

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

PETRO CANADA DURON SHP 10W30 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

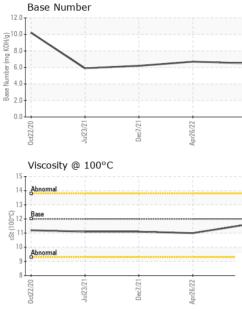
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

CONTAMINATION method imit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG Slycol WC Method NEG NEG NEG NEG NEG WEAR METALS method imit/base current history1 history2 ron ppm ASTM D5185m >100 25 32 29 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >3 0 <1 1 <1 Vickel ppm ASTM D5185m >40 <1 2 2 2 Opper ppm ASTM D5185m 0 <1 2 2 Adminum ppm ASTM D5185m 0 0 0 0 Admadnum ppm ASTM D5185m <t< th=""><th>AL)</th><th></th><th>0ct2020</th><th>Jui2021</th><th>Dec2021 Apr2022</th><th>Dec2023</th><th></th></t<>	AL)		0ct2020	Jui2021	Dec2021 Apr2022	Dec2023	
Sample Date Client Info 05 Dec 2023 26 Apr 2022 07 Dec 2021 Machine Age mis Client Info 137969 0 137969 Dil Age mis Client Info 27530 0 27530 Dil Changed Client Info N/A N/A N/A N/A Sample Status Imit/base current history1 history2 Fuel WC Method >5 +1.0 <1.0	SAMPLE INFO	RMATION	method	limit/base	current	history1	history2
Sample Date Client Info 05 Dec 2023 26 Apr 2022 07 Dec 2021 Machine Age mis Client Info 137969 0 137969 Dil Age mis Client Info 27530 0 27530 Dil Changed Client Info N/A N/A N/A N/A Sample Status Imit/base current history1 history2 Fuel WC Method >5 +1.0 <1.0	Sample Number		Client Info		PCA0112336	PCA0073046	PCA0061241
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Fuel WC Method >5 <1.0 <1.0 <1.0 Nater WC Method >0.2 NEG NEG NEG Blycol WC Method Imit/base current history1 history2 ron ppm ASTM D5185m >100 25 32 29 Dhromium ppm ASTM D5185m >20 <1	Sample Status						
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Nater WC Method >0.2 NEG NEG NEG NEG Blycol WC Method Iimit/base current history1 history2 ron ppm ASTM D5185m >100 25 32 29 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Blycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5165m >20 <1	Vater		WC Method	>0.2	NEG	NEG	
ron ppm ASTM D5185m >100 25 32 29 Chromium ppm ASTM D5185m >20 <1							
Dromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >4 <1	WEAR META	LS	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 <1 <1 <1 Fitanium ppm ASTM D5185m >3 0 <1	ron	ppm	ASTM D5185m	>100	25	32	29
Fitanium ppm ASTM D5185m >3 0 <1 Silver ppm ASTM D5185m >3 0 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >3 0 <1 1 Numinum ppm ASTM D5185m >20 4 6 6 ead ppm ASTM D5185m >40 <1	Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Numinum ppm ASTM D5185m >20 4 6 6 Lead ppm ASTM D5185m >40 <1	Fitanium	ppm	ASTM D5185m		0	0	<1
ead ppm ASTM D5185m >40 <1 2 2 Copper ppm ASTM D5185m >330 8 30 34 Fin ppm ASTM D5185m >15 <1	Silver	ppm	ASTM D5185m	>3	0	<1	1
Dopper ppm ASTM D5185m >330 8 30 34 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	4	6	6
Tin ppm ASTM D5185m >15 <1 1 2 Antimony ppm ASTM D5185m 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 12 0 6 Barium ppm ASTM D5185m 0 0 0 0 Maganese ppm ASTM D5185m 50 67 62 57 Maganesium ppm ASTM D5185m 950 943 926 841 Calcium ppm ASTM D5185m 1050 1144 1233 1225 Phosphorus ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current	ead	ppm	ASTM D5185m	>40	<1	2	2
Antimony ppm ASTM D5185m 0 Aanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 2 12 0 6 ASTM D5185m 2 12 0 6 6 Baron ppm ASTM D5185m 0 0 0 0 Adopbedenum ppm ASTM D5185m 50 67 62 57 Magnesse ppm ASTM D5185m 950 943 926 841 Calcium ppm ASTM D5185m 950 1144 1233 1225 Phosphorus ppm ASTM D5185m 950 1144 940 868 Cinc ppm ASTM D5185m 2600 3102 2494 2421 Contassium ppm ASTM D5185m >20 3 6 10 IntFRA-	Copper	ppm	ASTM D5185m	>330	8	30	34
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 12 0 6 Barium ppm ASTM D5185m 0 0 0 0 Aolybdenum ppm ASTM D5185m 0 67 62 57 Manganese ppm ASTM D5185m 0 1 <1	īn	ppm	ASTM D5185m	>15	<1	1	2
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 12 0 6 Barium ppm ASTM D5185m 0 0 0 0 0 Maganese ppm ASTM D5185m 0 67 62 57 Maganese ppm ASTM D5185m 0 1 <1 <1 <1 Alaganese ppm ASTM D5185m 0.0 1 <1 <1 <1 Alaganesum ppm ASTM D5185m 950 943 926 8411 Calcium ppm ASTM D5185m 1050 1144 1233 1225 Phosphorus ppm ASTM D5185m 180 1284 1188 1141 Sulfur ppm ASTM D5185m >20 3 0 2 CONTAMINANTS method limi	Antimony	ppm	ASTM D5185m				0
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m21206BariumppmASTM D5185m0000MolybdenumppmASTM D5185m50676257ManganeseppmASTM D5185m01<1	/anadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 2 12 0 6 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 50 67 62 57 Manganese ppm ASTM D5185m 0 1 <1	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 50 67 62 57 Manganese ppm ASTM D5185m 0 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 67 62 57 Manganese ppm ASTM D5185m 0 1 <1	Boron	ppm	ASTM D5185m	2	12	0	6
