

## **OIL ANALYSIS REPORT**

Sample Rating Trend



712053 Component Diesel Engine Fluid

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

SAMPLE INFORMATION method

# DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Machine Id

### 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		method	iimii/base	current	nistory i	nistoryz
Sample Number		Client Info		GFL0111253	GFL0111181	
Sample Date		Client Info		10 Apr 2024	30 Jan 2024	
Machine Age	hrs	Client Info		0	0	
Oil Age	hrs	Client Info		600	600	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
				-		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	c	method	limit/base	ourropt	history1	history?
	3	method		current		history2
Iron	ppm	ASTM D5185m	>120	12	6	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>5	4	4	
Titanium	ppm	ASTM D5185m	>2	0	<1	
Silver	ppm	ASTM D5185m	>2	0	0	
Aluminum	ppm	ASTM D5185m	>20	2	2	
Lead	ppm	ASTM D5185m	>40	<1	0	
Copper	ppm	ASTM D5185m	>330	2	<1	
Tin	ppm	ASTM D5185m	>15	1	<1	
Vanadium	ppm	ASTM D5185m		<1	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method				history2
	maa					history2
Boron	ppm ppm	ASTM D5185m	0	4	2	history2 
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 0	2 <1	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 57	2 <1 60	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 57 <1	2 <1 60 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	4 0 57 <1 961	2 <1 60 0 919	
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	4 0 57 <1 961 1202	2 <1 60 0 919 1028	   
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	4 0 57 <1 961 1202 1028	2 <1 60 0 919 1028 955	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	4 0 57 <1 961 1202 1028 1213	2 <1 60 0 919 1028 955 1183	
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	4 0 57 <1 961 1202 1028	2 <1 60 0 919 1028 955 1183 2705	
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	4 0 57 <1 961 1202 1028 1213 3473 current	2 <1 60 0 919 1028 955 1183 2705 history1	
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	4 0 57 <1 961 1202 1028 1213 3473	2 <1 60 0 919 1028 955 1183 2705	
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	4 0 57 <1 961 1202 1028 1213 3473 current	2 <1 60 0 919 1028 955 1183 2705 history1	
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	4 0 57 <1 961 1202 1028 1213 3473 current 3	2 <1 60 0 919 1028 955 1183 2705 history1 2	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 1010 1070 1150 1270 2060 kimit/base >25	4 0 57 <1 961 1202 1028 1213 3473 <u>current</u> 3 3	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	4 0 57 <1 961 1202 1028 1213 3473 current 3 3 3 3 3	2 <1 60 0 919 1028 955 1183 2705 history1 2 2 <1 7	     history2  
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 <b>limit/base</b> >25	4 0 57 <1 961 1202 1028 1213 3473 current 3 3 3 3 3 3 3	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1	     history2   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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	4 0 57 <1 961 1202 1028 1213 3473 <i>current</i> 3 3 3 3 <i>current</i> 0.5	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1 0.4	     history2   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 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 20 <b>imit/base</b> >4 >20 >30	4 0 57 <1 961 1202 1028 1213 3473 <b>current</b> 3 3 3 3 3 <b>current</b> 0.5 8.9 20.1	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1 0.4 8.5 20.1	     history2   history2  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 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	4 0 57 <1 961 1202 1028 1213 3473 <i>current</i> 3 3 3 3 <i>current</i> 0.5 8.9	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1 0.4 8.5	      history2  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 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 20 <b>imit/base</b> >4 >20 >30	4 0 57 <1 961 1202 1028 1213 3473 <b>current</b> 3 3 3 3 3 <b>current</b> 0.5 8.9 20.1	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1 0.4 8.5 20.1	     history2   history2  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 D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	4 0 57 <1 961 1202 1028 1213 3473 <i>current</i> 3 3 3 3 <i>current</i> 0.5 8.9 20.1 <i>current</i>	2 <1 60 0 919 1028 955 1183 2705 history1 2 <1 7 history1 0.4 8.5 20.1 history1	    history2  history2  history2  history2  history2



