

OIL ANALYSIS REPORT

Sample Rating Trend



Tomponent Diesel Engine

Machine Id

PETRO CANADA DURON SHP 15W40 (22 LTR)

Sample Date Client Info 13 Oct 2023 23 Aug 2023 14 Jul 2023 Machine Age kms Client Info 186902 18902 10267 Oil Age kms Client Info 0 0 0 0 Oil Changed Client Info Changed Not Changd Changed ABNORMAL ABNORM	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age kms Client Info 186902 186902 10267 Oil Age kms Client Info 0 0 0 0 Sample Status a method Imit/base current history1 history2 Iron ppm ASIN D518(m) >80 27 12 19 Chromium ppm ASIN D518(m) >55 <1	Sample Number		Client Info		GFL0094198	GFL0091068	GFL0086492
Oil Age kms Client Info 0 0 0 0 Oil Changed Client Info Changed Not Changed Changed Sample Status method limit/base current history1 history2 Iron ppm ASTM D5186(m) >80 27 12 19 Chromium ppm ASTM D5186(m) >55 <1	Sample Date		Client Info		13 Oct 2023	23 Aug 2023	14 Jul 2023
Oil Changed Client Info Changed Not Changed ABNORMAL ABNORMAL ABNORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM05186(m) >80 27 12 19 Chromium ppm ASTM05186(m) >55 <1	Machine Age	kms	Client Info		186902	186902	10267
Sample Status method Imit/base current history1 ABNORMAL ABNORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165(m) >50 <1	Oil Age	kms	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165(m) >80 27 12 19 Chromium ppm ASTM D5165(m) >5 <1	Oil Changed		Client Info		Changed	Not Changd	Changed
Iron ppm ASTM D5185(m) >80 27 12 19 Chromium ppm ASTM D5185(m) >5 <1	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
Dromium ppm ASTM D5185(m) >5 <1 <1 <1 <1 Nickel ppm ASTM D5185(m) >2 <1	WEAR META	LS	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185(m) >2 <1 0 0 Titanium ppm ASTM D5185(m) >3 <1	Iron	ppm	ASTM D5185(m)	>80	27	12	19
Titanium ppm ASTM 05185(m) 0 0 0 Silver ppm ASTM 05185(m) >3 <1	Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Silver ppm ASTM 05185(m) >3 <1 0 <1 Aluminum ppm ASTM 05185(m) >30 4 2 3 Lead ppm ASTM 05185(m) >30 0 0 0 Copper ppm ASTM 05185(m) >50 0 0 0 Antimony ppm ASTM 05185(m) >5 0 0 0 Vanadium ppm ASTM 05185(m) 0 0 0 0 Antimony ppm ASTM 05185(m) 0 0 0 0 Vanadium ppm ASTM 05185(m) 0 6 7 10 Boron ppm ASTM 05185(m) 0 4 0 0 Maganese ppm ASTM 05185(m) 0 6 7 10 Maganesium ppm ASTM 05185(m) 0 0 <1	Nickel	ppm	ASTM D5185(m)	>2	<1	0	0
Aluminum ppm ASTM D5185(m) >30 4 2 3 Lead ppm ASTM D5185(m) >30 0 0 0 Copper ppm ASTM D5185(m) >150 <1	Titanium	ppm	ASTM D5185(m)		0	0	0
Lead ppm ASTM D5185(m) >30 0 0 0 Copper ppm ASTM D5185(m) >150 <1	Silver	ppm	ASTM D5185(m)	>3	<1	0	<1
Copper ppm ASTM D5185(m) >150 <1 <1 <1 <1 Tin ppm ASTM D5185(m) >5 0 0 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) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Aluminum	ppm	ASTM D5185(m)	>30	4	2	3
Tin ppm ASTM D5185(m) >5 0 0 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) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Lead	ppm	ASTM D5185(m)	>30	0	0	0
Tin ppm ASTM D5185(m) >5 0 0 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) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Copper	ppm	ASTM D5185(m)	>150	<1	<1	<1
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 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 <1	Tin				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 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Antimony	ppm	ASTM D5185(m)		0	0	0
Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Vanadium	ppm			0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1 0 0 Maganese ppm ASTM D5185(m) 0 <1 0 <1 <10 Magnesium ppm ASTM D5185(m) 0 0 <1 <1 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11 <11			ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 0 6 7 10 Barium ppm ASTM D5185(m) 0 <1	Cadmium		· · ·		0		
Barium ppm ASTM D5185(m) 0 <1 0 0 Molybdenum ppm ASTM D5185(m) 60 57 56 58 Manganese ppm ASTM D5185(m) 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 60 57 56 58 Manganese ppm ASTM D5185(m) 0 0 <1	Boron	ppm	ASTM D5185(m)	0	6	7	10
Maganese ppm ASTM D5185(m) 0 0 <1 <1 Magnesium ppm ASTM D5185(m) 1010 866 897 899 Calcium ppm ASTM D5185(m) 1070 976 996 1005 Phosphorus ppm ASTM D5185(m) 1070 976 998 993 Zinc ppm ASTM D5185(m) 1270 1077 1119 1153 Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2203 2411 2107 Solicon ppm ASTM D5185(m) 2060 2133 2411 2107 Solicon ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D5185(m) >20 7 4 5 6.5 Glycol % ASTM D5185(m) >20 7 4 5 6.5 0.0	Barium	ppm	ASTM D5185(m)	0	<1	0	0
Magnesium ppm ASTM D5165(m) 1010 866 897 899 Calcium ppm ASTM D5165(m) 1070 976 996 1005 Phosphorus ppm ASTM D5185(m) 1150 872 998 993 Zinc ppm ASTM D5185(m) 1270 1077 1119 1153 Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2103 2411 210 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D793* >5 6.6 5.5 6 6.5 Glycol % ASTM D782* 0.0 NEG 0.0 0.0 INFRA-RED <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>60</td> <td>57</td> <td>56</td> <td>58</td>	Molybdenum	ppm	ASTM D5185(m)	60	57	56	58
