

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### PETRO CANADA DURON UHP 5W30 (--- GAL)

SAMPLE INFORMATION method



### 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

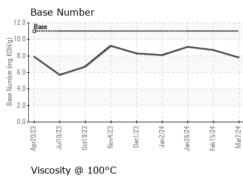
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

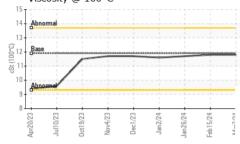
<u> </u>		0				
Sample Number		Client Info		GFL0108038	GFL0108029	GFL0108136
Sample Date		Client Info		07 Mar 2024	15 Feb 2024	26 Jan 2024
Machine Age	hrs	Client Info		2561	2436	2308
Oil Age	hrs	Client Info		1879	1754	0
Oil Changed		Client Info		Not Changd	N/A	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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 METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	11	8	7
Chromium	ppm	ASTM D5185m	>20	0	0	<1
Nickel	ppm	ASTM D5185m	>15	<1	1	1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	<1
Lead	ppm	ASTM D5185m	>40	0	3	<1
Copper	ppm	ASTM D5185m	>330	4	3	4
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method				history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 31	history1 40	history2 52
	ppm ppm					
Boron		ASTM D5185m	0	31	40	52
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	0 0 64	31 0	40 0	52 0
Boron Barium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 64	31 0 58	40 0 56	52 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 64 0	31 0 58 <1	40 0 56 0	52 0 59 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 64 0 1160	31 0 58 <1 1162	40 0 56 0 1215	52 0 59 <1 1136
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 64 0 1160 820	31 0 58 <1 1162 851	40 0 56 0 1215 851	52 0 59 <1 1136 779
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 64 0 1160 820 1160	31 0 58 <1 1162 851 1080	40 0 56 0 1215 851 1099	52 0 59 <1 1136 779 955
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 64 0 1160 820 1160 1260	31 0 58 <1 1162 851 1080 1290	40 0 56 0 1215 851 1099 1305	52 0 59 <1 1136 779 955 1266
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 64 0 1160 820 1160 1260 3000	31 0 58 <1 1162 851 1080 1290 3902	40 0 56 0 1215 851 1099 1305 3571	52 0 59 <1 1136 779 955 1266 3288
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 ASTM D5185m	0 0 64 0 1160 820 1160 1260 3000	31 0 58 <1 1162 851 1080 1290 3902 current	40 0 56 0 1215 851 1099 1305 3571 history1	52 0 59 <1 1136 779 955 1266 3288 history2
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 <b>method</b>	0 0 64 0 1160 820 1160 1260 3000	31 0 58 <1 1162 851 1080 1290 3902 current 4	40 0 56 0 1215 851 1099 1305 3571 history1 4	52 0 59 <1 1136 779 955 1266 3288 history2 5
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 <b>method</b> ASTM D5185m	0 0 64 0 1160 820 1160 1260 3000 Limit/base >25	31 0 58 <1 1162 851 1080 1290 3902 <u>current</u> 4 4	40 0 56 0 1215 851 1099 1305 3571 history1 4 4	52 0 59 <1 1136 779 955 1266 3288 history2 5 0
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 64 0 1160 820 1160 1260 3000 <b>limit/base</b> >25 >20	31 0 58 <1 1162 851 1080 1290 3902 current 4 4 4	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 3	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 64 0 1160 820 1160 1260 3000 <b>limit/base</b> >25 >20 <b>limit/base</b>	31 0 58 <1 1162 851 1080 1290 3902 current 4 4 4 4 current 0.3	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 3 history1 0.2	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4 history2 0.1
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 64 0 1160 820 1160 1260 3000 <b>limit/base</b> >25 >20 <b>limit/base</b>	31 0 58 <1 1162 851 1080 1290 3902 current 4 4 4 4	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 3 <i>history1</i>	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4 history2
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 64 0 1160 820 1160 1260 3000 limit/base >25 >20 limit/base >20	31 0 58 <1 1162 851 1080 1290 3902 <u>current</u> 4 4 4 4 0.3 9.4	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 3 history1 0.2 8.3	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4 4 history2 0.1 7.3
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 TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 64 0 1160 820 1160 1260 3000 <b>limit/base</b> >25 20 <b>limit/base</b> >4 >20 >30	31 0 58 <1 1162 851 1080 1290 3902 Current 4 4 4 4 0.3 9.4 20.0 Current	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 4 3 history1 0.2 8.3 19.4 history1	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4 kistory2 0.1 7.3 19.3 history2
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 64 0 1160 820 1160 1260 3000 <b>Iinit/base</b> >25 -20 <b>Iinit/base</b> >4 >20	31 0 58 <1 1162 851 1080 1290 3902 <u>current</u> 4 4 4 4 <u>current</u> 0.3 9.4 20.0	40 0 56 0 1215 851 1099 1305 3571 history1 4 4 4 3 history1 0.2 8.3 19.4	52 0 59 <1 1136 779 955 1266 3288 history2 5 0 4 4 history2 0.1 7.3 19.3



# **OIL ANALYSIS REPORT**

VISUAL





Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report,		: WearCheck USA - 50 : GFL0108038	)1 Madiso <b>Rece</b> i	-	, NC 27513 Mar 2024	3 GFL Environmental - 836 - Kansas City Hauling 7801 East Truman Road Kansas City, MO Wes Davis US 64126 Contact: Loyce Stewart loyce.stewart@gflenv.com			
		Apr20/23 0 00	Dec1/23	Jan 2/24	4.0 2.0 4.0 2.0 4.0 0.0	)	Nov4/23 Dec1/23 Jan2/24	Jan26/24 - Feb 15/24 - Mar724 -	
		13 (5,12 (5,12) (5,12) (5,11) (5,11) (5,11)			0.8 KOH(d) 6.0 konsee Number 4.0		$\sim$		
		15 14 Abnormal	-		12.0	Base			
		Viscosity @ 100°0		Jan2/24 Jan26/24 Feb15/24	Mar				
			Dec1/23	Jan 2/24 an 20/24 sb 15/24	Mar7/24				
		100 - copper 100 - lead							
		Mov4/23 Non-ferrous Meta		Jan 2/24 Jan 26/24 Feb 15/24	Mar7/24				
		0/23 9/23 9/23	Dec1/23	Jan2/24 an26/24 eb15/24	1/24				
		5 10							
Dec1/23 Jan2/24	Jan 26/24 Feb 15/24	35 30 25							
		Ferrous Alloys							
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	n haa ay aa aa aa aa a	Visc @ 100°C GRAPHS	cSt	ASTM D445	11.9	11.8	11.8	11.7	
		FLUID PROPE	ERTIES	method	limit/base	current	history1	history2	
		Free Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Jan Reb Mi	Odor Emulsified Water	scalar scalar	*Visual *Visual	NORML >0.2	NORML NEG	NORML NEG	NORML NEG	
Dec.1/23 Jan.2/24 Feb.15/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
	Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE	NONE	NONE	NONE		
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
		Yellow Metal Precipitate Silt	scalar scalar scalar	*Visual *Visual *Visual	NONE NONE	NONE NONE	NONE NONE NONE	NONE NONE	

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

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