

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 811041-101310

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- G

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.

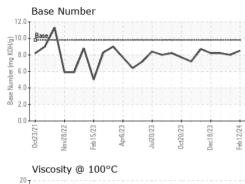
Fluid Condition

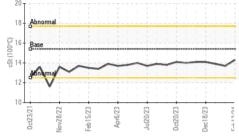
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

	iAL)		et2021 Nov	2022 Feb2023 Apr202	23 Jui2023 Oct2023 Dec2	023 Feb202	
Sample Date Client Info 12 Feb 2024 23 Jan 2024 05 Jan 2024 Machine Age hrs Client Info 5014 4859 4794 Oil Age hrs Client Info 155 65 148 Oil Changed Client Info Changed Change	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 5014 4859 4794 Oil Age hrs Client Info 155 65 148 Oil Changed Client Info 155 65 148 Oil Changed Client Info 155 65 148 Sample Status Imit/base current History1 History2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Ottom ppm ASTM 05185m >100 2 11 10 Ottomium ppm ASTM 05185m >20 21 <1 <1 Nickel ppm ASTM 05185m >20 2 2 2 Silver ppm ASTM 05185m >20 0 0 0 Oppper ppm ASTM 05185m >330 0 <1 0 Vanadium ppm ASTM 05185m 0 0 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0110874</th> <th>GFL0110900</th> <th>GFL0090975</th>	Sample Number		Client Info		GFL0110874	GFL0110900	GFL0090975
Oil Age hrs Client Info 155 65 148 Oil Changed Client Info Changed Changed </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>12 Feb 2024</th> <th>23 Jan 2024</th> <th>05 Jan 2024</th>	Sample Date		Client Info		12 Feb 2024	23 Jan 2024	05 Jan 2024
Oil Changed Client Info Changed Changed Changed Changed NORMAL NORMAL Sample Status Imethod Imit/base current history1 history2 Fuel WC Method >5. <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185m >100 2 11 10 Chromium ppm ASTM D5185m >20 <1 <1 1 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >30 0 <1 <1 1 Titanium ppm ASTM D5185m >30 0 <1 <1 <1 Titanium ppm ASTM D5185m	Machine Age	hrs	Client Info		5014	4859	4794
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Wear WC Method >0.2 NEG NEG NEG Othornium ppm ASTM D5185m >100 2 11 10 Chromium ppm ASTM D5185m >20 <1 <1 <1 <1 Nickel ppm ASTM D5185m >20 <2 2 </th <th>Oil Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>155</th> <th>65</th> <th>148</th>	Oil Age	hrs	Client Info		155	65	148
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 2 11 10 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >20 2 2 2 Lead ppm ASTM D5185m >30 0 <1 0 Copper ppm ASTM D5185m 0 <1 0 0 Copper ppm ASTM D5185m 0 0 0 0 Copper<	Oil Changed		Client Info		Changed	Changed	Changed
Fuel WC Method >5 <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >100 2 11 10 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >4 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 0 <1 0 Copper ppm ASTM D5185m >30 0 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 0 Adamium ppm ASTM D5185m 0 8 3 <1 Barium ppm ASTM D5185m 0 55 53	CONTAMINAT	ION	method	limit/base	current	history1	history2
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WEAR METALS method limit/base current history1 history2 iron ppm ASTM D5185m >100 2 11 10 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
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Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 2 2 ead ppm ASTM D5185m >40 0 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 2 2 ead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 0 <1 0 Vanadium ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m >15 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 0 0 0 0 0 Algenesium ppm ASTM D5185m 0 <1 <1 0 Algenesium ppm ASTM D5185m 1010 882 960 990 Calcium ppm ASTM D5185m 1070 </td <th>Nickel</th> <td>ppm</td> <td>ASTM D5185m</td> <td>>4</td> <th></th> <td></td> <td>0</td>	Nickel	ppm	ASTM D5185m	>4			0
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Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 0 <1	Silver	ppm	ASTM D5185m	>3			
Copper ppm ASTM D5185m >330 0 <1 <1 Tin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20			
Tin ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 8 3 <1	_ead	ppm	ASTM D5185m	>40	0		
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Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 8 3 <1 Barium ppm ASTM D5185m 0 0 0 0 0 Maganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method imit/base current history1 history2 Silicon ppm ASTM D5185m >20		ppm		>15			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 8 3 <1		ppm					
Boron ppm ASTM D5185m 0 8 3 <1 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 53 59 Manganese ppm ASTM D5185m 0 <1		ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 53 59 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 2 3 3 Potassium ppm	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 55 53 59 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 2 3 Nitration Abs/m<*ASTM D	Boron	ppm	ASTM D5185m	0	8	3	<1
Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1150 999 990 1094 Zinc ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 882 960 996 Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1150 999 990 1094 Zinc ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/mm *ASTM D7624	Molybdenum	ppm	ASTM D5185m	60	55	53	
Calcium ppm ASTM D5185m 1070 984 1065 1086 Phosphorus ppm ASTM D5185m 1150 999 990 1094 Zinc ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/ba	Vanganese	ppm	ASTM D5185m	0	<1	<1	0
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Zinc ppm ASTM D5185m 1270 1170 1283 1273 Sulfur ppm ASTM D5185m 2060 2912 3012 3441 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.0 8.6 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414<		ppm					
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Sodium ppm ASTM D5185m 2 3 3 Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.0 8.6 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	CONTAMINAN	TS	method	limit/base	current	history1	
Potassium ppm ASTM D5185m >20 2 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.0 8.6 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	Silicon	ppm		>25			
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Soot % % *ASTM D7844 >3 0.1 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.0 8.6 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	Potassium	ppm	ASTM D5185m	>20	2	2	3
Nitration Abs/cm *ASTM D7624 >20 6.0 8.6 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.5 20.2 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	Soot %	%	*ASTM D7844	>3	0.1	0.4	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	Nitration	Abs/cm	*ASTM D7624	>20	6.0	8.6	8.1
Oxidation Abs/.1mm *ASTM D7414 >25 14.4 16.9 16.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.5	20.2	19.7
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.5 8.0 8.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.4	16.9	16.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.5	8.0	8.2



OIL ANALYSIS REPORT





VISUAL		method	limit/base	current	history1	history2
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	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	13.7	13.9
GRAPHS						

Ferrous Alloys

