

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



MACK 2620E

Diesel Engine

PETRO CANADA DURON SHP 15W40 (10 GAL

Oil ChangedClient InfoNot ChangedNot ChangedNot ChangedNot ChangedSample StatusImageImageNORMALNORMALNORMALNORMALCONTAMINATIONmethodimit/basecurrenthistory1history2FuelWC Method>0.2NEGNEGNEGWaterWC Method>0.2NEGNEGNEGGlycolWC Method>0.2NEGNEGNEGWEAR METALSmethodimit/basecurrenthistory1history2IronppmASTM D5185m>20<123NickelppmASTM D5185m>20<123NickelppmASTM D5185m>201<1<1ChomiumppmASTM D5185m>201<1<1CopperppmASTM D5185m>201<1<1CopperppmASTM D5185m>330134TinppmASTM D5185m>15<1<12VanadiumppmASTM D5185m0000ADDITIVESmethodImit/basecurrenthistory1history2BoronppmASTM D5185m0<1<11MagnesiumppmASTM D5185m0<1<11MagnesiumppmASTM D5185m1100875871888CalciumppmASTM D5185m1010875871 <th colspan="10">ON SHP 15W40 (10 GAL)</th>	ON SHP 15W40 (10 GAL)									
Sample Date Client Info 07 Feb 2024 10 Oct 2023 03 Aug 2023 Machine Age hrs Client Info 33370 33261 33088 Oil Age hirs Client Info 109 669 496 Oil Changed Client Info Not Changd Nor MAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Ottom ppm ASTM D5185m >120 17 66 63 Chromium ppm ASTM D5185m >20 <1 2 3 Nickel ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >20 0 0 0 Alu	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2			
Sample Date Client Info 07 Feb 2024 10 Oct 2023 03 Aug 2023 Machine Age hrs Client Info 33370 33261 33088 Oil Age hrs Client Info 109 669 496 Oil Changed Client Info Not Changd NorMAL NORMAL NORMAL Sample Status Client Info Not Changd NorMAL NORMAL NORMAL CONTAMINATION method imil/base current history1 history2 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0109583	GFL0087458	GFL0087529			
Machine Age hrs Client Info 33370 33261 33088 Oil Age hrs Client Info 109 669 496 Oil Changed Kot Changed Not Changed Not Changed Sample Status Imit/base current NoRMAL NORMAL CONTAMINATION method s.0. <1.0			Client Info		07 Feb 2024	10 Oct 2023	03 Aug 2023			
Oil Age hrs Client Info 109 669 496 Oil Changed Client Info Not Changed Not Changed Not Changed Sample Status Imit/base current history1 history1 CONTAMINATION method imit/base current history1 history2 Fuel WC Method >3.0 <1.0	-	hrs	Client Info		33370	33261	-			
Oil Changed Client Info Not Changed Not Changed Not Changed Not Changed Sample Status Image Image Current NorRMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >0.2 NEG NEG NEG NEG Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >120 17 66 63 Chromium ppm ASTM D5185m >2 0 0 0 Othorium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 1 <1 2 Cadmium ppm ASTM D5185m >330 1 3 9 Cadmium ppm ASTM D5185m	Oil Age	hrs	Client Info		109	669	496			
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		Not Changd	Changed	Not Changd			
Fuel WC Method >3.0 <1.0 <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 >120 17 66 63 Chromium ppm ASTM D5185m >20 <1	Sample Status				NORMAL	NORMAL	NORMAL			
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 66 63 Chromium ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2			
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 66 63 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0			
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 66 63 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG			
Iron ppm ASTM D5185m >120 17 666 63 Chromium ppm ASTM D5185m >20 <1 2 3 Nickel ppm ASTM D5185m >5 <1 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >20 1 <1 1 1 Copper ppm ASTM D5185m >40 <1 1 1 2 Vanadium ppm ASTM D5185m >330 1 3 4 Copper ppm ASTM D5185m >40 <1 1 2 Vanadium ppm ASTM D5185m 0 9 3 9 Barium ppm ASTM D5185m 0	Glycol		WC Method		NEG	NEG	NEG			
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Chromium ppm ASTM D5185m >20 <1 2 3 Nickel ppm ASTM D5185m >5 <1	Iron	ppm	ASTM D5185m	>120	17	66	63			
Titanium ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1	Chromium	ppm	ASTM D5185m	>20	<1	2	3			
Titanium ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 1 <1	Nickel	ppm	ASTM D5185m	>5	<1	0	0			
Aluminum ppm ASTM D5185m >20 1 <1 <1 Lead ppm ASTM D5185m >40 <1	Titanium		ASTM D5185m	>2	<1	0	0			
Aluminum ppm ASTM D5185m >20 1 <1 <1 Lead ppm ASTM D5185m >40 <1	Silver	ppm	ASTM D5185m	>2	0	0	0			
Copper ppm ASTM D5185m >330 1 3 4 Tin ppm ASTM D5185m >15 <1	Aluminum		ASTM D5185m	>20	1	<1	<1			
Copper ppm ASTM D5185m >330 1 3 4 Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	<1	1	1			
Tin ppm ASTM D5185m >15 <1 <1 2 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m <1	Copper		ASTM D5185m	>330	1	3	4			
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 3 9 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 0 <1 <1 1 Magnesium ppm ASTM D5185m 1010 875 871 888 Calcium ppm ASTM D5185m 1070 1017 1164 1211 Phosphorus ppm ASTM D5185m 1270 1172 1191 1255 Sulfur ppm ASTM D5185m 2060 2801 2926 3705 CONTAMINANTS method limit/base current his			ASTM D5185m	>15	<1	<1	2			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 3 9 Barium ppm ASTM D5185m 0 <1	Vanadium		ASTM D5185m		0	0	0			
Boron ppm ASTM D5185m 0 9 3 9 Barium ppm ASTM D5185m 0 <1	Cadmium		ASTM D5185m		<1	0	0			
Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 61 57 56 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2			
Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 61 57 56 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	9	3	9			
Molybdenum ppm ASTM D5185m 60 61 57 56 Manganese ppm ASTM D5185m 0 <1	Barium		ASTM D5185m	0		0				
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Magnesium ppm ASTM D5185m 1010 875 871 888 Calcium ppm ASTM D5185m 1070 1017 1164 1211 Phosphorus ppm ASTM D5185m 1150 896 963 1015 Zinc ppm ASTM D5185m 1270 1172 1191 1255 Sulfur ppm ASTM D5185m 2060 2801 2926 3705 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 <1	-			0			1			
Calcium ppm ASTM D5185m 1070 1017 1164 1211 Phosphorus ppm ASTM D5185m 1150 896 963 1015 Zinc ppm ASTM D5185m 1270 1172 1191 1255 Sulfur ppm ASTM D5185m 2060 2801 2926 3705 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 <1	•		ASTM D5185m	1010		871	888			
Phosphorus ppm ASTM D5185m 1150 896 963 1015 Zinc ppm ASTM D5185m 1270 1172 1191 1255 Sulfur ppm ASTM D5185m 2060 2801 2926 3705 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 4 4 Potassium ppm ASTM D5185m >20 2 4 4 NtFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 2 <1	•		ASTM D5185m	1070		1164	1211			
Zinc ppm ASTM D5185m 1270 1172 1191 1255 Sulfur ppm ASTM D5185m 2060 2801 2926 3705 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m >20 2 <1	Phosphorus		ASTM D5185m	1150	896	963	1015			
SulfurppmASTM D5185m2060280129263705CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25344SodiumppmASTM D5185m024PotassiumppmASTM D5185m>202<1										
Silicon ppm ASTM D5185m >25 3 4 4 Sodium ppm ASTM D5185m 0 2 4 Potassium ppm ASTM D5185m >20 2 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 1 2.8 3 Nitration Abs/cm *ASTM D7624 >20 5.1 8.0 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	Sulfur		ASTM D5185m	2060		2926	3705			
Sodium ppm ASTM D5185m 0 2 4 Potassium ppm ASTM D5185m >20 2 <1	CONTAMINAN	NTS	method	limit/base	current	history1	history2			
Sodium ppm ASTM D5185m 0 2 4 Potassium ppm ASTM D5185m >20 2 <1	Silicon	ppm	ASTM D5185m	>25	3	4	4			
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 1 2.8 3 Nitration Abs/cm *ASTM D7624 >20 5.1 8.0 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	Sodium		ASTM D5185m		0	2	4			
Soot % % *ASTM D7844 >4 1 2.8 3 Nitration Abs/cm *ASTM D7624 >20 5.1 8.0 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	Potassium	ppm	ASTM D5185m	>20	2	<1	<1			
Nitration Abs/cm *ASTM D7624 >20 5.1 8.0 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	INFRA-RED		method	limit/base	current	history1	history2			
Nitration Abs/cm *ASTM D7624 >20 5.1 8.0 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	Soot %	%	*ASTM D7844	>4	1	2.8	3			
Sulfation Abs/.1mm *ASTM D7415 >30 18.1 21.7 22.3	Nitration									
FLUID DEGRADATION method limit/base current history1 history2	Sulfation									
	FLUID DEGRA		method	limit/base	current	history1	history2			

