

### **OIL ANALYSIS REPORT**

Sample Rating Trend





# Machine Id 234002

Fluid

Component Diesel Engine

### PETRO CANADA DURON SHP 15W40 (9 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

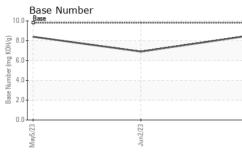
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

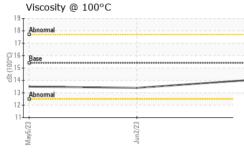
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0095293	PCA0098124	PCA0095302
Sample Date		Client Info		27 Jul 2023	02 Jun 2023	05 May 2023
Machine Age	hrs	Client Info		1879	1501	1229
Oil Age	hrs	Client Info		378	272	485
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	14	17	7
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	1	5	3
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	3	<1	5
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	7	30	16
Tin	ppm	ASTM D5185m	>15	1	2	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
		mathad	limit/base	ourropt	hintow d	history2
ADDITIVES		method				riistoryz
Boron	maa	ASTM D5185m	0	2	12	16
	ppm ppm	ASTM D5185m	0		12	
Boron Barium	ppm		0	2		16
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 2 86	12 2 76	16 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	2 2 86 <1	12 2	16 0 69
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 2 86 <1 1322	12 2 76 <1	16 0 69 0
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 2 86 <1	12 2 76 <1 935	16 0 69 0 1026
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 2 86 <1 1322 1435	12 2 76 <1 935 1152	16 0 69 0 1026 1184
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 2 86 <1 1322 1435 1356	12 2 76 <1 935 1152 1033	16 0 69 0 1026 1184 1055
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 2 86 <1 1322 1435 1356 1670	12 2 76 <1 935 1152 1033 1259	16 0 69 0 1026 1184 1055 1308
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	2 2 86 <1 1322 1435 1356 1670 4495	12 2 76 <1 935 1152 1033 1259 3403	16 0 69 0 1026 1184 1055 1308 3635
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 limit/base	2 2 86 <1 1322 1435 1356 1670 4495	12 2 76 <1 935 1152 1033 1259 3403 history1	16 0 69 0 1026 1184 1055 1308 3635 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13	12 2 76 <1 935 1152 1033 1259 3403 history1 10	16 0 69 0 1026 1184 1055 1308 3635 history2 9
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13 12	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5
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 limit/base >25	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13 12 3	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5 2
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 imit/base >25 >20 imit/base	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13 12 3 <u>current</u>	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3 history1	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5 2 2 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >4 >20	2 2 86 <1 1322 1435 1356 1670 4495 <b>current</b> 13 12 3 <b>current</b> 0.4	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3 3 <b>history1</b> 0.5	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5 2 9 5 2 history2 0.3
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >4 >20	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13 12 3 <u>current</u> 0.4 6.9	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3 history1 0.5 8.1	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5 2 9 5 2 2 history2 0.3 6.7
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	ASTM D5185m ASTM D5185m	0 0 1010 1070 1150 1270 2060 imit/base >25 	2 2 86 <1 1322 1435 1356 1670 4495 <u>current</u> 13 12 3 <u>current</u> 0.4 6.9 19.0	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3 history1 0.5 8.1 20.5	16 0 69 0 1026 1184 1055 1308 3635 <b>history2</b> 9 5 2 <b>y</b> 5 2 2 <b>history2</b> 0.3 6.7 19.2
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	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20 imit/base >30	2 2 86 <1 1322 1435 1356 1670 4495 <i>current</i> 13 12 3 <i>current</i> 0.4 6.9 19.0 <i>current</i>	12 2 76 <1 935 1152 1033 1259 3403 history1 10 8 3 history1 0.5 8.1 20.5 history1	16 0 69 0 1026 1184 1055 1308 3635 history2 9 5 2 2 history2 0.3 6.7 19.2 history2



### **OIL ANALYSIS REPORT**

VISUAL





	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
	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Odor	scalar			NORML	NORML	NORML
			*Visual	NORML			
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP		method	limit/base		history1	history
	Visc @ 100°C	cSt	ASTM D44	5 15.4	14.0	13.4	13.5
	GRAPHS						
	Ferrous Alloys						
	16 - iron	1					
	14 - nickel						
	12						
bpm	10 8						
	6-	1					
	4-	and the local division of the local division	the bold date of a state of the				
	2-	1		No. of Concession, Name			
		23 +		53			
	May5/23	Jun2/23		Jul27/23			
	Non-ferrous Me	tals					
	30 25 20 15 0						
	20 25 20 15 10 5 0 E27 E28 E28 E28 E28 E28 E28 E28 E28	Jun223a					
	30 25 20 15 0	Jun223a			Base Numb	ver	
	Copper Lin Lin Lin Lin Lin Lin Lin Lin	Jun223a			Base Numb	per	
	30 25 26 16 10 5 0 15 10 5 0 15 10 10 5 10 10 10 10 10 10 10 10 10 10 10 10 10	Jun223a		10	.0 Base	er	
mqq	30 25 20 15 10 5 0 5 5 0 5 5 7 7 7 8 8 8 8 8 9 7 10 7 7 8 8 8 9 7 9 7 9 7 9 7 9 7 9 7 9 7 9	Jun223a		10	.0 Base	ber	
mqq	30 25 20 15 10 5 0 5 5 0 5 5 7 7 7 8 8 8 8 8 9 7 10 7 7 8 8 8 9 7 9 7 9 7 9 7 9 7 9 7 9 7 9	Jun223a		10	.0 Base	er	
mqq	30 25 26 20 15 10 5 0 20 15 10 5 0 20 15 10 5 0 20 15 10 10 5 0 20 15 10 10 10 10 10 10 10 10 10 10 10 10 10	Jun223a		10	.0 Base	er	
(100°C) ppm	30 25 20 15 10 5 0 5 5 0 5 5 0 5 5 5 5 7 5 7 7 8 8 8 8 7 7 7 7 8 7 7 7 7	Jun223a		10	.0 - Base	er	
(100°C) ppm	30 25 26 20 15 10 5 0 15 10 5 0 15 10 10 10 10 10 10 10 10 10 10	Jun223a		0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)	.0 - Base	er	
(100°C) ppm	30 25 26 20 15 10 5 10 5 10 5 10 5 10 5 10 5 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 10 10 10 10 10 10 10 10	Jun223a		0 (b) 8 (b) 10 (b) 10 (b) 10 (c) 10 (	.0 - Base	er	
(100°C) ppm	30 25 20 25 20 20 20 25 20 20 20 20 20 20 20 20 20 20	Jun223		(0, 8 (0, 10) (0, 10)(	Base 0 Base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
(100°C) ppm	30 25 26 20 15 10 5 10 5 10 5 10 5 10 5 10 5 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 10 10 10 10 10 10 10 10	Jun223a		0 (b) 8 (b) 10 (b) 10 (b) 10 (c) 10 (	.0 - Base	per	
cst (100°C) ppm	30 25 20 25 20 20 20 25 20 20 20 20 20 20 20 20 20 20	Jun223	d :10 ed :11	۵ المالي (المالي) 8 المالي (المالي) 8 Base Number (mg KOH(a) 10 المالي (المالي) 10 المالي (المالي)	0 Base	E- BETHEL HEIG BETHE	<b>HTS (NWA /</b> 848 HWY 26 L HEIGHTS, US 72 OBERT HEA

To discuss this sample r \* - 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

Submitted By: ALSO ORIVANAR ORIHAR ORITOP - JAMIE HAYWORTH

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