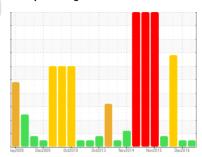


OIL ANALYSIS REPORT

Area LUBES 154

Component **Diesel Engine**

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



Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Please change truck miles to 140417)

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

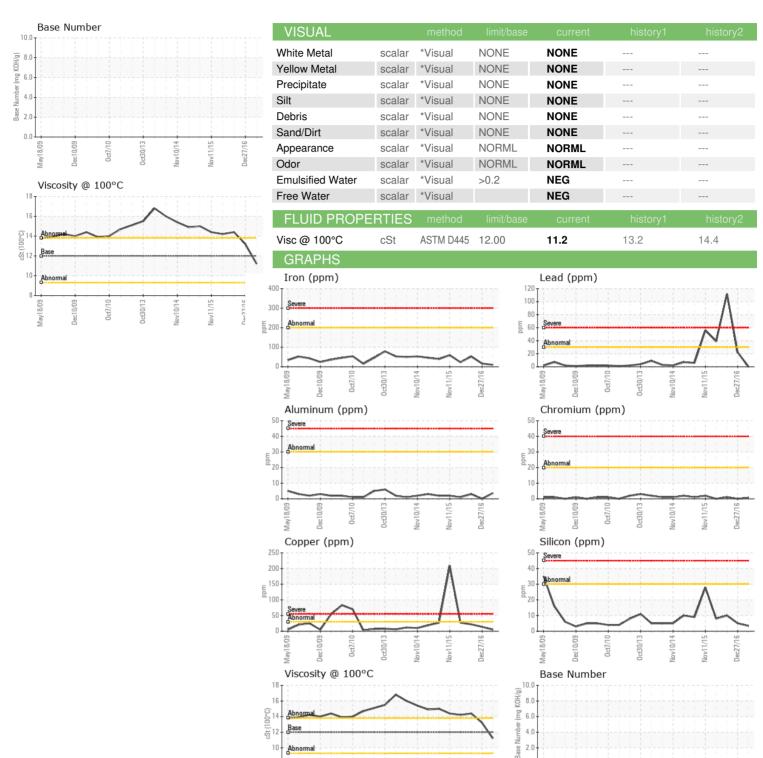
Fluid Condition

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

SAMPLE INFORMATION method imit/base current history1 history2	GAL)		lay2009 D	e2009 Oct2010 O	ct2013 Nov2014 Nov2015	Dec2016	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 140417 420000 402000 Oil Age mls Client Info 16000	Sample Number		Client Info		PCA0109679	PCA09160035	PCA82138037
Oil Age mls Client Info 16000	Sample Date		Client Info		05 Dec 2023	27 Dec 2016	15 Mar 2016
Oil Changed Sample Status Client Info Changed NORMAL NORMAL N/A SEVERE CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Machine Age	mls	Client Info		140417	420000	402000
Sample Status	Oil Age	mls	Client Info		16000		
CONTAMINATION	Oil Changed		Client Info		Changed	N/A	N/A
Fuel WC Method >3.0 <1.0	Sample Status				NORMAL	NORMAL	SEVERE
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG 0.0 0.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185m >20 <1 0 1 Nickel ppm ASTM DS185m >20 <1 0 1 Nickel ppm ASTM DS185m >2 0 0 0 Silver ppm ASTM DS185m >2 0 0 0 Silver ppm ASTM DS185m >30 4 0 3 Lead ppm ASTM DS185m >30 0 22 11 Copper ppm ASTM DS185m >30 5 14 △ 22 Tin ppm ASTM DS185m 0 0 1 Cadmium ppm ASTM DS185m 0 0 1 Cadmium ppm ASTM DS185m <td>CONTAMINAT</td> <td>ION</td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	CONTAMINAT	ION	method	limit/base	current	history1	history2
Silycol WC Method NEG 0.0 0.0	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	0.0	0.0
Chromium ppm ASTM D5185m >20 <1 0 1 Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 5 14 △ 22 Tin ppm ASTM D5185m >15 0 0 1 2 Vanadium ppm ASTM D5185m >15 0 0 1 2 Vanadium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m <th< td=""><td>WEAR METAL</td><td>.S</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></th<>	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 5 14 ≥2 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>200	10	16	52
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 0 22 112 Copper ppm ASTM D5185m >30 5 14 △ 22 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 </td <td>Chromium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>20</td> <th><1</th> <td>0</td> <td>1</td>	Chromium	ppm	ASTM D5185m	>20	<1	0	1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 0 22 112 Copper ppm ASTM D5185m >30 5 14 △ 22 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 Boron ppm ASTM D5185m 0 0 45 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 48 55 Manganese ppm ASTM D5185m 0 60 48 55 Magnesium ppm ASTM D5185m 1050 1061 1528	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum ppm ASTM D5185m >30 4 0 3 Lead ppm ASTM D5185m >30 0 22 112 Copper ppm ASTM D5185m >30 5 14 22 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >30 0 22 112 Copper ppm ASTM D5185m >30 5 14 ▲ 22 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1	Silver	ppm			0	0	0
Copper ppm ASTM D5185m >30 5 14 22 Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1	Aluminum	ppm	ASTM D5185m	>30	4	0	3
Tin ppm ASTM D5185m >15 0 0 1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 45 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 2600 2879 <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>30</td> <th>0</th> <td>22</td> <td>112</td>	Lead	ppm	ASTM D5185m	>30	0	22	112
