

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

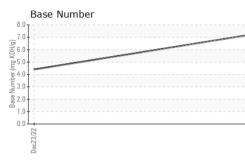
Fluid Condition

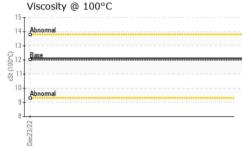
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

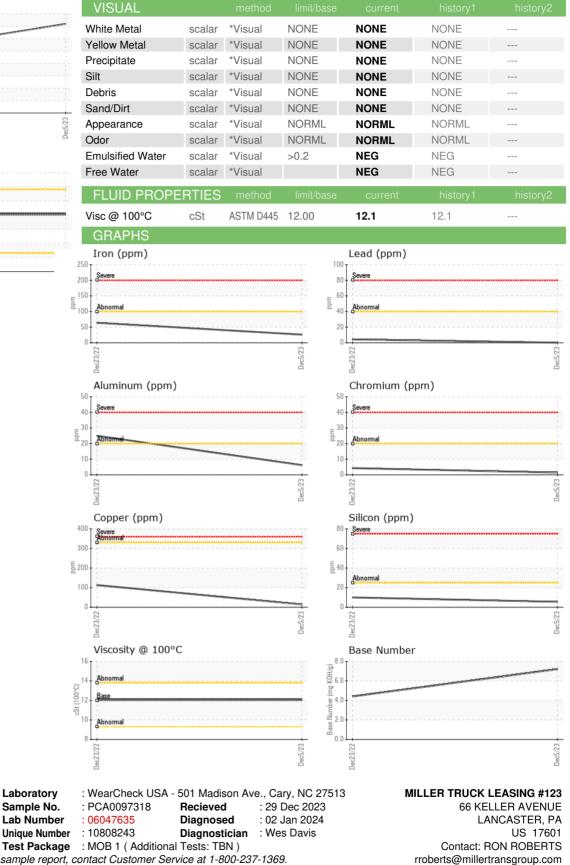
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Othromium ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >4 <1 1 Titanium ppm ASTM D5185m >3 0 <1 Aluminum ppm ASTM D5185m >3 0 <1 Copper ppm ASTM D5185m >30 14 113 Copper ppm ASTM D5185m >330 14 113 Cadmium ppm ASTM D5185m 0 <1 Admium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 61 49 Barium ppm ASTM D5185m 0 1133 <th>QTS)</th> <th></th> <th></th> <th>Dec2022</th> <th>Dec2023</th> <th></th> <th></th>	QTS)			Dec2022	Dec2023		
Sample Date Client Info 05 Dec 2023 23 Dec 2022 Machine Age mis Client Info 238109 146646 Oil Age mis Client Info 25585 80386 Sample Status Client Info Not Changd NoRMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 Qiyool WC Method >0.2 NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5165m >100 26 64 Itanium ppm ASTM D5165m >20 1 4 Itanium ppm ASTM D5165m >4 <1 1 Aluminum ppm ASTM D5165m >4 <1 1 Qio	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 05 Dec 2023 23 Dec 2022 Machine Age mis Client Info 238109 146646 Oil Age mis Client Info 25858 80386 Sample Status Imit fo NorRMAL NORMAL CONTAMINATION method Imit fos current Nistory1 Quert WC Method >5 <1.0 <1.0 Quert WC Method >0.2 NEG NEG WEAR WC Method >0.2 NEG NEG WEAR ppm ASTM D5165m >100 26 64 Iron ppm ASTM D5165m >20 1 4 Nickel ppm ASTM D5165m >20 6 25 Silver ppm ASTM D5165m >30 14 113 Auminum ppm ASTM D5165m	Sample Number		Client Info		PCA0097318	PCA0071697	
Machine Age mls Client Info 238109 146646 Oil Aga mis Client Info 25585 80386 Sample Status init/bas Nort Changed Nort MAL Sample Status init/bas current Nort MAL Water WC Method >5 <1.0 <1.0 Water WC Method >0.2 NEG NEG Chromium ppm ASTM 05185 >100 26 64 Chromium ppm ASTM 05185 >20 1 4 Nickel ppm ASTM 05185 >20 6 25 Auminum ppm ASTM 05185 >30 0 <1 Silver ppm ASTM 05185 >30 0 <1 Auminum ppm ASTM 05185 >30 0 <1 Silver	•		Client Info		05 Dec 2023	23 Dec 2022	
Oil Ghanged Client Info Not Changed NORMAL Sample Status method limit/base current history1 history2 Fuel WC Method >5. <1.0 <1.0 Water WC Method >0.2 NEG NEG Glycol WC Method >0.2 NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Nickel ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >20 6 25 Auminum ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >30 <-1 Auminum ppm ASTM D5185m >30 <1 Copper <	-	mls	Client Info		238109	146646	
Sample Status NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 Water WC Method >0.2 NEG NEG Optimum WC Method NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Nickel ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >3 0 <1 Aluminum ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >30 1 4 Vanadium ppm ASTM D5185m 50 1 4 Copper ppm	Oil Age	mls	Client Info		25585	80386	
Sample Status NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 Water WC Method >0.2 NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Nickel ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >30 <1 4 Copper ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m 20 6 1 Copper ppm ASTM D5185m 0 <1	Oil Changed		Client Info		Not Changd	Changed	
