
		4							
			5/23 -	1/23	4/24				
		May5/22 Dec21/22 Mar28/23	May5/23	Sep 11/23 Oct31/23	Mar14/24				
		Viscosity @ 100°C	2			Base Numbe	۲		
		19 18 - Abnormal			10.	Base			
		18 - Abnormal			- 8.	0			
					Base Number (mg KOH/g)				
		C) ¹⁶ Base 0015 3 14			B_ 6.	0			
) ts			⁹	0			
		12			ase				
		13 Abromal			° 2.	0			
		11		_				_	
		May5/22 Dec21/22 Mar28/23	May5/23	Sep11/23 0ct31/23	Mar14/24	May5/22 Dec21/22	Mar28/23 May5/23	Sep 11/23 0ct31/23	
		Ma Deci Mari	Ma	Sep Oct	Mar	Ma Deci	Mar	Sep Oct	
		· MaarChaak USA 50	1 Modice		NC 07510		wironmontal 60	5 - Harrison Heuli	
	I ah a wat - ····	: WearCheck USA - 50			Cary, NC 27513 GFL Environmental - 625 - Harrison Hauli : 19 Mar 2024 4102 Industrial Pkv				
4	Laboratory Sample No	GEL0116262	Reco	ived .ic	I Mar 2020	Received : 19 Mar 2024 Tested : 20 Mar 2024			
NAB	Laboratory Sample No. Lab Number	: GFL0116262 : 06122963					410		
	Sample No. Lab Number Unique Number	: <mark>06122963</mark> : 10937114	Teste	ed : 20		n Baldridge		Harrison, US 486	
Inc. Laboratory	Sample No. Lab Number Unique Number Test Package	: <mark>06122963</mark> : 10937114	Teste Diagr	ed : 20 nosed : 21) Mar 2024 Mar 2024 - Dor	n Baldridge	Contact:	Harrison, US 486 Glenda Stand den@gflenv.co	

Submitted By: also GFL632 and GFL638 - Glenda Standen