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 4 36 45 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>30</td><th>5</th><td>14</td><td><u>^</u> 22</td></t<>	Copper	ppm	ASTM D5185m	>30	5	14	<u>^</u> 22
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 4 36 45 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 50 60 48 55 Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 995 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current	Tin	ppm	ASTM D5185m	>15	0	0	1
Boron	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron	Cadmium	ppm	ASTM D5185m		0		
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 50 60 48 55 Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 1018 950 964 Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 20 4 0 3 INFRA-RED method limit/base current<	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 60 48 55 Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 2600 2879 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	2	4	36	45
Manganese ppm ASTM D5185m 0 0 Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 950 967 701 844 Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 20 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7414 >25	Molybdenum	ppm	ASTM D5185m	50	60	48	55
Calcium ppm ASTM D5185m 1050 1061 1528 1585 Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7415 >30 18.7 Sulfation Abs/.1mm *ASTM D7414	Manganese	ppm	ASTM D5185m	0	0		
Phosphorus ppm ASTM D5185m 995 1018 950 964 Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base	Magnesium	ppm	ASTM D5185m	950	967	701	844
Zinc ppm ASTM D5185m 1180 1266 1047 1125 Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1050	1061	1528	1585
Sulfur ppm ASTM D5185m 2600 2879 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Phosphorus	ppm	ASTM D5185m	995	1018	950	964
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Zinc	ppm	ASTM D5185m	1180	1266	1047	1125
Silicon ppm ASTM D5185m >30 3 5 10 Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17			ASTM D5185m	2600	2879		
Sodium ppm ASTM D5185m 2 7 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Silicon	ppm	ASTM D5185m	>30	3		10
INFRA-RED	Sodium	ppm	ASTM D5185m		2	7	11
Soot % % *ASTM D7844 >3 0.4 0.54 0.72 Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Potassium	ppm	ASTM D5185m	>20	4	0	3
Nitration Abs/cm *ASTM D7624 >20 7.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Soot %	%	*ASTM D7844	>3	0.4	0.54	0.72
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Nitration	Abs/cm	*ASTM D7624	>20	7.9		
Oxidation Abs/.1mm *ASTM D7414 >25 15.1 10 17	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.7		
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.49	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.1	10	17
	Base Number (BN)	mg KOH/g	ASTM D2896		9.49		



OIL ANALYSIS REPORT







Certificate L2367

Laboratory Sample No. Lab Number

Unique Number Test Package : MOB 2

: PCA0109679 : 06028829 : 10778620

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received Diagnosed

Diagnostician

2.0 0.0

: 07 Dec 2023 : 11 Dec 2023 : Don Baldridge **DENNIS K BURKE INC - INTERNAL SAMPLES**

555 CONSTITUTION DR TAUNTON, MA US 02780

Contact: GREG DUNKER

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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)

F: (617)889-6422

T: