

### **OIL ANALYSIS REPORT**

Sample Rating Trend



# 427186 - SW4728

#### 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

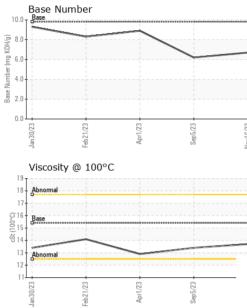
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094128	GFL0089399	GFL0075310
Sample Date		Client Info		16 Nov 2023	05 Sep 2023	01 Apr 2023
Machine Age	mls	Client Info		327650	318333	299134
Oil Age	mls	Client Info		327650	318333	0
Oil Changed		Client Info		Changed	Changed	N/A
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	ppm	ASTM D5185m	>100	7	6	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	2	2	0
Lead	ppm	ASTM D5185m	>40	1	3	1
Copper	ppm	ASTM D5185m	>330	<1	1	0
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
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	ASTM D5185m				
Boron		ASTM D5185m	0	0	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 45	0 0 45	0 0 48
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 45 <1	0 0 45 1	0 0 48 <1
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 45 <1 10	0 0 45 1 11	0 0 48 <1 154
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 45 <1 10 2494	0 0 45 1 11 2637	0 0 48 <1 154 2808
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 ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 45 <1 10 2494 1080	0 0 45 1 11 2637 1173	0 0 48 <1 154 2808 1151
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 45 <1 10 2494 1080 1290	0 0 45 1 11 2637 1173 1428	0 0 48 <1 154 2808 1151 1418
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 45 <1 10 2494 1080 1290 3140	0 0 45 1 11 2637 1173 1428 4250	0 0 48 <1 154 2808 1151 1418 3807
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	0 0 45 <1 10 2494 1080 1290 3140 current	0 0 45 1 11 2637 1173 1428 4250 history1	0 0 48 <1 154 2808 1151 1418 3807 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> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 0 45 <1 10 2494 1080 1290 3140 current 6	0 0 45 1 11 2637 1173 1428 4250 history1 8	0 0 48 <1 154 2808 1151 1418 3807 history2 6
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 Limit/base >25	0 0 45 <1 10 2494 1080 1290 3140 current 6 2	0 0 45 1 11 2637 1173 1428 4250 history1 8 3	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2
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> >25 >20	0 0 45 <1 10 2494 1080 1290 3140 current 6 2 2 2	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2 0
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 2060 225 >25	0 0 45 <1 10 2494 1080 1290 3140 current 6 2 2 2 2	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3 3 }	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2 0 0
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 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	0 0 45 <1 10 2494 1080 1290 3140 <i>current</i> 6 2 2 2 <i>current</i> 0.2	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3 3 history1 0.2	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2 0 history2 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	0 0 45 <1 10 2494 1080 1290 3140 <i>current</i> 6 2 2 2 <i>current</i> 0.2 8.1	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3 3 history1 0.2 8.3	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2 0 0 history2 0.4 9.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 3 3 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 45 <1 10 2494 1080 1290 3140 <i>current</i> 6 2 2 2 <i>current</i> 0.2 8.1 18.8 <i>current</i>	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3 3 history1 0.2 8.3 19.4 history1	0 0 48 <1 154 2808 1151 1418 3807 history2 6 2 0 history2 0.4 9.0 19.4 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 <b>imit/base</b> >3 >20 >3 >20	0 0 45 <1 10 2494 1080 1290 3140 <u>current</u> 6 2 2 2 2 <u>current</u> 0.2 8.1 18.8	0 0 45 1 11 2637 1173 1428 4250 history1 8 3 3 3 history1 0.2 8.3 19.4	0 0 48 <1 154 2808 1151 1418 3807 <b>history2</b> 6 2 0 <b>history2</b> 0.4 9.0 19.4



## **OIL ANALYSIS REPORT**

VISUAL



TING LABORATORY	Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - : GFL0094128 : 06015640 r : 10754784 e : FLEET	501 Madis Received Diagnose Diagnost	l : 22 ed : 27	ary, NC 27513 Nov 2023 Nov 2023 an Felton	GFL Envir	nmental - 983 - Sugar Land Hauling 16011 West Belfort Street Sugar Land, TX US 77498 Contact: Gino Griego ggriego@gflenv.com		
		Abnomal 12 12 11 12 12 12 12 12 12 12	Apr1/23	Sep 5/23	0.0	Jan 30/23 +	Apr1/23	Sep5/23	
		Base 0015 15 14			(b)/HOX (b, 0) (b)/HOX (b, 0) (b)/HOX (b) (b) (c)/HOX (c)/(c)/(c)/(c)/(c)/(c)/(c)/(c)/(c)/(c)/				
		19 18 - <mark>Abnormal</mark> 17 -			10.0	Base	-		
		ep:21/23 Viscosity @ 100°	Apr1/23	Sep 5/23	Nov16/23	Base Number			
		6 d							
		Non-ferrous Meta	ils						
		Jan 30/23	Apr1/23	Sep5/23	Nov16/23				
		4 2							
Apr1/23 -	Sep5/23 -	10- 8-							
		GRAPHS Ferrous Alloys							
		FLUID PROPE Visc @ 100°C	CSt	method ASTM D445	limit/base 15.4	current	history1 13.4	history2 12.9	
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG	
Apr1/23	Sep5/23 Nov16/23	0.001	scalar scalar	*Visual *Visual	NORML	NORML	NORML	NORML	
	3 3	Sand/Dirt	scalar scalar	*Visual *Visual	NONE	NONE	NONE	NONE	
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
	<u> </u>	Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE	NONE	



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

Submitted By: TECHNICIAN ACCOUNT