## **OIL ANALYSIS REPORT**

FT-IR (Direct Tr	end)		VISUAL		method	limit/base	current	history1	history2
Oxidation			White Meta	scalar	*Visual	NONE	NONE	NONE	
25			Yellow Meta		*Visual	NONE	NONE	NONE	
523 520 820 920			Precipitate	scalar	*Visual	NONE	NONE	NONE	
			Silt	scalar	*Visual	NONE	NONE	NONE	
15-			Debris	scalar	*Visual	NONE	NONE	NONE	
10-			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
54		- 24	Appearance		*Visual	NORML	NORML	NORML	
Jan 30/24		Apr10/24							
7		4	Odor	scalar	*Visual	NORML	NORML	NORML	
Base Number			Emulsified		*Visual	>0.2	NEG	NEG	
10.0 Base			Free Water	scalar	*Visual		NEG	NEG	
(0, H0) H03 Bub				PROPERTIES	method	limit/base	current	history1	history2
<u>ш</u> 0.0			Visc @ 100		ASTM D445	15.4	13.9	13.9	
Nu ase Nur			GRAPH						
			Ferrous A	lloys		- CONTROL OF			
0.0		Y CI U	10 - iror	mium	and the second se				
Jan 30/24		hand (	sesses nic	el					
Viscosity @ 100	°C		E						
<sup>19</sup> T	C		Md 6						
18 Abnormal			4						
17			2						
ට 16 00 15 ೮ 14									
<sup>4</sup> 3 14			74+0			724			
13 Abnormal			Jan 30/24			Apr10/24			
12			Non-ferro	us Motals		-			
		Vert	<sup>10</sup> T						
Jan 30/24		ν	cop	per					
,			8 tin						
			6						
			m dd						
			4-						
			2						
			2						
			n30/24			.pr10/24			
			ے Viscosity	a 100°C		Ap			
			<sup>19</sup> 1	@ 100°C		10.0	Base Number	-	
			18 - Abnormal						
			17-			<del>,</del> 8.0	-		
			C-16 Bare			6.0 B.0 KOH(d) B.0 KOH(d) B.0 For the second	1		
			00115			 			
			<sup>4</sup> / <sub>14</sub>			4.0			
			<sup>13</sup> Abnormal			50			
			12 -			°° 2.0			
			1				L		
			11				et-		
			11 +12/08			0/24	30/2		0/24
			Jan 30/24			Apr10/24	Jan 30/24		Apr10/24
			Jan 30/24			Apr10/24	Jan 30/2.		Apr10/24
	d		: WearCheck	JSA - 501 Madisc		/, NC 27513		vironmental - 960E	3 - Pittsfield HC
	ANAB	Sample No.	: WearCheck	Rece	ived : 19	/, NC 27513 9 Apr 2024			<b>3 - Pittsfield HC</b> V. Washington
		Sample No. Lab Number	: WearCheck   : GFL0111253 : 06154089	Rece Teste	ived : 19 d : 22	/, NC 27513 9 Apr 2024 2 Apr 2024	GFL En		<b>3 - Pittsfield HC</b> V. Washington Pittsfield, IL
		Sample No. Lab Number Unique Number	: WearCheck : GFL0111253 : 06154089 : 10989512	Rece Teste	ived : 19 d : 22	/, NC 27513 9 Apr 2024	GFL En	1335 V	<b>3 - Pittsfield HC</b> V. Washington Pittsfield, IL US 62363
	Terrificate L2367 To discuss this	Sample No. Lab Number Unique Number Test Package	: WearCheck   : GFL0111253 : 06154089 : 10989512 : FLEET	Rece Teste	ived : 19 ed : 22 nosed : 22	/, NC 27513 9 Apr 2024 2 Apr 2024 2 Apr 2024 - W	GFL En	1335 V	<b>3 - Pittsfield HC</b> V. Washington Pittsfield, IL US 62363 avid Bradshaw
	To discuss this * - Denotes tes	Sample No. Lab Number Unique Number Test Package s sample report, st methods that a	: WearCheck ( : GFL0111253 : 06154089 : 10989512 : FLEET contact Custol are outside of t	Rece Teste Diagr	ived : 19 ed : 22 nosed : 22 800-237-1369 ope of accred	r, NC 27513 9 Apr 2024 2 Apr 2024 2 Apr 2024 - W 9. ditation.	<b>GFL En</b> es Davis	1335 V Contact: Da david.bradshav	<b>3 - Pittsfield HC</b> V. Washington Pittsfield, IL US 62363 avid Bradshaw

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Submitted By: See also GFL960B, 960C, 960D - David Bradshaw