

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **4569M** Component **Diesel Engine** Fluid **PETRO CANADA DURON SHP 15W40 (--- GAL)**

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.

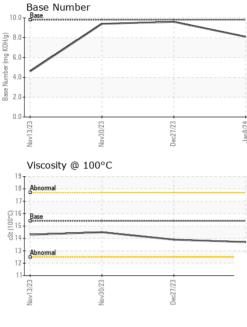
Fluid Condition

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

SAMPLE INFORMATION method imit/base current history1 history2 Sample Number Client Info 08 Jan 2024 GFL0104277 GFL0059311 Sample Date Client Info 08 Jan 2024 27 Dec 2023 30 Nov 2023 Dil Age hrs Client Info 9890 8930 8930 Dil Age hrs Client Info N/A N/A N/A Sample Status Client Info N/A N/A N/A CONTAMINATION method Imit/base current Nistory1 history1 Contromision method Imit/base current Nistory1 history2 Velat WC Method >0.0 <1.0 <1.0 <1.0 Vickel ppm ASTM 05185n<>20 <1 <1 <1 Vickel ppm ASTM 05185n<>20 <1 <1 <1 Noreke ppm ASTM 05185n<>20 <1 <1 <1 Storon ppm ASTM 05185n	N SHP 15W40 (-	GAL)	Nov202	3 Nov2023	Dec2023 Ja	an2024	
Sample Date Client Info 98 Jan 2024 27 Dec 2023 30 Nov 2023 Machine Age hrs Client Info 9202 9085 8930 Dil Age hrs Client Info 8890 8928 157 Dil Changed Client Info NVA NVA NVA NVA Sample Status Client Info NVA NVA NVA NVA CONTAMINATION method imit/base current history1 Filsory2 Fuel WC Method >0.2 NEG NEG NEG Silycol WC Method >0.2 NEG NEG NEG Veramium ppm ASTM 05185 >90 14 20 13 Chromium ppm ASTM 05185 >20 <1 <1 1 Silver ppm ASTM 05185 >2 0 0 0 Silver ppm ASTM 05185 >20 1 <1 1 Commium ppm	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 9202 9085 8930 Di Age hrs Client Info 8890 8928 157 Dial Changed Client Info 8890 8928 157 Dial Changed Client Info N/A N/A N/A N/A Sample Status Info Info NORMAL NORMAL NORMAL CONTAMINATION method 50.2 NEG NEG NEG NEG Status WC Method 50.2 NEG NEG NEG NEG Silver WC Method 50.2 NEG NEG NEG NEG Silver ppm ASTM 05185m 520 -1 -1 -1 0 Silver ppm ASTM 05185m >20 1 4 2 -2 Silver ppm ASTM 05185m >20 1 0 0 0 0 0 -1 1 5 1 1 5	Sample Number		Client Info		GFL0110012	GFL0104277	GFL0059311
Dail Age hrs Client Info 8890 8928 157 Dil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 uel WC Method 3.0 <1.0	Sample Date		Client Info		08 Jan 2024	27 Dec 2023	30 Nov 2023
Dit Changed Client Info N/A N/A N/A N/A N/A GONTAMINATION method limit/base current history1 history2 uel WC Method >3.0 <1.0	lachine Age	hrs	Client Info		9202	9085	8930
Bample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Suel WC Method >3.0 <1.0	Dil Age	hrs	Client Info		8890	8928	157
CONTAMINATION method imit/base current history1 history2 wel WC Method >3.0 <1.0	Dil Changed		Client Info		N/A	N/A	N/A
Fuel WC Method >3.0 <1.0 <1.0 <1.0 Nater WC Method >0.2 NEG NEG NEG Stycol WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >20 <1 <1 <1 <1 Chromium ppm ASTM D5185m >20 <1 <1 <1 <1 Chromium ppm ASTM D5185m >20 1 4 2 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <th< td=""><td>Sample Status</td><td></td><td></td><td></td><th>NORMAL</th><td>NORMAL</td><td>NORMAL</td></th<>	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Blycol WC Method Iimit/base current history1 history1 von ppm ASTM D5185m >90 14 20 13 Chromium ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Biycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5165m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >90 14 20 13 Dromium ppm ASTM D5185m >20 <1	Vater		WC Method	>0.2	NEG	NEG	NEG
ron ppm ASTM D5185m >90 14 20 13 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Dromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 Dilver ppm ASTM D5185m >2 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Number of the second	ron	ppm	ASTM D5185m	>90	14	20	13
Titanium ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Numinum ppm ASTM D5185m >20 1 4 2 e.ead ppm ASTM D5185m >40 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0 Numinum ppm ASTM D5185m >20 1 4 2 Lead ppm ASTM D5185m >40 <1	Nickel	ppm	ASTM D5185m	>2	0	0	0
Numinum ppm ASTM D5185m >20 1 4 2 Lead ppm ASTM D5185m >40 <1	Fitanium	ppm	ASTM D5185m	>2	0	<1	0
Lead ppm ASTM D5185m >40 <1 0 2 Copper ppm ASTM D5185m >330 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Dopper ppm ASTM D5185m >330 <1 1 5 Fin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20	1	4	2
Tin ppm ASTM D5185m >15 0 <1 <1 /anadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnese ppm ASTM D5185m 0 0 <1	ead	ppm	ASTM D5185m	>40	<1	0	2
Aranadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 5 13 Barium ppm ASTM D5185m 0 0 0 0 0 0 Aolybdenum ppm ASTM D5185m 0 0 0 <13 0 Aanganese ppm ASTM D5185m 0 0 <1 <1 <1 Aagenesium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m >25 4 10 5 0	Copper	ppm	ASTM D5185m	>330	<1	1	5
Deadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 5 13 Barium ppm ASTM D5185m 0 0 0 0 0 0 Aloybdenum ppm ASTM D5185m 0 0 0 0 0 0 Alanganese ppm ASTM D5185m 0 0 0 <11 <11 Alanganese ppm ASTM D5185m 0 0 0 <11 <11 Alanganese ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 28211 3186 3837 <td>īn</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <th>0</th> <td><1</td> <td><1</td>	īn	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 5 13 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 54 57 67 Manganese ppm ASTM D5185m 0 0 <1	/anadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 5 13 Barium ppm ASTM D5185m 0 0 0 0 0 Malybdenum ppm ASTM D5185m 60 54 57 67 Manganese ppm ASTM D5185m 0 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 54 57 67 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Soldium ppm ASTM D5185m >20 <1 2 3 INFRA-RED method	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 54 57 67 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <11 2 3 Potassium ppm ASTM D5185m >20 <11 2 3 INFRA-RED method limit/	Boron	ppm	ASTM D5185m	0	0	5	13
Maganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1150 934 1029 1123 Cinc ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 917 918 902 Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1150 934 1029 1123 Zinc ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >20 <1		ppm			54	57	67
Calcium ppm ASTM D5185m 1070 1005 1066 1287 Phosphorus ppm ASTM D5185m 1150 934 1029 1123 Zinc ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >20 <1	Nanganese	ppm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 1150 934 1029 1123 Zinc ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >25 4 10 5 Solicon ppm ASTM D5185m >25 4 10 5 Solicon ppm ASTM D5185m >20 <1 2 3 Potassium ppm ASTM D5185m >20 <1 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 0.2 0.1 Jitration Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 Soulfation Abs/.1mm *ASTM D7415	<i>A</i> agnesium	ppm	ASTM D5185m	1010	917	918	
Vinc ppm ASTM D5185m 1270 1249 1235 1311 Sulfur ppm ASTM D5185m 2060 2821 3186 3837 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	1070		1066	
SulfurppmASTM D5185m2060282131863837CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>254105SodiumppmASTM D5185m>20450PotassiumppmASTM D5185m>20<1	Phosphorus	ppm					
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m >25 4 10 5 Potassium ppm ASTM D5185m >20 <1	Zinc	ppm	ASTM D5185m	1270	1249	1235	1311
Silicon ppm ASTM D5185m >25 4 10 5 Sodium ppm ASTM D5185m <26 4 5 0 Potassium ppm ASTM D5185m >20 <1 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 0.2 0.1 Soot % % *ASTM D7624 >20 11.2 5.2 5.0 Soulfation Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6			ASTM D5185m	2060	2821	3186	3837
Sodium ppm ASTM D5185m 4 5 0 Potassium ppm ASTM D5185m >20 <1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 2 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 17.4 17.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6				>25			
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 Soulfation Abs/.1mm *ASTM D7415 >30 20.8 17.4 17.6 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6		ppm			4		
Soot % % *ASTM D7844 >6 0.6 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 17.4 17.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6	Potassium	ppm	ASTM D5185m	>20	<1	2	3
Nitration Abs/cm *ASTM D7624 >20 11.2 5.2 5.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 17.4 17.6 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.8 17.4 17.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6	Soot %	%	*ASTM D7844	>6	0.6		
FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6				>20			
Dxidation Abs/.1mm *ASTM D7414 >25 19.5 13.1 13.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.8	17.4	17.6
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.1 9.6 9.4		Abs/.1mm	*ASTM D7414	>25	19.5	13.1	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.1	9.6	9.4



