

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Area BD SHOP 200301 Component Diesel Engine

PETRO CANADA DURON SHP 10W30 (40 LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) 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.

Sample Number Client Info WC0864703 WC0864622 WC0814982 Sample Date Client Info 13 Dec 2023 01 Oct 2023 04 Aug 2023 Machine Age kms Client Info 174044 155375 143316 Oil Age Kms Client Info Not Changd Not Changd Changed Sample Status Imit base current Not Changd NORMAL NORMAL CONTAMINATION method Imit base current Nistory1 history1 history2 Fuel WC Method >0.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0 0 0 0 Silver ppm ASTM 0516600 >120 37 15 3 1 Titanium ppm ASTM 0516600 >20 24 15 <1 21 0 Silver ppm ASTM 0516500 0			May2023	Nay2023 Jun2023 Jul202	3 Jul2023 Aug2023 Oct202	Dec2023	
Sample Date Client Info 13 Dec 2023 01 Oct 2023 04 Aug 2023 Machine Age kms Client Info 174044 155375 143316 Oil Age kms Client Info 30729 12059 1 Oil Changed Client Info Not Changd Not Changd NoRMAL NoRMAL CONTAMINATION method init/base current history1 history1 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Wear WC Method >0.2 NEG NEG NEG NEG Method Imit/base current history1 history1 history1 Kroneium ppm ASTM D5185(m) >20 1 <1 0 Nickel ppm ASTM D5185(m) >3 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td< th=""><th>SAMPLE INFORM</th><th>MATION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td<>	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 13 Dec 2023 01 Oct 2023 04 Aug 2023 Machine Age kms Client Info 174044 155375 143316 Dil Age kms Client Info 30729 12059 1 Dil Changed Client Info Not Changd Not Changd NoRMAL	Sample Number		Client Info		WC0864703	WC0864662	WC0814936
Oil Age kms Client Info 30729 12059 1 Oil Changed Client Info Not Changd Not Changd Changed Sample Status Imit/Dase current history1 history2 CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		13 Dec 2023	01 Oct 2023	04 Aug 2023
Oli Changed Client Info Not Changd Not Changd Not Changd NorMAL NorMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0	Machine Age	kms	Client Info		174044	155375	143316
Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Age	kms	Client Info		30729	12059	1
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history2 WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185(m) >120 37 15 3 Chromium ppm ASTM D5185(m) >20 1 <1 0 Nickel ppm ASTM D5185(m) >20 20 0 0 0 Silver ppm ASTM D5185(m) >3 <1 <1 <1 0 Copper ppm ASTM D5185(m) >20 24 15 <1 <1 0 Antimony ppm ASTM D5185(m) >20 24 15 <1 <1 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 <t< td=""><td>Sample Status</td><td></td><td></td><td></td><th>NORMAL</th><td>NORMAL</td><td>NORMAL</td></t<>	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history1 WEAR METALS method Imit/base current history1 history1 Iron ppm ASTM D5185(m) >20 1 <1	CONTAMINATIO	N	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185(m) >120 37 15 3 Chromium ppm ASTM 05185(m) >20 1 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185(m) >120 37 15 3 Chromium ppm ASTM 05185(m) >20 1 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185(m) >120 37 15 3 Chromium ppm ASTM D5185(m) >20 1 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185(m) >20 1 <1 <1 0 Nickel ppm ASTM D5185(m) >15 10 3 1 Titanium ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >3 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185(m) >15 10 3 1 Titanium ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >3 <1	Iron	ppm	ASTM D5185(m)	>120	37	15	3
Titanium ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >3 <1	Chromium	ppm	ASTM D5185(m)	>20	1	<1	0
Silver ppm ASTM D5185(m) >3 <1 <1 <1 Aluminum ppm ASTM D5185(m) >20 24 15 <1 Lead ppm ASTM D5185(m) >40 2 1 0 Copper ppm ASTM D5185(m) >330 31 20 8 Tin ppm ASTM D5185(m) >15 <1 <1 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185(m) 0 <1 <1 0 Molybdenum pm ASTM D5185(m) 0 <1 <1 0 Magnesium ppm ASTM D5185(m)	Nickel	ppm	ASTM D5185(m)	>15	10	3	1
Aluminum ppm ASTM D5185(m) >20 24 15 <1 Lead ppm ASTM D5185(m) >40 2 1 0 Copper ppm ASTM D5185(m) >330 31 20 8 Tin ppm ASTM D5185(m) >15 <1	Titanium	ppm	ASTM D5185(m)	>2	0	0	0
Lead ppm ASTM D5185(m) >40 2 1 0 Copper ppm ASTM D5185(m) >330 31 20 8 Tin ppm ASTM D5185(m) >15 <1 <1 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 3 3 4 Molybdenum ppm ASTM D5185(m) 0 <1 0 <1 Molybdenum ppm ASTM D5185(m) 0 <1 0 <1 Molybdenum ppm ASTM D5185(m) 0 <1 0 <1 Magnesium ppm ASTM D5185(m) 950 961	Silver	ppm	ASTM D5185(m)	>3	<1	<1	<1