Calcium ppm ASTM D5185(m) 1070 976 996 1005 Phosphorus ppm ASTM D5185(m) 1150 872 998 993 Zinc ppm ASTM D5185(m) 1270 1077 1119 1153 Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2103 2411 2307 Lithium ppm ASTM D5185(m) 2060 2103 2411 2307 Silicon ppm ASTM D5185(m) 2060 <1	Manganese	ppm	ASTM D5185(m)	0	0	<1	<1
Phosphorus ppm ASTM D5185(m) 1150 872 998 993 Zinc ppm ASTM D5185(m) 1270 1077 1119 1153 Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2103 2411 2307 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D7593* >5 6.6 5.5 6 6.5 Glycol % ASTM D782* 0.0 NEG 0.0 NEG 0.0 INFRA-RED method limit/base current history1 history2 Soot %	Magnesium	ppm	ASTM D5185(m)	1010	866	897	899
Zinc ppm ASTM D5185(m) 1270 1077 1119 1153 Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) <1	Calcium	ppm	ASTM D5185(m)	1070	976	996	1005
Sulfur ppm ASTM D5185(m) 2060 2203 2411 2307 Lithium ppm ASTM D5185(m) 2060 2103 2411 2307 Lithium ppm ASTM D5185(m) 200 6 1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D5185(m) >20 7 4 7 Fuel % ASTM D5185(m) >20 7 4 7 Fuel % ASTM D7932* >5 6.6 5.5 6.5 6.5 Glycol % ASTM D7844* >3 0.3 0.2 0.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* </td <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>1150</td> <td>872</td> <td>998</td> <td>993</td>	Phosphorus	ppm	ASTM D5185(m)	1150	872	998	993
LithiumppmASTM D5185(m)<1<1<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>20657SodiumppmASTM D5185(m)>20657PotassiumppmASTM D5185(m)>20747Fuel%ASTM D5185(m)>20746.5Glycol%ASTM D7932*>56.65.56.5Glycol%ASTM D7922*0.0NEG0.0INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%ASTM D7644*>30.30.20.3NitrationAbs/cmASTM D7624*>2013.010.310.9SulfationAbs/.1mmASTM D7415*>3024.121.522.0FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Zinc	ppm	ASTM D5185(m)	1270	1077	1119	1153
LithiumppmASTM D5185(m)<1<1<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>20657SodiumppmASTM D5185(m)>20657PotassiumppmASTM D5185(m)>20747Fuel%ASTM D5185(m)>20747Glycol%ASTM D7933*>56.65.56.5Glycol%ASTM D7922*0.0NEG0.0INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%ASTM D7624*>2013.010.310.9SulfationAbs/cmASTM D7624*>3024.121.522.0FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Sulfur	ppm	ASTM D5185(m)	2060	2203	2411	2307
Silicon ppm ASTM D5185(m) >20 6 5 7 Sodium ppm ASTM D5185(m) 18 11 21 Potassium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D5185(m) >20 7 4 7 Glycol % ASTM D7932* >5 6.6 5.5 6.5 Glycol % ASTM D7922* 0.0 NEG 0.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >3 0.3 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Lithium		ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) 18 11 21 Potassium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D7593* >5 ▲ 6.6 ▲ 5.5 ▲ 6.5 Glycol % ASTM D7922* 0.0 NEG 0.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >3 0.3 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 7 4 7 Fuel % ASTM D7593* >5 6.6 5.5 6.5 Glycol % ASTM D7922* 0.0 NEG 0.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >3 0.3 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Silicon	ppm	ASTM D5185(m)	>20	6	5	7
Fuel % ASTM D7593* >5 6.6 5.5 6.5 Glycol % ASTM D7922* 0.0 NEG 0.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >3 0.3 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.tmm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185(m)		18	11	21
Glycol%ASTM D7922*0.0NEG0.0INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%ASTM D7844*>30.30.20.3NitrationAbs/cmASTM D7624*>2013.010.310.9SulfationAbs/.1mmASTM D7415*>3024.121.522.0FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Potassium	ppm	ASTM D5185(m)	>20	7	4	7
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%ASTM D7844*>30.30.20.3NitrationAbs/cmASTM D7624*>2013.010.310.9SulfationAbs/.tmmASTM D7415*>3024.121.522.0FLUID DEGRADATION methodlimit/basecurrenthistory1history2	Fuel	%	ASTM D7593*	>5	<u> </u>	▲ 5.5	6 .5
Soot % % ASTM D7844* >3 0.3 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Glycol	%	ASTM D7922*		0.0	NEG	0.0
Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm ASTM D7624* >20 13.0 10.3 10.9 Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Soot %	%	ASTM D7844*	>3	0.3	0.2	0.3
Sulfation Abs/.1mm ASTM D7415* >30 24.1 21.5 22.0 FLUID DEGRADATION method limit/base current history1 history2	Nitration	Abs/cm	ASTM D7624*	>20			10.9
		Abs/.1mm					22.0
Oxidation Abs/.1mm ASTM D7414* >25 25.2 18.6 20.6	FLUID DEGRA		method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	ASTM D7414*	>25	25.2	18.6	20.6

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.



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