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Water WC Method >0.2 NEG NEG Glycol WC Method NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Chromium ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >3 0 <1 Aluminum ppm ASTM D5185m >20 6 25 Aluminum ppm ASTM D5185m >20 6 25 Aluminum ppm ASTM D5185m >30 14 113 Copper ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 61 49 Barium ppm ASTM D5185m 0 103 81	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >3 0 <11 Aluminum ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >1 4 Vanadium ppm ASTM D5185m 0 0 Addminum ppm ASTM D5185m 0 0 Addminum ppm ASTM D5185m 0 0	Fuel		WC Method	>5	<1.0	<1.0	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 26 64 Chromium ppm ASTM D5185m >20 1 4 Nickel ppm ASTM D5185m >20 1 4 Titanium ppm ASTM D5185m >3 0 <1 Aluminum ppm ASTM D5185m >20 6 25 Aluminum ppm ASTM D5185m >20 6 25 Aluminum ppm ASTM D5185m >20 6 25 Copper ppm ASTM D5185m >20 6 2 Cadmium ppm ASTM D5185m 0 <1 4 Cadmium ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 11	Water		WC Method	>0.2	NEG	NEG	
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Nickel ppm ASTM D5185m >4 <1	Iron	ppm	ASTM D5185m	>100	26	64	
Titanium ppm ASTM D5185m Silver ppm ASTM D5185m >3 0 <1 Aluminum ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >40 <1 4 Copper ppm ASTM D5185m >330 14 113 Tin ppm ASTM D5185m >15 1 4 Cadmium ppm ASTM D5185m 10 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Magneseum ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 0 <103 881 Calcium ppm ASTM D5185m 1050 1204 1378	Chromium	ppm	ASTM D5185m	>20	1	4	
Silver ppm ASTM D5185m >3 0 <1	Nickel	ppm	ASTM D5185m	>4	<1	1	
Aluminum ppm ASTM D5185m >20 6 25 Lead ppm ASTM D5185m >40 <1 4 Copper ppm ASTM D5185m >330 14 113 Tin ppm ASTM D5185m >15 1 4 Cadmium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 < ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 6 1 49 Magnesium ppm ASTM D5185m 050 1003 881 Calcium ppm ASTM D5185m 950 1133 931 Phosphorus ppm ASTM D5185m 2600 3054 </th <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>4</th> <th>5</th> <th></th>	Titanium	ppm	ASTM D5185m		4	5	
Lead ppm ASTM D5185m >40 <1	Silver	ppm	ASTM D5185m	>3	0	<1	
Copper ppm ASTM D5185m >330 14 113 Tin ppm ASTM D5185m >15 1 4 Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 3 3 Molyddenum ppm ASTM D5185m 0 0 0 Marganese ppm ASTM D5185m 0 <11 2 Magnesium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 950 1003 881 Sulfur ppm ASTM D5185m 955 1133 931 Sulfur ppm ASTM D5185m 2600 3054 2501 </th <th>Aluminum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>20</th> <th>6</th> <th>25</th> <th></th>	Aluminum	ppm	ASTM D5185m	>20	6	25	
Tin ppm ASTM D5185m >15 1 4 Vanadium ppm ASTM D5185m 0 <11	Lead	ppm	ASTM D5185m	>40	<1	4	
Vanadium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>330	14	113	
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 3 3 Barium ppm ASTM D5185m 0 0 0 Magnaese ppm ASTM D5185m 0 61 49 Magnesium ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 0 <1 2 Calcium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 950 1133 931 Sulfur ppm ASTM D5185m 950 3054 2501 Sulfur ppm ASTM D5185m >20 4 44 Sodium ppm ASTM D5185m >20 4	Tin	ppm	ASTM D5185m	>15	1	4	
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m233BariumppmASTM D5185m000MolybdenumppmASTM D5185m506149ManganeseppmASTM D5185m0<12MagnesiumppmASTM D5185m9501003881CalciumppmASTM D5185m105012041378PhosphorusppmASTM D5185m9951133931ZincppmASTM D5185m260030542501SulfurppmASTM D5185m228SodiumppmASTM D5185m>25610SodiumppmASTM D5185m>20444INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7644>32.22.9NitrationAbs/m*ASTM D7644>3022.730.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2CxidationAbs/Imm*ASTM D7414>2516.323.2	Vanadium	ppm	ASTM D5185m		0	<1	
