

# **OIL ANALYSIS REPORT**

Sample Rating Trend





## Component

Diesel Engine

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

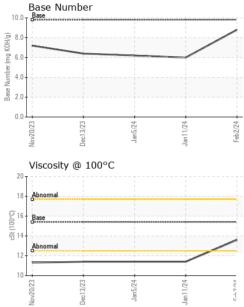
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

						1.1
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0107938	GFL0102586	GFL0107949
Sample Date		Client Info		02 Feb 2024	11 Jan 2024	05 Jan 2024
Machine Age	hrs	Client Info		731	596	562
Oil Age	hrs	Client Info		0	600	0
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	ATTENTION	ATTENTION
CONTAMINAT	ION	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	>110	7	44	43
Chromium	ppm	ASTM D5185m		/ <1	<1	43 <1
Nickel	ppm	ASTM D5185m	>2	1	<1	0
Titanium	ppm	ASTM D5185m	<i>&gt;L</i>	، <1	0	0
Silver		ASTM D5185m	>2	0	0	0
Aluminum	ppm ppm	ASTM D5185m		12	55	56
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm		>85	3	16	18
Tin	ppm	ASTM D5185m	>4	ر 1	<1	0
Vanadium	ppm	ASTM D5185m	~7	<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
oudinium	ppm	/10/111/00/100/11		•		0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 5	history1 37	history2 46
	ppm ppm					
Boron		ASTM D5185m	0	5	37	46
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 0	37 0	46 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 0 52	37 0 14	46 0 13
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 0 52 1	37 0 14 4	46 0 13 4 793 1334
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	5 0 52 1 878 1025 982	37 0 14 4 764 1280 740	46 0 13 4 793 1334 757
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	5 0 52 1 878 1025	37 0 14 4 764 1280 740 867	46 0 13 4 793 1334 757 892
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	5 0 52 1 878 1025 982	37 0 14 4 764 1280 740	46 0 13 4 793 1334 757
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	5 0 52 1 878 1025 982 1167	37 0 14 4 764 1280 740 867	46 0 13 4 793 1334 757 892
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	5 0 52 1 878 1025 982 1167 2980	37 0 14 4 764 1280 740 867 2692	46 0 13 4 793 1334 757 892 3034 history2 25
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 60 1010 1070 1150 1270 2060	5 0 52 1 878 1025 982 1167 2980 current	37 0 14 4 764 1280 740 867 2692 history1	46 0 13 4 793 1334 757 892 3034 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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	5 0 52 1 878 1025 982 1167 2980 current 6	37 0 14 4 764 1280 740 867 2692 history1 24	46 0 13 4 793 1334 757 892 3034 history2 25
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	5 0 52 1 878 1025 982 1167 2980 current 6 4	37 0 14 4 764 1280 740 867 2692 history1 24 6	46 0 13 4 793 1334 757 892 3034 history2 25 5
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> >30	5 0 52 1 878 1025 982 1167 2980 current 6 4 28	37 0 14 4 764 1280 740 867 2692 history1 24 6 141	46 0 13 4 793 1334 757 892 3034 history2 25 5 144
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 -20	5 0 52 1 878 1025 982 1167 2980 current 6 4 28 28 current	37 0 14 4 764 1280 740 867 2692 history1 24 6 141 history1	46 0 13 4 793 1334 757 892 3034 <b>history2</b> 25 5 144 <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 ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 200 limit/base	5 0 52 1 878 1025 982 1167 2980 <u>current</u> 6 4 28 <u>current</u> 0.2	37 0 14 4 764 1280 740 867 2692 history1 24 6 141 41 history1 0.5	46 0 13 4 793 1334 757 892 3034 history2 25 5 144 <u>history2</u> 0.4
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 >30 220 imit/base >3 >20	5 0 52 1 878 1025 982 1167 2980 current 6 4 288 current 0.2 6.0	37 0 14 4 764 1280 740 867 2692 history1 24 6 141 24 6 141 0.5 10.0	46 0 13 4 793 1334 757 892 3034 history2 25 5 144 <u>history2</u> 0.4 9.9
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 2060 2060 2060 200 200 200 200 20	5 0 52 1 878 1025 982 1167 2980 current 6 4 28 current 0.2 6.0 18.5	37 0 14 4 764 1280 740 867 2692 history1 24 6 141 0.5 10.0 21.9	46 0 13 4 793 1334 757 892 3034 <b>history2</b> 25 5 144 <b>history2</b> 0.4 9.9 21.5 <b>history2</b>
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> >30 <b>imit/base</b> >3 20	5 0 52 1 878 1025 982 1167 2980 <u>current</u> 6 4 28 <u>current</u> 0.2 6.0 18.5	37 0 14 4 764 1280 740 867 2692 history1 24 6 141 0.5 10.0 21.9 history1	46 0 13 4 793 1334 757 892 3034 <b>history2</b> 25 5 144 <b>history2</b> 0.4 9.9 21.5



