

OIL ANALYSIS REPORT

Sample Rating Trend

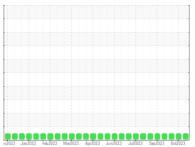
NORMAL



MACK 913016 Component

Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

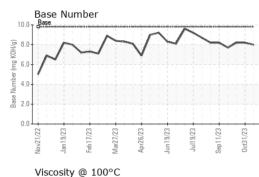


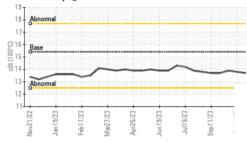


Second end at the mest service interval to monitor. Sample Number Client Info GFL0087986 GFL008986 GFL008066 GFL008066 GFL	DIAGNOSIS	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
seample at the next service interval to monitor. Sample Data Client Info 17 Nov 2023 31 Oct 2023 18 Oct 2023 is component wear rates are normal. Onl Age in sc Client Info 3915 3739 38 032 Onl Age in sc Client Info NA NA NA NA semple Status Client Info NA NA NA NA NA to id condition fair fair semicons Sample Status Client Info NA NA NORMAL NORMAL to id condition of the condition of the is suitable confurther service. WC Method 3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Recommendation					GFL0087986	GFL0089896	
ear icomponent war rates are normal. ontamination there is in adication of any contamination in the . Main Page (Di Age (Di Age (Di Age)) Tick (Di Change) Client Info Map (Map (Map)) Map (Map) Map (Map) <th< td=""><td></td><td></td><td></td><td></td><td></td><th>17 Nov 2023</th><td></td><td></td></th<>						17 Nov 2023		
Outponent wear rates are normal. Oil Age hrs Client Info 432 255 129 Oil Changed Oil Changed Client Info N/A Not Changed			hrs					
Optimination tere is nucleation of any contamination in the . Oil Changed Sample Status Client Info NA Not Changel NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL et BN result indicates that there is suitable valuibly remaining in the oil. The condition of the is suitable for further service. method indicates intervention intervention intervention NoR NoR NoR Water WC Method is.0.2 NEG NEG NEG NEG Glycol WC Method is.0.2 NEG NEG NEG NEG Water WC Method is.0.2 NEG NEG NEG NEG Water WC Method is.0.2 11 8 5 5 3 3 <1		Ŭ						
Sample Status NORMAL NORMAL NORMAL NORMAL uid condition tells suitable CONTAMINATION method imitbase current history1 history1 history2 tip condition in the oil. The condition of the is suitable for further service. WEAR WC Method 2.0 <1.0		0						
CONTAMINATION method imitibase current history1 history2 Fuel WC Method >3.0 <1.0		-						
Fuel WC Method >3.0 <1.0	il.	CONTAMINAT	TION	method	limit/base	current	history1	history2
Water WCM tethod >>0.2 NEG NEG NEG allyd readinging inte oil. The condition of the is suitable for further service. Water WC Method NEG NEG NEG Wear Qlycol WC Method NedG NEG NEG NEG Wear ppm ASTM 0518m >120 11 8 5 Iron ppm ASTM 0518m >20 <1	uid Condition			WC Method	>3.0	<1.0	<1.0	<1.0
Bijvol WC Method NEG NEG NEG is suitable for further service. Gijvol WC Method Imulbase current history1 history1 Iron ppm ASTM DSISm >20 11 8 5 Chromium ppm ASTM DSISm >20 11 8 5 Iritanium ppm ASTM DSISm >20 0 <1								
WEAR METALS method limbbase current history1 history2 Iron ppm ASTM 0518m >120 11 8 5 Chtromium ppm ASTM 0518m >50 3 3					20.L			
Iron ppm ASTM D518m >120 11 8 5 Chromium ppm ASTM D518m >20 <1		-	S		limit/base			
Chromium ppm ASTM DS185m >20 <1 <1 <1 Nickel ppm ASTM DS185m >2 0 <1								
Nickel ppm ASTM DS185m >5 3 3 <1 Titanium ppm ASTM DS185m >2 0 <1								
Titanium ppm ASTM D5185m >2 0 <1 <1 Silver ppm ASTM D5185m >20 2 3 1 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 2 1 <1								
Silver ppm ASTM D518m >2 0 0 0 Aluminum ppm ASTM D518m >20 2 3 1 Lead ppm ASTM D518m >20 2 3 1 Copper ppm ASTM D518m >330 2 1 <<1 Tin ppm ASTM D518m >15 <1 <1 <1 Cadmium ppm ASTM D518m 0 <1 <1 <1 Cadmium ppm ASTM D518m 0 11 <1 <1 <1 Cadmium ppm ASTM D518m 0 11 <1 41 41 Barium ppm ASTM D518m 0 11 <1 0 <11 0 <11 0 <11 0 <11 0 <11 0 <11 0 <11 0 <11 0 <11 0 <11< 0 <11< 0 <11< 0 <11< 0 <11< 0 <11< 0 <11< 0 <1								
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Lead ppm ASTM D5185m >-40 0 0 0 Copper ppm ASTM D5185m >330 2 1 -1 Tin ppm ASTM D5185m >15 <1								
Copper ppm ASTM D5185m >330 2 1 <1 Tin ppm ASTM D5185m >15 <1			ppm					
Tin ppm ASTM D5185m<>15 <1			ppm					
Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 <1		Copper	ppm	ASTM D5185m	>330	2	1	<1
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 <1		Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5165m 0 1 <1		Vanadium	ppm	ASTM D5185m		0	<1	<1
Boron ppm ASTM D5185m 0 1 <1		Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 0 0 <1 0 Molybdenum ppm ASTM D5185m 60 61 64 60 Manganese ppm ASTM D5185m 0 <1		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 61 64 60 Manganese ppm ASTM D5185m 0 <1		Boron	ppm	ASTM D5185m	0	1	<1	4
Marganese pm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 975 966 905 Calcium ppm ASTM D5185m 1070 1066 1075 1029 Phosphorus ppm ASTM D5185m 1070 1066 1075 1029 Phosphorus ppm ASTM D5185m 1150 911 1007 958 Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method imit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 3 <1		Barium	ppm	ASTM D5185m	0	0	<1	0
Magnesium ppm ASTM D5185m 1010 975 966 905 Calcium ppm ASTM D5185m 1070 1066 1075 1029 Phosphorus ppm ASTM D5185m 1150 911 1007 958 Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >20 2 3 <1		Molybdenum	ppm	ASTM D5185m	60	61	64	60
Calcium ppm ASTM D5185m 1070 1066 1075 1029 Phosphorus ppm ASTM D5185m 1150 911 1007 958 Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >20 2 3 <1		Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus ppm ASTM D5185m 1150 911 1007 958 Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >20 2 3 41 Potassium ppm ASTM D5185m >20 2 3 51 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.7 0.5 0.3 Nitration Abs/tmm *ASTM D7624 >20 8.9 7.4 5.8 Sulfation Abs/tmm *ASTM D7415 </td <td></td> <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>975</th> <td>966</td> <td>905</td>		Magnesium	ppm	ASTM D5185m	1010	975	966	905
Phosphorus ppm ASTM D5185m 1150 911 1007 958 Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >20 2 3 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.7 0.5 0.3 Nitration Abs/cm *ASTM D7624 >20 8.9 7.4 5.8 Sulfation Abs/tmm *ASTM D7415 >30 20.5 19.4 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/tmm <td></td> <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1070</td> <th>1066</th> <td>1075</td> <td>1029</td>		Calcium	ppm	ASTM D5185m	1070	1066	1075	1029
Zinc ppm ASTM D5185m 1270 1223 1240 1115 Sulfur ppm ASTM D5185m 2060 2774 3609 2826 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >25 10 9 6 Sodium ppm ASTM D5185m >20 2 3 <1		Phosphorus		ASTM D5185m	1150			958
SulfurppmASTM D5185m2060277436092826CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>251096SodiumppmASTM D5185m>20544PotassiumppmASTM D5185m>2023<1				ASTM D5185m	1270		1240	1115
SiliconppmASTM D5185m>251096SodiumppmASTM D5185mS544PotassiumppmASTM D5185m>2023<1								
SodiumppmASTM D5185m544PotassiumppmASTM D5185m>2023<1		CONTAMINAN	NTS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>2023<1INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.70.50.3NitrationAbs/cm*ASTM D7624>208.97.45.8SulfationAbs/.1mm*ASTM D7415>3020.519.417.7FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.115.013.3		Silicon	ppm	ASTM D5185m	>25	10	9	6
PotassiumppmASTM D5185m>2023<1INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.70.50.3NitrationAbs/cm*ASTM D7624>208.97.45.8SulfationAbs/.1mm*ASTM D7415>3020.519.417.7FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.115.013.3		Sodium	ppm	ASTM D5185m		5	4	4
Soot % % *ASTM D7844 >4 0.7 0.5 0.3 Nitration Abs/cm *ASTM D7624 >20 8.9 7.4 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.4 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.0 13.3		Potassium	ppm	ASTM D5185m	>20	2	3	<1
Nitration Abs/cm *ASTM D7624 >20 8.9 7.4 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.4 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.0 13.3		INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 8.9 7.4 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.5 19.4 17.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.0 13.3		Soot %	%	*ASTM D7844	>4	0.7	0.5	0.3
SulfationAbs/.1mm*ASTM D7415>3020.519.417.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2516.115.013.3								
Oxidation Abs/.1mm *ASTM D7414 >25 16.1 15.0 13.3								
		FLUID DEGRA	DAT <u>IO</u> N	method	limit/base	current	history1	history2
					>25	16.1	15.0	13.3
						8.0	8.2	8.2

