

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



#### Machine Id 739571 Component

## Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- QTS)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Fluid

All component wear rates are normal.

#### Contamination

Elevated aluminum (AI) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

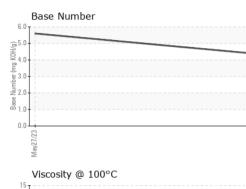
#### Fluid Condition

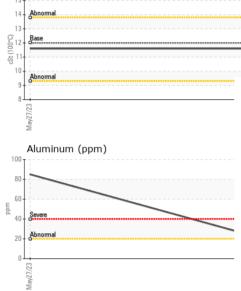
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

TS)			May2023	Nov2023		
SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0105762	PCA0097734	
Sample Date		Client Info		04 Nov 2023	27 May 2023	
Machine Age	mls	Client Info		134117	0	
Dil Age	mls	Client Info		10000	0	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ABNORMAL	
CONTAMINAT	ΓION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Glycol		WC Method		NEG	NEG	
WEAR METAL	_S	method	limit/base	current	history1	history2
ron	ppm	ASTM D5185m	>100	52	<b>1</b> 07	
Chromium	ppm	ASTM D5185m	>20	2	5	
Nickel	ppm	ASTM D5185m	>4	<1	1	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	25	85	
Lead	ppm	ASTM D5185m	>40	<1	<1	
Copper	ppm	ASTM D5185m	>330	45	182	
Tin	ppm	ASTM D5185m	>15	<1	3	
Vanadium	ppm	ASTM D5185m		0	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES						
ADDITIVES		method	limit/base	current	history1	history2
	ppm		limit/base	current 2	history1 30	history2
Boron	ppm ppm					
Boron Barium		ASTM D5185m	2	2	30	
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	2 0	2 0	30 12	
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	2 0 53	30 12 46	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	2 0 53 1	30 12 46 5	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	2 0 53 1 831	30 12 46 5 541	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	2 0 53 1 831 1391	30 12 46 5 541 1873	  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	2 0 53 1 831 1391 847	30 12 46 5 541 1873 772	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180	2 0 53 1 831 1391 847 1103	30 12 46 5 541 1873 772 1009	
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	2 0 50 950 1050 995 1180 2600 limit/base	2 0 53 1 831 1391 847 1103 2212	30 12 46 5 541 1873 772 1009 2300	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	2 0 50 950 1050 995 1180 2600 limit/base	2 0 53 1 831 1391 847 1103 2212 current	30 12 46 5 541 1873 772 1009 2300 history1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	2 0 50 950 1050 995 1180 2600 limit/base >25	2 0 53 1 831 1391 847 1103 2212 current 7	30 12 46 5 541 1873 772 1009 2300 history1 10	    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ypm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	2 0 53 1 831 1391 847 1103 2212 current 7 4	30 12 46 5 541 1873 772 1009 2300 history1 10 8	    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ypm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25	2 0 53 1 831 1391 847 1103 2212 current 7 4 62	30 12 46 5 541 1873 772 1009 2300 history1 10 8 211	    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ypm ypm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	2 0 53 1 831 1391 847 1103 2212 current 7 4 62 current	30 12 46 5 541 1873 772 1009 2300 history1 10 8 211 history1	    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 vTS	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	2 0 53 1 831 1391 847 1103 2212 current 7 4 62 current 1.2	30 12 46 5 541 1873 772 1009 2300 history1 10 8 211 10 8 211 1.5	    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 ypm ypm ypm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 .20 limit/base >3 >20	2 0 53 1 831 1391 847 1103 2212 <i>current</i> 7 4 62 <i>current</i> 1.2 1.2	30 12 46 5 541 1873 772 1009 2300 history1 10 8 211 10 8 211 1.5 1.5 9	    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 ypm ypm ypm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 imit/base >25 	2 0 53 1 831 1391 847 1103 2212 <u>current</u> 7 4 62 <u>current</u> 1.2 13.4 25.5	30 12 46 5 541 1873 772 1009 2300 history1 10 8 211 history1 1.5 1.5 9 27.9	    history2  history2



