

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 713064

Fluid

Component Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

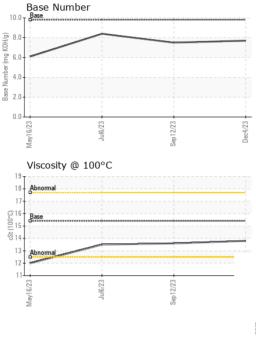
Fluid Condition

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

Sample Date Client Info 04 Dec 2023 12 Sep 2023 06 Jul 2023 Machine Age hrs Client Info 2000 1364 909 Oil Age hrs Client Info 1091 450 600 Sample Status Client Info N/A Not Changed Contante NorMAL 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 WEAR METALS method limit/base current history1 history2 Iro ppm ASTM 051655 >1 1 1 1 Chromium ppm ASTM 051655 >2 0 <1 0 Silver ppm ASTM 051655 >2 0 <1 1 Coronium ppm ASTM 051655 >2 0 <1	N SHP 15W40 (- GAL)	May202	3 Jul2023	Sep2023 Di	c2023	
Sample Date Client Info 04 De 2023 12 Sep 2023 06 Jul 2023 Machine Age hrs Client Info 1091 450 600 Oil Age hrs Client Info 1091 450 600 Sample Status Client Info N/A Not Changed Contanged 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 WEAR METALS method imit/base current history1 history2 Iton ppm ASTM D5165n >20 <1 <1 <1 Chromium ppm ASTM D5165n >20 <1 <1 <1 Sliver ppm ASTM D5165n >20 <1 <1 <1 Coronium ppm ASTM D5165n >20 <1 <1 <1 <	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 2000 1364 909 Oil Age hrs Client Info 1091 450 600 Oil Age hrs Client Info N/A Not Changed Changed Sample Status Imit/base current History1 History2 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0086959	GFL0086996	GFL0087003
Oil Age Ins Client Info 1091 450 600 Oil Changed Client Info N/A Not Changed Changed Sample Status Imil/base current NoRMAL NORMAL CONTAMINATION method imil/base current Nistory1 Nistory2 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		04 Dec 2023	12 Sep 2023	06 Jul 2023
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Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imil/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Age	hrs	Client Info		1091	450	600
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Fuel WC Method >3.0 <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 >20 <1	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 >120 8 12 11 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 >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 8 12 11 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >120 8 12 11 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >5 1 1 1 Nickel ppm ASTM D5185m >2 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 1 1 1 Titanium ppm ASTM D5185m >2 0 <1	-	ppm		>120	-		
Titanium ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >20 <1		ppm		>20	<1		
Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 <1	Nickel	ppm	ASTM D5185m	>5		1	
Aluminum ppm ASTM D5185m >20 <1 1 1 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 2 2 8 Tin ppm ASTM D5185m >15 0 <1	Titanium	ppm	ASTM D5185m	>2	0	<1	0
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 2 2 8 Tin ppm ASTM D5185m >15 0 <1	Silver	ppm		>2	0	0	<1
Copper ppm ASTM D5185m >330 2 2 8 Tin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20	<1	1	1
Tin ppm ASTM D5185m >15 0 <1 <1 Vanadium ppm ASTM D5185m >15 0 <1	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m <1 <1 <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 5 7 Barium ppm ASTM D5185m 0 0 0 0 0 Barium ppm ASTM D5185m 0 4 5 7 Barium ppm ASTM D5185m 0 0 0 0 0 0 Maganese ppm ASTM D5185m 00 <1 <1 <1 <1 Maganesium ppm ASTM D5185m 1010 929 1065 855 Calcium ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1270 1108 1352 1200 Sulfur </td <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>330</td> <th>2</th> <td>2</td> <td>8</td>	Copper	ppm	ASTM D5185m	>330	2	2	8
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 5 7 Barium ppm ASTM D5185m 0 0 0 0 0 0 Magnases ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1< <1 <1< Magnesium ppm ASTM D5185m 0 <10 929 1065 855 Calcium ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 5 7 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 62 59 Manganese ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron ppm ASTM D5185m 0 4 5 7 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 62 59 Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 62 59 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
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Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 929 1065 855 Calcium ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1150 880 1056 1007 Zinc ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 929 1065 855 Calcium ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1150 880 1056 1007 Zinc ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/.mm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.lmm *ASTM D74	Molybdenum	ppm	ASTM D5185m	60	56	62	59
Calcium ppm ASTM D5185m 1070 912 1247 1194 Phosphorus ppm ASTM D5185m 1150 880 1056 1007 Zinc ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 0 3 3 Potassium ppm ASTM D5185m >20 0 3 0.3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D741	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 880 1056 1007 Zinc ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 0 3 3 Potassium ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7644 >4 0.3 0.3 19.8 FLUID DEGRADATION method limit/ba	Magnesium	ppm	ASTM D5185m	1010	929	1065	855
Zinc ppm ASTM D5185m 1270 1108 1352 1200 Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 0 3 3 Potassium ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7615 >30 19.1 18.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414<	Calcium	ppm	ASTM D5185m	1070	912	1247	1194
Sulfur ppm ASTM D5185m 2060 2820 3759 2957 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 0 3 4 0 Potassium ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/lm *ASTM D7624 >20 8.1 8.3 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/lmm *ASTM D7414 >25 15.4 14.9 15.6		ppm	ASTM D5185m	1150	880		
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>25544SodiumppmASTM D5185m340PotassiumppmASTM D5185m20033INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>40.30.30.3NitrationAbs/cm*ASTM D7624>208.18.37.8SulfationAbs/lmm*ASTM D7615>3019.118.819.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.414.915.6	Zinc	ppm	ASTM D5185m	1270	1108	1352	1200
Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 3 4 0 Potassium ppm ASTM D5185m >20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/cm *ASTM D7624 >20 8.1 8.3 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6			ASTM D5185m	2060	2820	3759	2957
Sodium ppm ASTM D5185m 3 4 0 Potassium ppm ASTM D5185m<>20 0 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6	CONTAMINAN	TS	method	limit/base	current	history1	history2
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INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6		ppm					
Soot % % *ASTM D7844 >4 0.3 0.3 0.3 Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6		ppm	ASTM D5185m	>20	0	3	3
Nitration Abs/cm *ASTM D7624 >20 8.1 8.3 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6	INFRA-RED		method	limit/base	current	history1	history2
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FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6	Nitration	Abs/cm	*ASTM D7624	>20	8.1	8.3	
Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.9 15.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	18.8	19.8
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.7 7.5 8.4				>25			
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.7	7.5	8.4