11.9

9.4

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.

Oxidation

Abs/.1mm *ASTM D7414 >25

Base Number (BN) mg KOH/g ASTM D2896 9.8

13.5

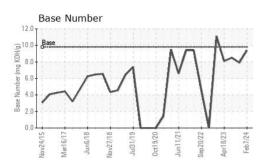
8.5

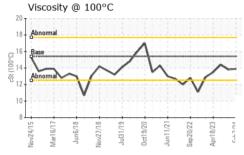
12.6

7.9

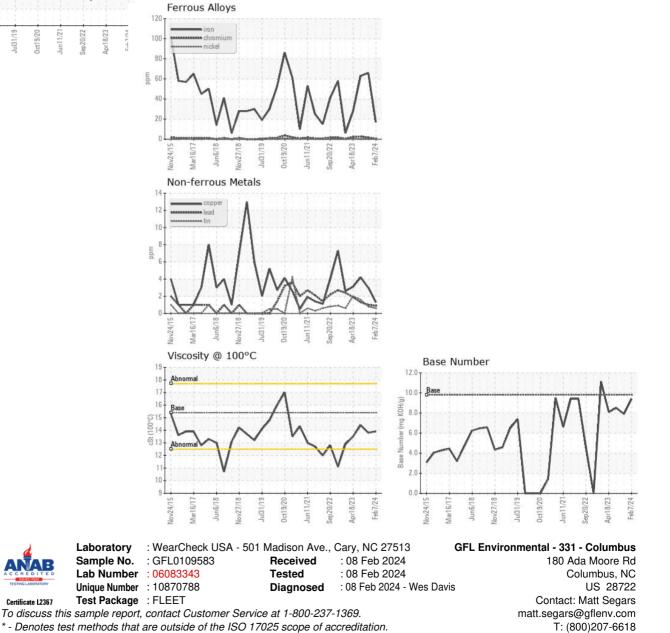


OIL ANALYSIS REPORT





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	13.9	13.8	14.4
GRAPHS						



Certificate L2367

F: (252)617-2494