

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# **427181 - SW4721** 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.

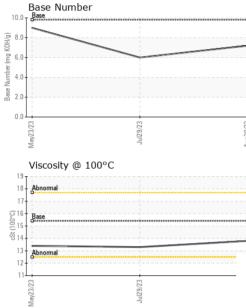
## Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0089405	GFL0085506	GFL0075356
Sample Date		Client Info		30 Aug 2023	29 Jul 2023	23 May 2023
Machine Age	mls	Client Info		370415	365632	355620
Oil Age	mls	Client Info		370415	365362	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method	20	NEG	NEG	NEG
, 						
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm		>100	13	24	14
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm		>4	0	0	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	1	2	3
Lead	ppm	ASTM D5185m	>40	2	6	3
Copper	ppm	ASTM D5185m		2	3	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 0	history2 0
	ppm ppm					
Boron		ASTM D5185m	0	0	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	0	0 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 50	0 0 45	0 0 39
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 50 <1	0 0 45 <1	0 0 39 <1 20 2294
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 50 <1 29	0 0 45 <1 32	0 0 39 <1 20
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	0 0 50 <1 29 2644	0 0 45 <1 32 2453	0 0 39 <1 20 2294
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	0 0 50 <1 29 2644 1155	0 0 45 <1 32 2453 1105	0 0 39 <1 20 2294 1038
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	0 0 50 <1 29 2644 1155 1408	0 0 45 <1 32 2453 1105 1325	0 0 39 <1 20 2294 1038 1243
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 0 1010 1070 1150 1270 2060	0 0 50 <1 29 2644 1155 1408 4004	0 0 45 <1 32 2453 1105 1325 3905	0 0 39 <1 20 2294 1038 1243 3952
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 0 1010 1070 1150 1270 2060	0 0 50 <1 29 2644 1155 1408 4004 current	0 0 45 <1 32 2453 1105 1325 3905 history1	0 0 39 <1 20 2294 1038 1243 3952 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 1010 1070 1150 1270 2060 kimit/base >25	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9	0 0 45 <1 32 2453 1105 1325 3905 history1 19	0 0 39 <1 20 2294 1038 1243 3952 history2 13
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	0 0 50 <1 29 2644 1155 1408 4004 <u>current</u> 9 <	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	0 0 50 <1 29 2644 1155 1408 4004 current 9 <1 2	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 3
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 2060 225 >25 >20 20	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9 <1 2 <i>current</i>	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5 5 history1	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 3 }
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 2060 225 >25 >20 20	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9 <1 2 <i>current</i> 0.2	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5 5 history1 0.4	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 3 history2 0.1
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> >3 >20	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9 <1 2 <i>current</i> 0.2 8.0 18.1	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5 history1 0.4 10.2	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 3 ×1 3 1 4.3
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9 <1 2 <i>current</i> 0.2 8.0 18.1 <i>current</i>	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5 5 history1 0.4 10.2 22.2	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	0 0 50 <1 29 2644 1155 1408 4004 <i>current</i> 9 <1 2 <i>current</i> 0.2 8.0 18.1	0 0 45 <1 32 2453 1105 1325 3905 history1 19 4 5 <u>history1</u> 0.4 10.2 22.2 history1	0 0 39 <1 20 2294 1038 1243 3952 history2 13 <1 3 <1 3 history2 0.1 4.3 14.0



# **OIL ANALYSIS REPORT**



			method	limit/base		irrent	history1	history2
	White Metal	scalar	*Visual	NONE	NO		NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NO		NONE	NONE
	Precipitate	scalar	*Visual	NONE	NO		NONE	NONE
	Silt	scalar	*Visual	NONE	NO		NONE	NONE
	Debris	scalar	*Visual	NONE	NO		NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NO		NONE	NONE
Aug30/23	Appearance	scalar	*Visual	NORML	NO		NORML	NORML
AL	Odor	scalar	*Visual	NORML	NO		NORML	NORML
	Emulsified Water		*Visual	>0.2	NEC		NEG	NEG
	Free Water	scalar	*Visual		NEC		NEG	NEG
	FLUID PROP		method	limit/base		irrent	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8	5	13.3	13.4
	GRAPHS							
	Ferrous Alloys							
	iron							
	20 - nickel	-						
	15							
	mqq							
	10							
	5-							
		23 -		23				
	May23/23	Jul29/23		Aug30/23				
	≥ Non-ferrous Me	-		A				
	10 T	lais						
	copper							
	8 - tin tin 6 -							
	second lead							
	8 - tin tin 6 -							
	8 - tin tin 6 -							
	8 - Line lead			Λ				
	8 - Lead Lead Lead Lead Lead Lead Lead Lead			23				
	8 - Lead Lead Lead Lead Lead Lead Lead Lead	Inceiza de la companya		ng30/23				
	B B B B B B B B B B B B B B B B B B B	Ecologian DPC		Aug30/23				
	8 - Lead Lead Lead Lead Lead Lead Lead Lead			4		Number		
	Viscosity @ 100			4	Base	Number		
	Udd 4 0 0 0 0 0 0 0 0 0 0 0 0 0			1		Number		
	Viscosity @ 100			1	0.0 Base 8.0	Number		
	Viscosity @ 100			1	0.0 Base	Number		
	Wind the second			1	0.0 Base 8.0	Number		
	Base Base Control 15 Base Base Base Base Base Base Base Base Base			ase Number (mg KOH/g)	0.0 Base 8.0 6.0 4.0	Number		
	Base Base Control 15 Base Base Base Base Base Base Base Base Base			ase Number (mg KOH/g)	0.0 Base 8.0	Number		
	8 Image: Second Se	)°C		Base Number (mg KOH(g)	0.0 Base 8.0 6.0 4.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Number		
	8 Image: Second Se	)°C		Base Number (mg KOH(g)	0.0 Base 8.0 6.0 4.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Number	29/23	
	Base 4 4 2 0 EZE EZE EZE EZE EZE EZE EZE			Base Number (mg KOH/g)	0.0 Base 8.0	Number	Ju29/23	
ory	Viscosity @ 100 bhoomal bhoomal control to the second s	0°C		1 (0)HOX Buu) Jaquini aseeg EZ/000Bink try, NC 275	0.0 - Base 8.0		onmental - 983	
ory No.	Viscosity @ 100 Viscosity @ 100 bhoomal bhoomal CEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE	0°C	d : 06 :	1 (0)HOX Bul) Jaquiny Beeg EZ/000Biny try, NC 275 Sep 2023	0.0 - Base 8.0		onmental - 983	- Sugar Land Haul /est Belfort Stre
ory No. nber	Viscosity @ 100 Viscosity @ 100 Base Abnomal Base EVERTING E	0°C	d : 06 : ed : 08 :	1 (B/HO) Bul) Jaquiny Beeg EZ/0EBry try, NC 275 Sep 2023 Sep 2023	0.0 Base 8.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6		onmental - 983	lest Belfort Stre Sugar Land,
ory No.	Viscosity @ 100 Viscosity @ 100 bhoomal bhoomal CEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE	0°C	d : 06 : ed : 08 :	1 (0)HOX Bul) Jaquiny Beeg EZ/000Biny try, NC 275 Sep 2023	0.0 Base 8.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6		onmental - 983 16011 W	lest Belfort Stre

To discuss this sample repo \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

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