OIL ANALYSIS REPORT



		VISUAL			method					history2	
		White Meta	I	scalar	*Visual	NONE	Ν	ONE	NONE	NONE	
		Yellow Meta	al	scalar	*Visual	NONE	Ν	ONE	NONE	NONE	
		Precipitate		scalar	*Visual	NONE	Ν	ONE	NONE	NONE	
		Silt		scalar	*Visual	NONE	Ν	ONE	NONE	NONE	
		Debris		scalar	*Visual	NONE	N	ONE	NONE	NONE	
		Sand/Dirt		scalar	*Visual	NONE		ONE	NONE	NONE	
5015	ep I 2/23 -		9	scalar	*Visual	NORML		ORML	NORML	NORML	
C (/ C m/S	Dec	Odor		scalar	*Visual	NORML		ORML	NORML	NORML	
		Emulsified	Nater	scalar	*Visual	>0.2		EG	NEG	NEG	
		Free Water		scalar	*Visual			EG	NEG	NEG	
		FLUID F	PROPER	RTIES	method	limit/bas	se	current	history1	history2	
		Visc @ 100		cSt	ASTM D445	15.4		3.8	13.6	13.5	
		GRAPH	S								
		Ferrous A	lloys								
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C (/ C	17/1 da	12-	omium tel								
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		6-									
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		0	**********	*******							
		May16/23	Jul6/23		Sep12/23	Dec4/23					
		May	ĥ		Sep	De					
		Non-ferro	us Metals								
		16 cop	per								
		14 - neeseeneese lead									
		10									
		Mdd 8-									
		6									
		4									
		123	/23		/23	/23					
		May16/23	Jul6/23		Sep12/23	Dec4/23					
		Viscosity	@ 100°C				Ro	se Number			
		19 18 Abnormal									
		18 - Abnormal					8.0				
						KOH/					
		C3-16 Base Base 15 15 14				, and a second	6.0				
		73 14	1			Base Number (ma KOH/a)	4.0				
		10				La Na					
		Abnormal					2.0-				
		11			-		0.0				
		6/23	Jul6/23		Sep12/23	Dec4/23		6 6	27/glnC	Sep12/23	
		May16/23	٦٢		Sep	Dec	May16/23		7	Sep	
	l oboveterre	WeerOber					= 10		due numerated	100 Braum 0	
4	Laboratory Sample No.	: WearChecl : GFL00869		eceived		ary, NC 27 Dec 2023	513	GFL EN	invironmental - 408 - Brown Ci 4235 M-3		
	Lab Number	: 06028516		iagnose		Dec 2023			B	ROWN CITY,	
REDITED											
	Unique Number	: 10778307	D	iagnosti	ician : we	es Davis				US 484	
Inclate L2367	Unique Number Test Package s sample report,	: FLEET		•						VILLIAM DEOI ola@gflenv.cc	

回答

Submitted By: WILLIAM DEOLA

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