

# **OIL ANALYSIS REPORT**

Sample Rating Trend







Machine Id 527064

#### 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.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0085630		
Sample Date		Client Info		31 Aug 2023		
Machine Age	mls	Client Info		541924		
Oil Age	mls	Client Info		3000		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method		NEG		
WEAR METAL	0	mathad	limit/base	ou www.out	biotomut	history 0
	3	method		current	history1	history2
Iron	ppm	ASTM D5185m	>100	44		
Chromium	ppm	ASTM D5185m	>20	2		
Nickel	ppm	ASTM D5185m	>4	0		
Titanium	ppm	ASTM D5185m		0		
Silver	ppm	ASTM D5185m	>3	<1		
Aluminum	ppm	ASTM D5185m	>20	3		
Lead	ppm	ASTM D5185m	>40	11		
Copper	ppm	ASTM D5185m	>330	<1		
Tin	ppm	ASTM D5185m	>15	<1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 8	history1	history2
	ppm ppm					
Boron		ASTM D5185m	0	8		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	8 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	8 0 76		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	8 0 76 <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	8 0 76 <1 1262		
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	8 0 76 <1 1262 1475	  	  
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	8 0 76 <1 1262 1475 1340	   	
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	8 0 76 <1 1262 1475 1340 1645	    	
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	8 0 76 <1 1262 1475 1340 1645 3960		
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	8 0 76 <1 1262 1475 1340 1645 3960 current		
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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	8 0 76 <1 1262 1475 1340 1645 3960 current 6	     history1 	     history2
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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	8 0 76 <1 1262 1475 1340 1645 3960 current 6 2	      history1	     history2
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	8 0 76 <1 1262 1475 1340 1645 3960 current 6 2 3	     history1  	     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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	8 0 76 <1 1262 1475 1340 1645 3960 current 6 2 3 3	     history1   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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	8 0 76 <1 1262 1475 1340 1645 3960 <u>current</u> 6 2 3 3 <u>current</u> 0.5	     history1   history1	     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> >3 >20	8 0 76 <1 1262 1475 1340 1645 3960 <i>current</i> 6 2 3 <i>current</i> 0.5 11.5	      history1   history1  	     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 3 20 20 20 20 20 20 20 20 20 20 20 20 20	8 0 76 <1 1262 1475 1340 1645 3960 current 6 2 3 0 current 0.5 11.5 24.5	      history1   history1  history1	    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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <b>imit/base</b> >3 20 20	8 0 76 <1 1262 1475 1340 1645 3960 <u>current</u> 6 2 3 3 <u>current</u> 0.5 11.5 24.5	      history1  history1  history1	    history2  history2  history2  history2  history2

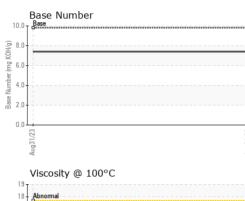


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13 Abnormal 12 11 Aug31/23

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# **OIL ANALYSIS REPORT**



	VISUAL		method		current	history1	history2
	White Metal	scalar	*Visual	NONE	NONE		
	Yellow Metal	scalar	*Visual	NONE	NONE		
	Precipitate	scalar	*Visual	NONE	NONE		
	Silt		*Visual	NONE	NONE		
	Debris	scalar	*Visual	NONE	NONE		
	Sand/Dirt		*Visual	NONE	NONE		
		scalar	*Visual	NORML	NORML		
	Appearance Odor	scalar	*Visual	NORML	NORML		
°C	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	15.1		
	GRAPHS						
	Ferrous Alloys						
	- 45 40 iron						
	35 - norman nickel						
	30-						
	e <sup>25</sup>						
	15						
	5						
		*****					
	Aug31/23			Aug31/23			
	Augû			Aug3			
	Non-ferrous Meta	ils					
	12 copper_h			l I			
	10			1			
	8+						
	Ē 6						
	4-						
	2+						
	2						
	0			23			
	1031/23			1031/23			
	Aug31/23			Aug31/23			
	0	с		A	Base Number		
	U EZIZEBONY Viscosity @ 100°C	c		A	Base Number		
	Viscosity @ 100°0	С		10.0	Base		
	Viscosity @ 100° Abnomal	c		10.0	Base		
	Viscosity @ 100° Abnomal	C		10.0	Base		
	Viscosity @ 100°0	c		10.0			
	Viscosity @ 100°	C		10.0 (b)(10)(0)(0)(0)(0) (b)(10)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0	D - Base		
	Viscosity @ 100° billion bil	C		۲۵. 8.( 0,000 (0,000) ۵.( ۵.( ۵.( ۵.( ۵.( ۵.( ۵.( ۵.( ۵.( ۵.(	D - Base		
	Viscosity @ 100° Abnomal Base Abnomal Abnomal Abnomal Abnomal	C		4 10.0 (6,0) (6,0) (0,0)	Base		
	Viscosity @ 100° Abnomal Base Abnomal Abnomal Abnomal Abnomal	C		4 10.0 (6,0) (6,0) (0,0)	Base		31/23
	Viscosity @ 100°	C		(0)HOX Bull (0)HOX Bull aquiny see 2.0	Base		Aug31/23
laborator	Viscosity @ 100° Viscosity @ 100° Abnomal 17 0-000135 14 Abnomal 12 12 12 12 12 12 12 12 12 12		son Ave. Ca	4 10.0 (0)HOX DWJ aquiny see 2.0 EZ/ICDny	Base Exclusion of the second	ironmental - 411	
Laborator Sample N	Viscosity @ 100° Viscosity @ 100° Abnomal Base Description Base Viscosity @ 100° Base Description Base Citering Strength Strength Streng			v 10.0 (0)HOX 0 10,0 00,0 0,0 0,0 0,0 0,0 0,0	Base Exclusion of the second	ironmental - 411	- Kingsford HC 1001 E Blvd
Laborator Sample N Lab Numb	y : WearCheck USA - 0. : GFL0085630	501 Madis Received Diagnose	i : 05 \$ ed : 06 \$	et 10.0 (0)HOX Du 3400 M 4.0 EC/(Enry ry, NC 27513 Sep 2023 Sep 2023	Base Exclusion of the second	ironmental - 411	<b>- Kingsford HC</b> 1001 E Blvd Kingsford, MI
Sample N Lab Numb Unique Nur	Viscosity @ 100% Viscosity @ 100% Abnomal Base banomal control of the second control of	501 Madis Received	i : 05 \$ ed : 06 \$	Ty, NC 27513 Sep 2023	Base Exclusion of the second		- Kingsford HC 1001 E Blvd Kingsford, MI US 49802
Certificate L2367	Viscosity @ 100% Viscosity @ 100% Abnomal Base Units of the second secon	501 Madis Received Diagnose Diagnosti	l : 05 \$ ed : 06 \$ ician : We	Ty, NC 27513 Sep 2023 s Davis	Base Exclusion of the second		<b>- Kingsford HC</b> 1001 E Blvd Kingsford, MI
Certificate L2367 To discuss this sample rep	Viscosity @ 100% Viscosity @ 100% Abnomal Base banomal control of the second control of	501 Madis Received Diagnose Diagnosti	l : 05 \$ ed : 06 \$ ician : We 00-237-1369	Ty, NC 27513 Sep 2023 s Davis	Base Exclusion of the second		- Kingsford HC 1001 E Blvd Kingsford, MI US 49802

Submitted By: TECHNICIAN ACCOUNT