Boron ppm ASTM D5185m 2 3 3 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 50 61 49 Manganese ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 950 1133 931 Calcium ppm ASTM D5185m 995 1133 931 Zinc ppm ASTM D5185m 995 133 931 Sulfur ppm ASTM D5185m 2600 3054 2501 Solicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m	Cadmium		ASTM D5185m		0	0	
Barium ppm ASTM D5185m 0 0 0	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 61 49 Manganese ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 1050 1204 1378 Phosphorus ppm ASTM D5185m 1050 1204 1378 Zinc ppm ASTM D5185m 995 1133 931 Sulfur ppm ASTM D5185m 995 1324 1148 Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 4 44 Sodium ppm ASTM D7844 >3 2.2 2.9 INFRA-RED method	Boron	ppm	ASTM D5185m	2	3	3	
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m	0	0	0	
Magnesium ppm ASTM D5185m 950 1003 881 Calcium ppm ASTM D5185m 1050 1204 1378 Phosphorus ppm ASTM D5185m 995 1133 931 Zinc ppm ASTM D5185m 180 1324 1148 Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >20 4 44 Nortassium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/.1mm *ASTM D7	Molybdenum	ppm	ASTM D5185m	50	61	49	
Calcium ppm ASTM D5185m 1050 1204 1378 Phosphorus ppm ASTM D5185m 995 1133 931 Zinc ppm ASTM D5185m 1180 1324 1148 Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/m *ASTM D7624 >20 10.2 14.7 Sulfation Abs/inm<*ASTM D7415 >30<	Manganese	ppm	ASTM D5185m	0	<1	2	
Phosphorus ppm ASTM D5185m 995 1133 931 Zinc ppm ASTM D5185m 1180 1324 1148 Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method lim	Magnesium	ppm	ASTM D5185m	950	1003	881	
Zinc ppm ASTM D5185m 1180 1324 1148 Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/tmm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D74	Calcium	ppm	ASTM D5185m	1050	1204	1378	
Sulfur ppm ASTM D5185m 2600 3054 2501 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/rm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Phosphorus	ppm	ASTM D5185m	995	1133	931	
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Silicon ppm ASTM D5185m >25 6 10 Sodium ppm ASTM D5185m 2 8 Potassium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/.tmm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 16.3 23.2	Sulfur	ppm	ASTM D5185m	2600	3054	2501	
Sodium ppm ASTM D5185m 2 8 Potassium ppm ASTM D5185m<>20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844<>3 2.2 2.9 Nitration Abs/cm *ASTM D7624<>20 10.2 14.7 Sulfation Abs/.1mm *ASTM D7415<>30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414<>25 16.3 23.2	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 44 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Silicon	ppm	ASTM D5185m	>25	6	10	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Sodium	ppm	ASTM D5185m		2	8	
Soot % % *ASTM D7844 >3 2.2 2.9 Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Potassium	ppm	ASTM D5185m	>20	4	44	
Nitration Abs/cm *ASTM D7624 >20 10.2 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.7 30.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Soot %	%	*ASTM D7844	>3	2.2	2.9	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Nitration	Abs/cm	*ASTM D7624	>20	10.2	14.7	
Oxidation Abs/.1mm *ASTM D7414 >25 16.3 23.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.7	30.1	
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 72 4 4	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.3	23.2	
	Base Number (BN)	mg KOH/g	ASTM D2896		7.2	4.4	



OIL ANALYSIS REPORT







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)

Certificate L2367

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Laboratory

Sample No.

Contact/Location: RON ROBERTS - MILLAN

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