# **OIL ANALYSIS REPORT**





White Metal scalar Visual NONE NONE NONE NONE									
Velow Metal       scalar       Visual       NONE       NORML       N			VISUAL		method	limit/base	current	history1	history2
Precipitate scalar Visual NONE NONE NONE NONE			White Metal	scalar	*Visual	NONE	NONE	NONE	
Siti scalar Visual NONE NONE NONE NONE			Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Laboratory Sample No. Sample No.			Precipitate	scalar	*Visual	NONE	NONE	NONE	
Laboratory Sample No. Sample No.				scalar	*Visual	NONE	NONE	NONE	
Appearance scalar Visual NORML NORML NORML NORML Odor scalar Visual NORML NORML NORML Didor scalar Visual NORML NORML NORML Free Water scalar Visual Norm Free Water scalar Visual NORML Free Water scalar Visual Norm Free Water Free Water Free Water Free Water Free Water Free Water Free Water			Debris	scalar	*Visual	NONE	NONE	NONE	
Appearance scalar 'Visual NORML NORML NORMU Odor scalar 'Visual NORML NORMU NORMU Emulsified Water scalar 'Visual NORMU NORMU Free Water scalar 'Visual NORMU NORMU NORMU Free Water scalar 'Visual NORMU NORMU NORMU Free Water scalar 'Visual NORMU NORMU NORMU NEG NEG FLUID PROPERTIES method imitbase current history! history! Visc @ 100°C cSt ASTM D45 12.00 11.6 11.6 GRAPHS Tron (ppm) 			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Laboratory Sample No. Sample No.		4/23	Appearance		*Visual		NORML	NORML	
Emulsified Water scalar Visual >0.2 NEG NEG Free Water scalar Visual NEG NEG Free Water scalar Visual NEG NEG FLUID PROPERTIES method Imt/base current history/ history/ Visc @ 100°C cst ASTM D45 12.00 11.6 11.6 GRAPHS Ton (ppm) Auminum (ppm) Auminum (ppm) Auminum (ppm) Copper (ppm) Copper (ppm) Copper (ppm) Fluid of the scalar visual of the visual o		Nov	Odor			NORML		NORML	
Free Water       scalar       Visual       NEG       NEG          FLUID PROPERTIES       method       imit/base       current       history1       history1         Vise @ 100°C       cSt       ASTM D445       12.00       11.6       11.6          GRAPHS       Inon (ppm)         Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (ppm)       Inon (			Emulsified Water					NEG	
Visc @ 100°C cSt ASTM D445 12.00 11.6 11.6 GRAPHS  Ton (ppm)  Aluminum (ppm)  Aluminum (ppm)  Copper (ppm)  Gopper (ppm)  Uscosity @ 100°C  Uscosity @ 10°C  Uscosity @ 10°C  Uscosity @ 10°C  Uscosity @ 10°C									
Visc @ 100°C cSt ASTM D445 12.00 11.6 11.6 GRAPHS  Ton (ppm)  Aluminum (ppm)  Aluminum (ppm)  Copper (ppm)  Gopper (ppm)  Uscosity @ 100°C  Uscosity @ 10°C  Uscosity @ 10°C  Uscosity @ 10°C  Uscosity @ 10°C			FLUID PRO	PERTIES	method	limit/base	current	history1	history2
Leboratory Sample No. Laboratory Sample No. Sample						12.00			
Leboratory Sample No. Laboratory Sample No. Sample									
Aluminum (ppm) Aluminum (ppm)							Lead (ppm)		
Auminum (ppm) Auminum (ppm) Auminum (ppm) Auminum (ppm) Corpor (ppm) Viscosity @ 100°C Uscosity @ 100°C Uscosity @ 100°C Uscosity @ 100°C Silicon (ppm) Corpor (			<sup>250</sup> T			100	T		
Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Grow (ppm) Gopper (			200 - 9						
Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Grow (ppm) Gopper (			E 150			. E.	Abaranal		
Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Aluminum (ppm) Chromium (ppm) Gropper (ppm)						- 40	- Abnormai		
Laboratory Sample No. Laboratory Sample No. Labora			50			20	)		
Aluminum (ppm) Aluminum (ppm)						33			
Aluminum (ppm) Aluminum (ppm)			ay27//			Vov4/2	ay27//		
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Laboratory Sample No. Lab Number Unique Number Unique Number Unique Number Unique Number USCON I (Additional Tests: TBN)				n)		50		pm)	
Laboratory Sample No. Lab Number Unique Number Unique Number WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number USCOS1223 Diagnosed :: 90 Nov 2023 Diagnosed :: 90 Nov 2023 Test Package :: MOE 1 (Additional Tests: TBN)							Severe		
Laboratory Sample No. Lab Number Test Package Inter 1287			60			_ 30			
Laboratory Sample No. Lab Number Test Package Inter 1287			E Parama			d. 20	Abnormal		
Laboratory Silleon (ppm) Viscosity @ 100°C Uscosity @ 100			Abnormal						