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
- 23 -	- 24		scalar	*Visual	NORML	NORML	NORML	NORML
Dec27/23	Jan 8/24	Appearance			NORML		NORML	
		Odor	scalar	*Visual		NORML		NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROF		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.9	14.5
		GRAPHS						
1		Ferrous Alloys						
Dec27/23 .		80 - iron 70 - iron iron 70 - iron iron						
Dec		60						
		E 40						
		30						
		20						
		10						
		0			57:			
		Nov13/23 Nov30/23		Dec27/23	Jan 8/24			
		Nov		Dec	Ja L			
		Non-ferrous Me	tals					
		10 copper						
		8 -						
		6						
		mdd						
		4						
		2+						
		Indian Distance of the owners of the owners of the	Concession of the owned					
		0	A REAL PROPERTY.					
		4ov13/23 4ov30/23		ec27/23	Jan 8/24			
		Nov1 Nov3		Dec2	Jan			
		Viscosity @ 100	°C			Base Number		
		19 18 - Abnormal			10.0	Base		
		17-				/		
		-16			KOH			
		Base			E 6.0			
		Contraction 16 Base			(0,740) 6.0- 0.0 Kmp sage Numper 4.0-	/		
		10						
		13 Abnormal			<u>2.0</u>			
		12-			0.0			
		114		1/23		Nov13/23.	Nov30/23 -	
						2	52	
		Nov13/23		Dec27/23	La.	°N :	ž	
J.	Laboratory	Nov13/23 Nov30/23	- 501 Madi					
	Laboratory Sample No.		- 501 Madia Recieved	son Ave., Ca			ironmental - 410	- Michigan We
TAB.		EZ/EI/OP/OP	Recieved Diagnos	son Ave., Ca 1 :11 . ed :12 .	ry, NC 27513		ironmental - 410	
	Sample No. Lab Number Unique Number	: WearCheck USA : GFL0110012 : 06057769 r : 10829151	Recieved	son Ave., Ca 1 :11 . ed :12 .	ry, NC 27513 Jan 2024		ironmental - 410 3900	- Michigan We 0 Van Born F Wayne, I US 4818
LINGUARDING	Sample No. Lab Number Unique Number Test Package	: WearCheck USA : GFL0110012 : 06057769 r : 10829151	Recieved Diagnos Diagnos	son Ave., Ca 1 : 11 , ed : 12 , ician : We	ry, NC 27513 Jan 2024 Jan 2024 s Davis		ironmental - 410 3900 Contact	- Michigan We 0 Van Born F Wayne, I