Manganese ppm ASTM D5185m 0 1 <1 <1 <1 Magnesium ppm ASTM D5185m 950 943 926 841 Calcium ppm ASTM D5185m 1050 1144 1233 1225 Phosphorus ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 995 1144 940 868 Sulfur ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D	Barium	ppm	ASTM D5185m	0	0	0	0
Agnesium ppm ASTM D5185m 950 943 926 841 Calcium ppm ASTM D5185m 1050 1144 1233 1225 Phosphorus ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 1180 1284 1188 1141 Sulfur ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 5 5 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >3 0.6 0.8 0.7 Soot % % *ASTM D7624 >0<	Molybdenum	ppm	ASTM D5185m	50	67	62	57
Calcium ppm ASTM D5185m 1050 1144 1233 1225 Phosphorus ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 1180 1284 1188 1141 Sulfur ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 5 5 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Sulfation Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/.1mm *ASTM D7415	Nanganese	ppm	ASTM D5185m	0	1	<1	<1
Phosphorus ppm ASTM D5185m 995 1144 940 868 Zinc ppm ASTM D5185m 1180 1284 1188 1141 Sulfur ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >25 6 5 5 Solicon ppm ASTM D5185m >25 6 5 5 Solicon ppm ASTM D5185m >20 3 0 2 Octassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Sulfation Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/1mm *ASTM D7415 <t< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>950</td><th>943</th><td>926</td><td>841</td></t<>	Magnesium	ppm	ASTM D5185m	950	943	926	841
Vinc ppm ASTM D5185m 1180 1284 1188 1141 Sulfur ppm ASTM D5185m 2600 3102 2494 2421 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >25 6 5 5 Solicon ppm ASTM D5185m >25 6 5 5 Solicon ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Soot % % *ASTM D7624 >20 9.3 10.5 9.9 Soulfation Abs/cm *ASTM D7415 >30 20.9 22.7 22 FLUID DEGRADATION Method limit/base <	Calcium	ppm	ASTM D5185m	1050	1144	1233	1225
SulfurppmASTM D5185m2600310224942421CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25655SodiumppmASTM D5185m>20302PotassiumppmASTM D5185m>203610INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.80.7NitrationAbs/cm*ASTM D7624>209.310.59.9SoulfationAbs/1m*ASTM D7624>3020.922.722FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2DxidationAbs/1m*ASTM D7414>2516.017.516.9	Phosphorus	ppm	ASTM D5185m	995	1144	940	868
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25655SodiumppmASTM D5185m302PotassiumppmASTM D5185m>203610INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.80.7NitrationAbs/cm*ASTM D7624>209.310.59.9SoulfationAbs/cm*ASTM D7624>3020.922.722FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/Inm*ASTM D7414>2516.017.516.9	Zinc	ppm	ASTM D5185m	1180	1284	1188	1141
Silicon ppm ASTM D5185m >25 6 5 5 Sodium ppm ASTM D5185m 20 3 0 2 Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Soot % % *ASTM D7624 >20 9.3 10.5 9.9 Soulfation Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Sulfur	ppm	ASTM D5185m	2600	3102	2494	2421
Sodium ppm ASTM D5185m 3 0 2 Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Soot % % *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/cm *ASTM D7615 >30 20.9 22.7 22 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 6 10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Stitration Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 22.7 22 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Silicon	ppm	ASTM D5185m	>25	6	5	5
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.80.7NitrationAbs/cm*ASTM D7624>209.310.59.9SoulfationAbs/1mm*ASTM D7415>3020.922.722FLUID DEGRADATION method limit/base currenthistory1history2DxidationAbs/1mm*ASTM D7414>2516.017.516.9	Sodium	ppm	ASTM D5185m		3	0	2
Soot % % *ASTM D7844 >3 0.6 0.8 0.7 Nitration Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 22.7 22 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Potassium	ppm	ASTM D5185m	>20	3	6	10
Nitration Abs/cm *ASTM D7624 >20 9.3 10.5 9.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.9 22.7 22 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.9 22.7 22 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Soot %	%	*ASTM D7844	>3	0.6	0.8	0.7
FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Nitration	Abs/cm	*ASTM D7624	>20	9.3	10.5	9.9
Dxidation Abs/.1mm *ASTM D7414 >25 16.0 17.5 16.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.9	22.7	22
	FLUID DEGRA	ADATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 6.5 6.7 6.2	Dxidation			>25			
	Base Number (BN)	mg KOH/g	ASTM D2896		6.5	6.7	6.2

