

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



## Machine Id 7829M

#### 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.

						1.1
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108788	GFL0108969	GFL0089165
Sample Date		Client Info		27 Mar 2024	01 Mar 2024	19 Nov 2023
Machine Age	hrs	Client Info		8039	7890	7449
Oil Age	hrs	Client Info		7449	7449	2600
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
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		ASTM D5185m	>80	33	39	50
Chromium	ppm	ASTM D5185m		33 <1	2	1
Nickel	ppm	ASTM D5185m	>0	1	0	<1
Titanium	ppm ppm	ASTM D5185m	<i>&gt;L</i>	0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m		9	8	9
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm		>150	0	2	2
Tin	ppm	ASTM D5185m	>5	۰ <1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	le le		limit/bace			-
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 1	history1 <1	history2 <1
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 1 0	history1 <1 0	history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 1 0 55	history1 <1 0 64	history2 <1 0 58
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 1 0 55 <1	history1 <1 0 64 0	history2 <1 0 58 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 1 0 55 <1 888	history1 <1 0 64 0 898	history2 <1 0 58 <1 816
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 1 0 55 <1 888 1026	history1 <1 0 64 0 898 1007	history2 <1 0 58 <1 816 987
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 1 0 55 <1 888 1026 956	history1 <1 0 64 0 898 1007 910	history2 <1 0 58 <1 816 987 898
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           1           0           55           <1           888           1026           956           1210	history1           <1           0           64           0           898           1007           910           1183	history2           <1           0           58           <1           816           987           898           1096
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 1 0 55 <1 888 1026 956 1210 3192	<1         0         64         0         898         1007         910         1183         2586	history2 <1 0 58 <1 816 987 898 1096 2492
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 1 0 55 <1 888 1026 956 1210 3192 Current	history1 <1 0 64 0 898 1007 910 1183 2586 history1	history2 <1 0 58 <1 816 987 898 1096 2492 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current           1           0           555           <1           888           1026           956           1210           3192           current           6	<1         0         64         0         898         1007         910         1183         2586         history1         7	<1         0         58         <1         816         987         898         1096         2492         history2         5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >20	current           1           0           555           <1           888           1026           956           1210           3192           current           6           6           6	<1         0         64         0         898         1007         910         1183         2586         history1         7         25	<1         0         58         <1         816         987         898         1096         2492         history2         5         6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Jimit/base</b> >20	current           1           0           555           <1           888           1026           956           1210           3192           current           6           6           8	<1         0         64         0         898         1007         910         1183         2586         history1         7         25         8	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >20	current           1           0           555           <1           888           1026           956           1210           3192           current           6           6           8	<1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1	<1         0         58         <1         816         987         898         1096         2492         history2         5         6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Silicon Sidium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20 20	current         1         0         55         <1         888         1026         956         1210         3192         current         6         6         8         current         0.7	history1         <1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0.8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >20	current         1         0         55         <1         888         1026         956         1210         3192         current         6         6         8         current         0.7         11.9	history1         <1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8         11.9	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0         0.8         12.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Silicon Sidium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20 20	current         1         0         55         <1         888         1026         956         1210         3192         current         6         6         8         current         0.7	history1         <1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0.8
ADDITIVES 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	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>imit/base</i> >20 <i>imit/base</i> >20	current         1         0         55         <1         888         1026         956         1210         3192         current         6         6         8         current         0.7         11.9	history1         <1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8         11.9	history2         <1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0.8         12.4
ADDITIVES 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	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >20 <b>imit/base</b> >3 >20 >3	1         0         55         <1         888         1026         956         1210         3192         current         6         6         6         7         11.9         22.7	<1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8         11.9         22.5	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0.8         12.4         24.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7844         *ASTM D7844         *ASTM D7415         method	0 0 0 1010 1070 1150 2060 2060 200 200 200 200 200 200 20 20 20 20 20	current         1         0         55         <1         888         1026         956         1210         3192         current         6         6         6         7         11.9         22.7         current	<1         0         64         0         898         1007         910         1183         2586         history1         7         25         8         history1         0.8         11.9         22.5         history1	<1         0         58         <1         816         987         898         1096         2492         history2         5         6         11         history2         0.8         12.4         24.2         history2



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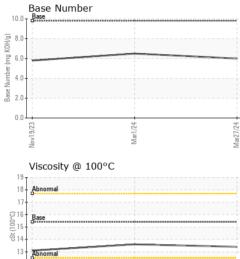
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Nov19/23

# **OIL ANALYSIS REPORT**

VISUAL



	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
Mar1/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar1/24 Mar27/24	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	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.6	13.1
	GRAPHS						
	Ferrous Alloys						
	50 T						
Mar1/24 Accenter	40 - nickel						
N N							
	30 - 특						
	20-						
	10-						
	19/23	Mar1/24		Mar27/24			
	Nov	Ma		Mará			
	Non-ferrous Metal	s					
	10 copper						
	8 -						
	6						
	4						
	2						
	0						
	Nov19/23	Mar1/24		Mar27/24			
	Novi	Ma		Mar			
	Viscosity @ 100°C	2			Base Number		
	19 T			10.			
	18 - Abnormal	1					
	17-			(B/HC	0		
	10-0011 3-0011 3-15-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			Base Number (mg KOH/g)	0		
	은 15			nber (			
		_		4.	0		
	13 Abnormal			ee 2.	0-		
	12						
	33	- 724 -				24 +-	
	Nov19/23	Mar1/24		Mar27/24	Nov19/23	Mar1/24	
Laboratory Sample No. Lab Number	: WearCheck USA - 50 : GFL0108788 : 06133000 : 10952465	Recei Teste	ived : 29 ed : 31	) Mar 2024 Mar 2024	<b>GFL Env</b> n Baldridge	<b>ironmental - 415</b> Sterl	<b>- Michigan E</b> 6200 Elmric ling Heights, US 483

Submitted By: Frank Wolak

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