

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

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

DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

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 INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0046381	GFL0081271	GFL0063246
Sample Date		Client Info		19 Sep 2023	15 May 2023	21 Nov 2022
Machine Age	hrs	Client Info		0	14914	13874
Oil Age	hrs	Client Info		0	600	600
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	2 010	NEG	NEG	NEG
			11 1. 1			
WEAR METALS	5	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	8	12	15
Chromium	ppm	ASTM D5185m		0	1	2
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>30	1	2	2
Lead	ppm	ASTM D5185m	>30	<1	0	0
Copper	ppm	ASTM D5185m	>30	<1	0	4
Tin	ppm	ASTM D5185m	>15	0	0	<1
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	0	1	4	3
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	60	55	61	60
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m		0	61 0	60 <1
-						
Manganese	ppm	ASTM D5185m	0	0	0	<1
Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m	0 1010	0 910	0 989	<1 950
Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	0 910 1054	0 989 1074	<1 950 1144
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	0 910 1054 994	0 989 1074 1059	<1 950 1144 1019
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270	0 910 1054 994 1232	0 989 1074 1059 1323	<1 950 1144 1019 1267
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	0 910 1054 994 1232 3770	0 989 1074 1059 1323 3598	<1 950 1144 1019 1267 3391
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	0 910 1054 994 1232 3770 current	0 989 1074 1059 1323 3598 history1	<1 950 1144 1019 1267 3391 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >30	0 910 1054 994 1232 3770 current 5	0 989 1074 1059 1323 3598 history1 3	<1 950 1144 1019 1267 3391 history2 5
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >30	0 910 1054 994 1232 3770 current 5 3	0 989 1074 1059 1323 3598 history1 3 1	<1 950 1144 1019 1267 3391 history2 5 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >30 >20 limit/base	0 910 1054 994 1232 3770 current 5 3 4 current	0 989 1074 1059 1323 3598 history1 3 1 0 history1	<1 950 1144 1019 1267 3391 history2 5 2 2 2 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >30 >20 limit/base >3	0 910 1054 994 1232 3770 current 5 3 4 current 0.6	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5	<1 950 1144 1019 1267 3391 history2 5 2 2 2 history2 0.7
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >30 >20 limit/base >3 >20	0 910 1054 994 1232 3770 current 5 3 4 current 0.6 6.5	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5 8.5	<1 950 1144 1019 1267 3391 history2 5 2 2 2 history2 0.7 9.2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 1010 1070 1150 1270 2060 imit/base >30 >20 imit/base >3 >20 >30	0 910 1054 994 1232 3770 current 5 3 4 current 0.6 6.5 19.2	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5 8.5 20.4	<1 950 1144 1019 1267 3391 history2 5 2 2 history2 0.7 9.2 21.4
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415	0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 >20 imit/base	0 910 1054 994 1232 3770 current 5 3 4 current 0.6 6.5 19.2 current	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5 8.5 20.4 history1	<1 950 1144 1019 1267 3391 history2 5 2 2 history2 0.7 9.2 21.4 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7415	0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 >20 imit/base >30 imit/base	0 910 1054 994 1232 3770 current 5 3 4 current 0.6 6.5 19.2 current 14.7	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5 8.5 20.4 history1 16.7	<1 950 1144 1019 1267 3391 history2 5 2 2 history2 0.7 9.2 21.4 history2 16.7
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415	0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 >20 imit/base >30 imit/base	0 910 1054 994 1232 3770 current 5 3 4 current 0.6 6.5 19.2 current	0 989 1074 1059 1323 3598 history1 3 1 0 history1 0.5 8.5 20.4 history1	<1 950 1144 1019 1267 3391 history2 5 2 2 history2 0.7 9.2 21.4 history2



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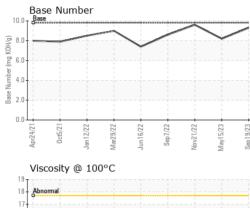
> 13 Abnorma 12 11 Apr24/21

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Jan12/22 0ct5/21

OIL ANALYSIS REPORT

VISUAL



	\sim	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
\checkmark	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE		
Mar29/22	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE		
	Silt		*Visual	NONE	NONE	NONE	NONE		
		scalar							
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE		
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE		
	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
an an	Man	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	15.0	14.7	14.6	
		GRAPHS							
		Ferrous Alloys							
Jun16/22 -	Nov21/22 - May15/23 -	80 - iron chromium							
Juni	Novi May1	70 nickel							
		E 40							
		30							
		20							
		10							
		22 - Z1-0 23 - Z1-0	22	22	53				
		Apr24/21 0ct5/21 Jan 12/22 Mar29/22	Jun16/22 Sep7/22	vep // 22 Nov21/22 May15/23	Sep 19/23				
		Non-ferrous Metal		2 2	0				
		²⁵ T							
		copper							
	20 tin								
		15							
		10							
		5	\sim						
		0							
		Apr24/21 0ct5/21 Jan12/22 Mar29/22	Jun16/22 Sep7/22	Vov21/22 May15/23	Sep 19/23				
			~	Nov	Sep				
		Viscosity @ 100°C	;		10.	Base Number			
		18 - Abnormal	1 1				~ - /		
		17-			(B) 8	.0	\sim		
		⊋ ¹⁶ Base			E G	0			
		016 Base 15 3 14			Le Le				
		⁴³ 14			4.	.0 -			
		13 - Abnormal			Base Number (mg KOH/g)				
		12			° 2.				
		11							
		Apr24/21 0ct5/21 Jan12/22 Mar29/22	Jun16/22 Sep7/22	Vov21/22 May15/23	Sep 19/23	Apr24/21 0ct5/21 Jan12/22	Mar29/22 Jun16/22 Sep7/22	Nov21/22 May15/23	
		Api Jan	Jun Ser	Nov	Sep	Jan O	Mar Sej	Nov May	
	l oborator:	· WaarChask UCA	-01 Madi-	on Ave C-			wironmont-l		
4	Laboratory Sample No.	: WearCheck USA - 5 : GFL0046381	Received		ry, NC 2751 Sep 2023	513 GFL Environmental - 465 - Pontia 888 Baldw			
ANAB	Lab Number		Diagnose		Pontiac, N				
CCREDITED	Unique Numbe		Diagnosti		Sep 2023 s Davis			US 4834	
TESTING LABORATORY					<u> </u>				
Certificate L2367	Test Package							Ricky Matthev	
o discuss this	Test Packages s sample report	e : FLEET ; contact Customer Serv ; are outside of the ISO 1					rickymathev	Ricky Matthev ws@gflenv.co (586)825-95	

Submitted By: Ricky Matthews

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