

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 412047 Component

Diesel Engine

## PETRO CANADA DURON SHP 15W40 (--- GAL)

# 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

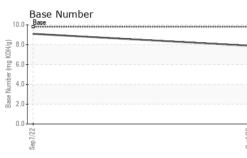
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0080381	GFL0056058	
Sample Date		Client Info		04 Oct 2023	07 Sep 2022	
Machine Age	hrs	Client Info		3003	584	
Oil Age	hrs	Client Info		3003	584	
Oil Changed		Client Info		Changed	Not Changd	
Sample Status				NORMAL	ATTENTION	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.4	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	10	36	
Chromium	ppm	ASTM D5185m	>20	<1	5	
Nickel	ppm	ASTM D5185m	>5	<1	3	
Titanium	ppm	ASTM D5185m	>2	0	0	
Silver	ppm	ASTM D5185m	>2	0	<1	
Aluminum	ppm	ASTM D5185m	>20	4	14	
Lead	ppm	ASTM D5185m	>40	0	10	
Copper	ppm	ASTM D5185m	>330	2	24	
Tin	ppm	ASTM D5185m	>15	<1	5	
Vanadium	ppm	ASTM D5185m		0	<1	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 234	history2
	ppm ppm					
Boron		ASTM D5185m	0	2	234	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	234 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 61	234 0 99	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 61 0	234 0 99 4	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 61 0 946	234 0 99 4 646	
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	2 0 61 0 946 1045	234 0 99 4 646 1462	  
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	2 0 61 0 946 1045 978	234 0 99 4 646 1462 654	   
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	2 0 61 0 946 1045 978 1226	234 0 99 4 646 1462 654 788	   
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 61 0 946 1045 978 1226 3244	234 0 99 4 646 1462 654 788 2286	
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	2 0 61 0 946 1045 978 1226 3244 current	234 0 99 4 646 1462 654 788 2286 history1	     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	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4	234 0 99 4 646 1462 654 788 2286 history1 66	     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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	2 0 61 0 946 1045 978 1226 3244 <u>current</u> 4 3	234 0 99 4 646 1462 654 788 2286 history1 66 4	     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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4 3 9	234 0 99 4 646 1462 654 788 2286 history1 66 4 4	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	2 0 61 946 1045 978 1226 3244 current 4 3 9	234 0 99 4 646 1462 654 788 2286 history1 66 4 4 46 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 imit/base >20	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4 3 9 <i>current</i> 0.3	234 0 99 4 646 1462 654 788 2286 history1 66 4 4 66 4 4 6 1 1 4 60 0.4	     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> >4 >20	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4 3 9 <i>current</i> 0.3 6.8	234 0 99 4 646 1462 654 788 2286 history1 66 4 4 66 4 46 history1 0.4 10.6	     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 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 >30	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4 3 9 <i>current</i> 0.3 6.8 18.8	234 0 99 4 646 1462 654 788 2286 history1 66 4 4 46 history1 0.4 10.6 26.4	     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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *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	2 0 61 0 946 1045 978 1226 3244 <i>current</i> 4 3 3244 <i>current</i> 0.3 6.8 18.8	234 0 99 4 646 1462 654 788 2286 history1 66 4 4 46 history1 0.4 10.6 26.4 history1	     history2  history2  history2  history2

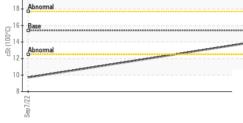


# **OIL ANALYSIS REPORT**

VISUAL







	VICONE		nounou		ourronn	motory	
	White Metal	scalar *Vi	isual N	ONE	NONE	NONE	
	Yellow Metal			ONE	NONE	NONE	
	Precipitate			ONE	NONE	NONE	
	Silt			ONE			
					NONE	NONE	
	Debris			ONE	NONE	NONE	
	Sand/Dirt			ONE	NONE	NONE	
0ct4/23	Appearance	scalar *Vi		ORML	NORML	NORML	
0	Odor	scalar *Vi	isual N	ORML	NORML	NORML	
	Emulsified Water	scalar *Vi	isual >0	0.2	NEG	NEG	
	Free Water	scalar *Vi	isual		NEG	NEG	
	FLUID PROPE		nethod	limit/base	current	history1	history2
	Visc @ 100°C		TM D445 1			▲ 9.7	
		COL AO		5.4	13.0	9.7	
	GRAPHS						
	Ferrous Alloys						
	imp						
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	15						
	10						
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	52			23			
	Sep7/22			0ct4/23			
	Non-ferrous Metals	S					
	copper						
	20 - tin						
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-	10-						
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	1/22			ł/23 -			
	Sep7/22			0ct4/23			
	Viscosity @ 100°C						
	20 T				Base Number		
				10.0 -	Base Number		
	20 18 - Abnormal			10.0			
	18 - Abnormal			10.0			
	18 - Abnormal			10.0			
	18 - Abnormal			10.0			
1	18 - Abnormal			10.0			
1440017 494	18 - Abnormal 16 - Base 6000 14 - Abnormal			10.0 (B/HOX 8.0 B(HOX 8.0 			
to and 11 kg	18 - Abnormal 16 - Base 1001 14 - Abnormal 12 -			10.0 - (0)/HOX 6.0 - (0)/HOX 6.0 - 10/HOX 4.0 - 988 8 2.0 -			
1000UL / 400	18 Abnormal   16 Base   31 2   12 Abnormal   10 Abnormal   10 Abnormal			10.0	Base		
NAPAU I Y NY	18 - Abnormal 16 - Base 1001 14 - Abnormal 12 -			10.0			
Laboratory Sample No. Lab Number Unique Number	Abnormal Base Base Base Comparison Base Base Comparison Comporison Comparison Comporison Comparison Co	501 Madison Received Diagnosed Diagnosticia	: 18 Oct : 19 Oct	10.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (C) HCX Bull 4.0 (	Base	vironmental - 932	00 College ( Muskego, V US 531
Laboratory Sample No. Lab Number Unique Number	Abnormal Base Abnormal Base Abnormal Control of the second s	Received Diagnosed Diagnosticia	: 18 Oct : 19 Oct n : Wes D	10.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (B) HCX Bull 4.0 (C) HCX Bull 4.0 (	Base	vironmental - 932 W144 S64	00 College ( Muskego, V US 531 an Schloma

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

Submitted By: BECKY FLETCHER

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