Laboratory Sample No. Lab Number Viges Number Sample No. Lab Number Tigue Number Silicon (ppm)       WearCheck USA - 501 Madison Ave., Cary, NC 27513 Diagnosed :: 09 Nov 2023 Diagnosed :: 09 Nov 2023 Midel 1287       MILLER TRUCK LEASING #1 63 REPAUPO STATION BOU LOGAN TOWNSHIP, US 080 Contact: ED DAY									
Copper (ppm) Geoper (ppm) Ge			7/23 .						
Laboratory Sample No. Lab Number Unique Number Test Package MOB 1 (Additional Tests: TBN)			May2			Nov	May2		
Laboratory Sample No. Lab Number Unique Number Test Package MOB 1 (Additional Tests: TBN)									
Laboratory Sample No. Lab Number Unique Number Test Package Mitter 12307						80	Severe		
Viscosity @ 100°C Viscosity @ 100°C Muller TRUCK LEASING #1 63 REPAUPO STATION RO/ Lob Number Viscosity @ 100°C Viscosity @ 100°C Muller TRUCK LEASING #1 63 REPAUPO STATION RO/ LOGAN TOWNSHIP, US 080 Contact: ED DAV						60	•		
Viscosity @ 100°C Viscosity @ 100°C Muller TRUCK LEASING #1 63 REPAUPO STATION RO/ Lob Number Viscosity @ 100°C Viscosity @ 100°C Muller TRUCK LEASING #1 63 REPAUPO STATION RO/ LOGAN TOWNSHIP, US 080 Contact: ED DAV			E.200			E.40			
Viscosity @ 100°C Viscosity @ 1							Abnormal		
Viscosity @ 100°C Viscosity @ 1			100			20			
Viscosity @ 100°C Viscosity @ 1			04			) <del> </del>			
Viscosity @ 100°C Viscosity @ 1			7/2//			lov4/2	7/2/v		
Laboratory Sample No. Lab Number Unique Number Test Package MOB 1 (Additional Tests: TBN)				٥°C		~		-	
Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : PCA0105762 Received : 08 Nov 2023 63 REPAUPO STATION RO/ Lab Number : 06001323 Diagnosed : 09 Nov 2023 LOGAN TOWNSHIP, I Unique Number : 10729683 Diagnostician : Jonathan Hester US 080 Test Package : MOB 1 (Additional Tests: TBN )				J-C		6.0			
Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : PCA0105762 Received : 08 Nov 2023 63 REPAUPO STATION RO/ Lab Number : 06001323 Diagnosed : 09 Nov 2023 LOGAN TOWNSHIP, I Unique Number : 10729683 Diagnostician : Jonathan Hester US 080 Test Package : MOB 1 (Additional Tests: TBN )			Abnormal			<sup>B</sup> /HO	-		
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Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : PCA0105762 Received : 08 Nov 2023 Lab Number : 06001323 Diagnosed : 09 Nov 2023 Unique Number : 10729683 Diagnostician : Jonathan Hester Test Package : MOB 1 (Additional Tests: TBN ) Contact: ED DAV			Ŧ			& 1.0			
Laboratory: WearCheck USA - 501 Madison Ave., Cary, NC 27513MILLER TRUCK LEASING #1 63 REPAUPO STATION RO/ 108 Nov 2023Sample No.: PCA0105762Received: 08 Nov 202363 REPAUPO STATION RO/ LogAN TOWNSHIP, I LOGAN TOWNSHIP, I Unique NumberLifteate L2367: 06001323Diagnosed: 09 Nov 2023LOGAN TOWNSHIP, Us 080Lifteate L2367: MOB 1 (Additional Tests: TBN ): Contact: ED DAV									
Sample No.       : PCA0105762       Received       : 08 Nov 2023       63 REPAUPO STATION RO/         Lab Number       : 06001323       Diagnosed       : 09 Nov 2023       LOGAN TOWNSHIP, I         Unique Number       : 10729683       Diagnostician       : Jonathan Hester       US 080         tifficate L2367       Test Package       : MOB 1 (Additional Tests: TBN )       Contact: ED DAV			May2			Nové	May2		
Sample No.       : PCA0105762       Received       : 08 Nov 2023       63 REPAUPO STATION RO/         Lab Number       : 06001323       Diagnosed       : 09 Nov 2023       LOGAN TOWNSHIP, I         Unique Number       : 10729683       Diagnostician       : Jonathan Hester       US 080         tifficate L2367       Test Package       : MOB 1 (Additional Tests: TBN )       Contact: ED DAV		Laboratory		- 501 Mad	ison Avo Co	n/ NC 9751			EASING #1
Lab Number       : 06001323       Diagnosed       : 09 Nov 2023       LOGAN TOWNSHIP, 1         Unique Number       : 10729683       Diagnostician       : Jonathan Hester       US 080         ifficate L2367       Test Package       : MOB 1 (Additional Tests: TBN )       Contact: ED DAV									
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ufficate L2367 Test Package : MOB 1 (Additional Tests: TBN ) Contact: ED DAV	STING LABORATORY			•					US 0808
discuss this sample report, contact Customer Service at 1-800-237-1369. edavis@millertransgroup.cc	tificate L2367	Test Package	e : MOB 1 ( Addition					Con	tact: ED DAV
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\* - 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)

T: (856)214-3521

F: (856)214-3663