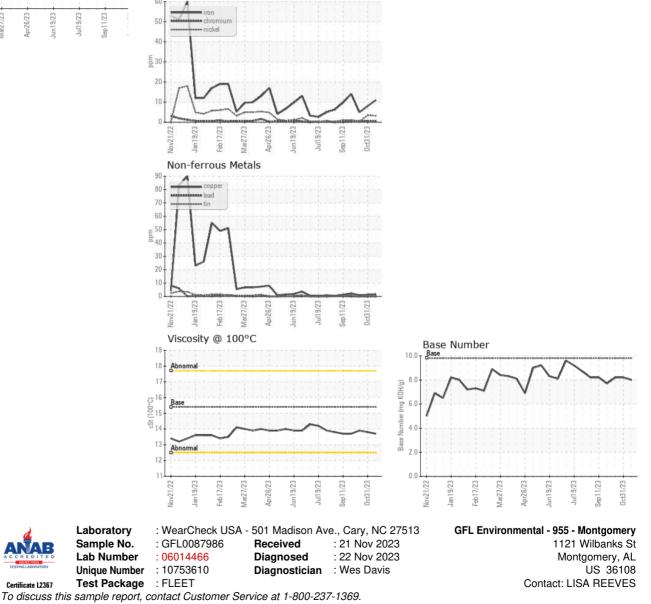


OIL ANALYSIS REPORT





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	13.7	13.8	13.9
GRAPHS						
Ferrous Alloys						



^{* -} Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)