

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 10445

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (8 GAL)

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.

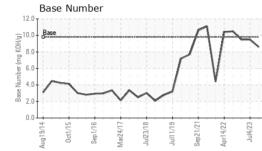
Fluid Condition

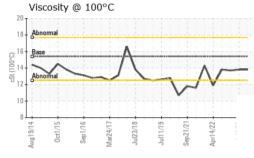
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0080834 GFL0068235 GFL0068235 GFL0068235 Sample Date I Client Info 14 Aug 202 04 Jul 2023 15 Mar 2023 Machine Age hrs Client Info 54587 54587 54587 Oil Age hrs Client Info 54587 54587 54587 Oil Age Client Info 54587 54587 54587 Oil Age Client Info 54587 54587 54587 Gample Status Client Info Changed Changed Changed Glycol WC Method >3.0 <1.0 NORMAL NORMAL Glycol WC Method >3.0 <1.0 <1.0 <1.0 Glycol WC Method >5 1 1 <1 <1 Nickel ppm ASTM 051858 >5 1 1 <1 <1 Nickel ppm ASTM 051858 >2 <1 1 <1 1 Nickel	SAMPLE INFORM	MATION	method	limit/base		history1	history2
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Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 25 22 7 Chromium ppm ASTM D5185m >5 1 1 <1 0 Titanium ppm ASTM D5185m >2 <1 <1 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 0 Aluminum ppm ASTM D5185m >2 1 2 1 2 Lead ppm ASTM D5185m >100 <1 2 <1 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 1 <1 <1 1 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>							
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Titanium ppm ASTM D5185m >2 <1	Chromium	ppm	ASTM D5185m	>5	1	1	<1
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Lead ppm ASTM D5185m >25 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >100 <1	Aluminum	ppm	ASTM D5185m	>15	2	1	2
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>25	<1	<1	<1
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 8 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 57 62 55 Magnesium ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 941 988 839 Calcium ppm ASTM D5185m 1070 1044 1115 1020 Phosphorus ppm ASTM D5185m 1270 1259 1330 1111 Sulfur ppm ASTM D5185m 2060 3669 3959 2610 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 6 3 Sodium ppm ASTM D5185m >20 <th>Vanadium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Vanadium	ppm	ASTM D5185m		0	0	0
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Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 57 62 55 Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 941 988 839 Calcium ppm ASTM D5185m 1010 941 115 1020 Phosphorus ppm ASTM D5185m 1070 1044 1115 1020 Phosphorus ppm ASTM D5185m 1070 1035 1100 951 Zinc ppm ASTM D5185m 1270 1259 1330 1111 Sulfur ppm ASTM D5185m 2060 3669 3959 2610 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 5 3 INFRA-RED method	ADDITIVES		method	limit/base	current	history1	history2
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Silicon ppm ASTM D5185m >25 5 6 3 Sodium ppm ASTM D5185m 1 2 <1 Potassium ppm ASTM D5185m >20 3 5 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.3 6.3 5.4 Sulfation Abs/.imm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m	1070 1150	1044 1035	1115 1100	1020 951
Sodium ppm ASTM D5185m 1 2 <1	Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270	1044 1035 1259	1115 1100 1330	1020 951 1111
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Potassium ppm ASTM D5185m >20 3 5 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.3 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1070 1150 1270 2060 limit/base	1044 1035 1259 3669 current	1115 1100 1330 3959 history1	1020 951 1111 2610 history2
Soot % % *ASTM D7844 >6 0.4 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 6.3 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1070 1150 1270 2060 limit/base	1044 1035 1259 3669 current 5	1115 1100 1330 3959 history1 6	1020 951 1111 2610 history2 3
Nitration Abs/cm *ASTM D7624 >20 6.3 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060 limit/base >25	1044 1035 1259 3669 current 5 1	1115 1100 1330 3959 history1 6 2	1020 951 1111 2610 history2 3 <1
Nitration Abs/cm *ASTM D7624 >20 6.3 6.3 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	1070 1150 1270 2060 <i>limit/base</i> >25 >20	1044 1035 1259 3669 current 5 1 3	1115 1100 1330 3959 history1 6 2 5	1020 951 1111 2610 history2 3 <1 3
Sulfation Abs/.1mm *ASTM D7415 >30 18.2 19.1 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i>	1044 1035 1259 3669 current 5 1 3 current	1115 1100 1330 3959 history1 6 2 5 5 history1	1020 951 1111 2610 history2 3 <1 3 +istory2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060 limit/base >25 >20 limit/base >6	1044 1035 1259 3669 current 5 1 3 current 0.4	1115 1100 1330 3959 history1 6 2 5 5 history1 0.4	1020 951 1111 2610 history2 3 <1 3 <1 3 history2 0.3
Oxidation Abs/.1mm *ASTM D7414 >25 13.6 14.4 13.0	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	1044 1035 1259 3669 current 5 1 3 current 0.4 6.3	1115 1100 1330 3959 history1 6 2 5 5 history1 0.4 6.3	1020 951 1111 2610 history2 3 <1 3 <1 3 history2 0.3 5.4
	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7624	1070 1150 1270 2060 limit/base >25 >20 limit/base >6 >20 >20 >30	1044 1035 1259 3669 current 5 1 3 current 0.4 6.3 18.2	1115 1100 1330 3959 history1 6 2 5 <u>history1</u> 0.4 6.3 19.1	1020 951 1111 2610 history2 3 <1 3 <1 3 history2 0.3 5.4 17.8
Dase Multiper (DIN) mg NUMg ASTM D2830 9.8 8.0 9.5 9.5	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm TS ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	1070 1150 1270 2060 imit/base >25 >20 imit/base >6 >20 >30 imit/base	1044 1035 1259 3669 current 5 1 3 current 0.4 6.3 18.2 current	1115 1100 1330 3959 history1 6 2 5 history1 0.4 6.3 19.1 history1	1020 951 1111 2610 history2 3 <1 3 <1 3 history2 0.3 5.4 17.8 history2
	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	1070 1150 1270 2060 limit/base >25 limit/base >20 limit/base >30 limit/base	1044 1035 1259 3669 current 5 1 3 current 0.4 6.3 18.2 current 13.6	1115 1100 1330 3959 history1 6 2 5 history1 0.4 6.3 19.1 history1 14.4	1020 951 1111 2610 history2 3 <1 3 <1 3 history2 0.3 5.4 17.8 history2 13.0



OIL ANALYSIS REPORT





VISUAL		method	limit/base	current	history1	history
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		method	limit/base	current	history1	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.8	13.7
GRAPHS						
Ferrous Alloys						
250 - iron						
nickel						
200	1					
.150	-11					
100	11.					
50	IV					
	$1 \cdot C$	~~	~			
Aug19/14 0ct1/15 Sep1/16 Mar24/17	Jul23/18	Sep21/21	Jul4/23			
Aug19/14 Oct1/15 Sep1/16 Mar24/17	Jul Jul	Sep2 Apr1	lul			
Non-ferrous Meta	als					
copper	1					
250 - tin	1					
200						
200-	11					
150-	111					
100	1 VA					
50	WL					
	19	/21- 22	23			
Aug19/14 0ct1/15 Sep1/16 Mar24/17	Jul23/18 -	Sep21/21 Apr14/22	Jul4/23 -			
Viscosity @ 100°	С	100		Base Number		
10			12.0			
19 Abnormal			12.1			
18 - Abnormal				12012323		10
18 - Abnormal 17 -	٨		10.0	0 - Base		An
18 - Abnormal 17 -	Δ			0 - Base		A