# **OIL ANALYSIS REPORT**

VISUAL



		VISUAL		method	limit/base	current	history1	history
		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
	/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Jan 1 1/24 Feb 2/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	,	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water			>0.2	NEG	NEG	NEG
			scalar	*Visual				
				method	limit/base	current	history1	history
		Visc @ 100°C	cSt	ASTM D445	15.4	13.6	<b>1</b> 1.4	<b>▲</b> 11.4
		GRAPHS						
		Ferrous Alloys						
	1/24	40 - iron chromium		$\langle \cdot \rangle$				
	Jan 11/24	35 - nickel		$\langle \rangle$				
		30		$\langle \rangle$				
		E 25 20						
		15-			$\lambda$			
		10						
		5						
			**	42	5			
		Nov20/23 Dec13/23	Jan 5/24	Jan 1 1/24	Feb2/24			
				Ja	LL.			
		Non-ferrous Meta	S					
		16 copper						
		14 -		· · · · · ·				
	12							
		E <sup>10</sup>		·····				
		8						
		6						
		4						
		2 -	Sec		Stanonade.			
		1/23	6/24 .	/24.	.124			
		Nov20/23 Dec13/23	Jan5/24	Jan 1 1/24	Feb2/24			
		Viscosity @ 100°C						
		<sup>19</sup> T			10.0	Base Numbe	er	
		18 - Abnormal						
		17-			.8.0	) <b>-</b>		/
		Base	1		Кон			
		0 15			0.8 0 0.6 0 0.4 KOH/dJ	]		
					- <sup>4</sup> 4.0			
		13 - Abnormal		/	ase N			
		12			<sup>66</sup> 2.0	D <b>-</b>		
		10						
			/24 -	/24 -		723	24 -	/24 +
		Nov20/23 Dec13/23	Jan5/24	Jan 11/24	Feb2/24	Nov20/23 Dec13/23	Jan5/24	Jan 11/24
			-	-ř		z ő		ت. ت
		2 0						
	Laboratory		1 Madiso	on Ave Carv	NC 27513	GFI En	vironmental - 809 .	Pauls Valley Hau
	Laboratory Sample No.	: WearCheck USA - 50					vironmental - 892 - 405 East Airpo	
AB	Sample No.	: WearCheck USA - 50 : GFL0107938	1 Madiso Recei Teste	ived : 06	y, NC 27513 6 Feb 2024 7 Feb 2024		vironmental - 892 - 405 East Airpo	ort Industrial Ro
	Sample No. Lab Number	: WearCheck USA - 50 : GFL0107938 : <mark>06081903</mark>	Recei Teste	ived : 06 ed : 07	6 Feb 2024			
ABBRATON MARKEN	Sample No.	: WearCheck USA - 50 : GFL0107938 : 06081903 : 10869348	Recei Teste	ived : 06 ed : 07	6 Feb 2024 7 Feb 2024		405 East Airpo	rt Industrial Ro Pauls Valley,
cuss this	Sample No. Lab Number Unique Number Test Package s sample report	: WearCheck USA - 50 : GFL0107938 : 06081903 : 10869348	Recei Teste Diagr	ived : 06 ed : 07 nosed : 07 800-237-1369	3 Feb 2024 7 Feb 2024 7 Feb 2024 - W 9.		405 East Airpo Conta	rt Industrial Ro Pauls Valley, US 730

Contact/Location: Tony Graham - GFL892