Submitted By: KEVIN HOOKS



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			
Dec7/21	Apr26/22 Dec5/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
De	Apri	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	12.00	11.6	11.0	11.1			
		GRAPHS									
		Ferrous Alloys									
Dec7/21	6/22	35 - iron chromium		 							
Dec	Apr26/22	30 - mickel		\frown							
		25		· · · · · · · · · · · · · · · · · · ·							
		톱 20 -									
		15									
		10									
		0ct22/20 - Jul23/21	Dec7/21.	Apr26/22 .	Dec5/23 -						
		_		Apri	Dei						
		Non-ferrous Meta	ls								
		50 - copper									
		mana tin									
		40									
		톱 30									
		20-									
		10									
		0			and an and a second						
		Jul23/21	Dec7/21.	Apr26/22 .	Dec5/23						
		ੋ Viscosity @ 100°C		Apr	Ď						
		¹⁵			12.0	Base Number					
		14 - Abnormal		, ,	10.0						
		13			(B/HC						
		C 12 Base	1		9 8.0 E						
		0 12 Base 001 23 11			0.8 KOH/d) Base Number (mg KOH/d) 8 Autor (mg KOH/d))					
		10-			2 4.0	•					
		Abnormal 9 -			2.0						
		8									
)ct22/20	Dec7/21.	6/22	Dec5/23		Dec7/21-	Apr26/22 -			
		0ct22/20 Jul23/21	Dec	Apr26/22	Dec	0ct22/20 Ju(23/21	Dec	Apr26/22			
	Laboratory	WearCheck USA	501 Madi	son Ave Co	rv NC 27519	3		<u>ہ</u> م ا الم - 8MS			
			WearCheck USA - 501 Madison Ave., Cary, NC 27513 PCA0112336 Recieved : 12 Dec 2023					PERDUE FARMS - DILLOI 2047 HWY 9 WES			
		: PCA0112336	I IECIEVE(: 06032181 Diagnosed : 13 Dec 2023						
	Sample No. Lab Number	: 06032181	Diagnos	ed : 13 l				DILLON, S			
	Sample No. Lab Number Unique Number	: <mark>06032181</mark> : 10781972		ed : 13 l				DILLON, S US 2953			
INTERCATIONAL CONTRACTOR	Sample No. Lab Number Unique Number Test Package	: <mark>06032181</mark> : 10781972	Diagnos Diagnos	ed : 13 l tician : We	Dec 2023 s Davis						

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