Copper ppm ASTM D5185(m) >330 31 20 8 Tin ppm ASTM D5185(m) >15 <1	Aluminum	ppm	ASTM D5185(m)	>20	24	15	<1
Copper ppm ASTM D5185(m) >330 31 20 8 Tin ppm ASTM D5185(m) >15 <1	Lead	ppm	ASTM D5185(m)	>40	2	1	0
Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 0 <1	Copper		ASTM D5185(m)	>330	31	20	8
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Beryllum ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 0 <1	Antimony	ppm	ASTM D5185(m)		0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 0 <1 <1 0 Molybdenum ppm ASTM D5185(m) 0 <60 60 58 Manganese ppm ASTM D5185(m) 0 <1 0 <1 Magnesium ppm ASTM D5185(m) 950 961 979 942 Calcium ppm ASTM D5185(m) 1050 1047 1053 1027 Phosphorus ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 265 5 4 4 Sodium ppm ASTM D5185(m) >25	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 0 <1	Beryllium	ppm	ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 2 3 3 4 Barium ppm ASTM D5185(m) 0 <1	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium ppm ASTM D5185(m) 0 <1 <1 0 Molybdenum ppm ASTM D5185(m) 50 60 60 58 Manganese ppm ASTM D5185(m) 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 50 60 60 58 Manganese ppm ASTM D5185(m) 0 <1	Boron	ppm	ASTM D5185(m)	2	3	3	4
Manganese ppm ASTM D5185(m) 0 <1 0 <1 Magnesium ppm ASTM D5185(m) 950 961 979 942 Calcium ppm ASTM D5185(m) 950 961 979 942 Calcium ppm ASTM D5185(m) 1050 1047 1053 1027 Phosphorus ppm ASTM D5185(m) 1050 1047 1053 1027 Phosphorus ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 25 5 4 4 Solicon ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method	Barium	ppm	ASTM D5185(m)	0	<1	<1	0
Magnesium ppm ASTM D5185(m) 950 961 979 942 Calcium ppm ASTM D5185(m) 1050 1047 1053 1027 Phosphorus ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 1180 1159 1188 1152 Sulfur ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 225 5 4 4 Sodium ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >20 65 411 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM	Molybdenum	ppm	ASTM D5185(m)	50	60	60	58
Calcium ppm ASTM D5185(m) 1050 1047 1053 1027 Phosphorus ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 1180 1159 1188 1152 Sulfur ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Solicon ppm ASTM D5185(m) 225 5 4 4 Sodium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm <t< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185(m)</td><td>0</td><th><1</th><td>0</td><td><1</td></t<>	Manganese	ppm	ASTM D5185(m)	0	<1	0	<1
Phosphorus ppm ASTM D5185(m) 995 986 1021 1044 Zinc ppm ASTM D5185(m) 1180 1159 1188 1152 Sulfur ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Solicon ppm ASTM D5185(m) 2600 2492 2620 2590 Silicon ppm ASTM D5185(m) 265 5 4 4 Sodium ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Magnesium	ppm	ASTM D5185(m)	950	961	979	942
Zinc ppm ASTM D5185(m) 1180 1159 1188 1152 Sulfur ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 2492 2620 2590 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Calcium	ppm	ASTM D5185(m)	1050	1047	1053	1027
Sulfur ppm ASTM D5185(m) 2600 2492 2620 2590 Lithium ppm ASTM D5185(m) 2600 current cline	Phosphorus	ppm	ASTM D5185(m)	995	986	1021	1044
Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Zinc	ppm	ASTM D5185(m)	1180	1159	1188	1152
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) >25 5 4 4 Potassium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Sulfur	ppm	ASTM D5185(m)	2600	2492	2620	2590
Silicon ppm ASTM D5185(m) >25 5 4 4 Sodium ppm ASTM D5185(m) 2 2 2 2 Potassium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) 2 2 2 2 Potassium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	CONTAMINANTS	3	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 65 41 1 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Silicon	ppm	ASTM D5185(m)	>25	5	4	4
INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Sodium	ppm	ASTM D5185(m)		2	2	2
Soot % % ASTM D7844* >4 0.3 0 0 Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	Potassium	ppm	ASTM D5185(m)	>20	65	41	1
Nitration Abs/cm ASTM D7624* >20 8.6 5.8 4.7	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>4	0.3	0	0
Sulfation Abs/.1mm ASTM D7415* >30 20.2 19.0 18.3	Nitration	Abs/cm	ASTM D7624*	>20	8.6	5.8	4.7
	Sulfation	Abs/.1mm	ASTM D7415*	>30	20.2	19.0	18.3



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