

OIL ANALYSIS REPORT

Sample Rating Trend





Component

Diesel Engine

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.

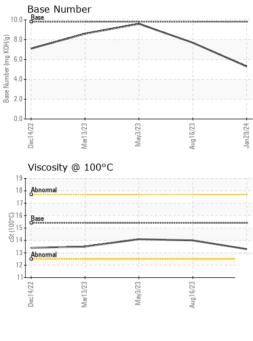
Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108426	GFL0089501	GFL0078788
Sample Date		Client Info		29 Jan 2024	16 Aug 2023	03 May 2023
Machine Age	hrs	Client Info		5865	4880	39494
Oil Age	hrs	Client Info		5865	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	28	24	26
Chromium	ppm	ASTM D5185m	>4	2	3	6
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>25	4	8	4
Lead	ppm	ASTM D5185m	>45	1	0	0
Copper	ppm	ASTM D5185m	>85	2	2	1
Tin	ppm	ASTM D5185m	>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 0	history1 1	history2 2
	ppm ppm					
Boron		ASTM D5185m	0	0	1	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0	1 0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 49	1 0 65	2 0 53
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 49 <1	1 0 65 <1	2 0 53 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 49 <1 841	1 0 65 <1 1079	2 0 53 <1 933
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 0 49 <1 841 897	1 0 65 <1 1079 1175	2 0 53 <1 933 1023
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 49 <1 841 897 884	1 0 65 <1 1079 1175 1160	2 0 53 <1 933 1023 984
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 0 49 <1 841 897 884 1088	1 0 65 <1 1079 1175 1160 1436	2 0 53 <1 933 1023 984 1265
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	0 0 49 <1 841 897 884 1088 2485	1 0 65 <1 1079 1175 1160 1436 4019	2 0 53 <1 933 1023 984 1265 3655
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 0 49 <1 841 897 884 1088 2485 current	1 0 65 <1 1079 1175 1160 1436 4019 history1	2 0 53 <1 933 1023 984 1265 3655 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 49 <1 841 897 884 1088 2485 current 3	1 0 65 <1 1079 1175 1160 1436 4019 history1 4	2 0 53 <1 933 1023 984 1265 3655 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 49 <1 841 897 884 1088 2485 <u>current</u> 3 6	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	0 0 49 <1 841 897 884 1088 2485 <u>current</u> 3 6 7	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 Imit/base >33	0 0 49 <1 841 897 884 1088 2485 current 3 6 7	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8 8	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 Imit/base >33	0 0 49 <1 841 897 884 1088 2485 <i>current</i> 3 6 7 <i>current</i> 0.5	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8 <u>history1</u> 0.4	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3 history2 0.3
Boron Barium Molybdenum 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 0 0 1010 1070 1150 1270 2060 imit/base >30 220 imit/base >3 20	0 0 49 <1 841 897 884 1088 2485 <u>current</u> 3 6 7 <u>current</u> 0.5 11.0	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8 history1 0.4 10.2	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3 history2 0.3 7.9
Boron Barium Molybdenum 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 D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 Imit/base >3 >20	0 0 49 <1 841 897 884 1088 2485 current 3 6 7 7 current 0.5 11.0 21.3	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8 <u>history1</u> 0.4 10.2 19.6	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3 3 5 history2 0.3 7.9 18.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >30 >20 imit/base >3 >20 >30	0 0 49 <1 841 897 884 1088 2485 <i>current</i> 3 6 7 <i>current</i> 0.5 11.0 21.3	1 0 65 <1 1079 1175 1160 1436 4019 history1 4 5 8 history1 0.4 10.2 19.6 history1	2 0 53 <1 933 1023 984 1265 3655 history2 3 3 3 3 3 history2 0.3 7.9 18.8 history2



OIL ANALYSIS REPORT



		White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE 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		
May3/23	Aug16/23 Jan29/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
Ma	Aug	Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
		Free Water	scalar	*Visual		NEG	NEG	NEG		
		FLUID PROPI	ERTIES	method	limit/base	current	history1	history2		
		Visc @ 100°C	cSt	ASTM D445	15.4	13.3	14.0	14.1		
		GRAPHS								
		Ferrous Alloys								
May3/23	Aug16/23 -	25 - iron chromium								
May	Aug1	20								
		<u>ة</u> 15-								
		10-								
		5	STREET, STREET	North Lange						
		0								
		Dec14/22 Mar13/23	May3/23	Aug16/23	Jan 29/24					
		Dec	Ma	Aug	Jan					
		Non-ferrous Meta	als							
		10 copper								
		8 - Internet lead								
		6+								
		u d								
		4		1						
		2								
		3 5	23	23	24					
)ec14/22 //ar13/23	May3/23	4ug16/23	Jan 29/24					
		Viscosity @ 100°		4	->					
		¹⁹		1	10.0	Base Number				
		18 - Abnormal								
		17-			(B/H					
		Diametric Base Base Base Base Base Base Base Base			6.1 Base Number (mg KOH/g)					
		0015- #			ther (r					
					4.0	0+				
		13 Abnormal			2.0					
		12								
		11	3/23 -	3/23 -	.0	1/22	3/23 -)/23 -		
		Dec14/22 Mar13/23	May3/23	Aug16/23	Jan 29/24	Dec14/22 Mar13/23	May3/23	Aug16/23		
	1									
4	Laboratory Sample No.	: WearCheck USA - : GFL0108426	son Ave., Ca 1 : 01 I	3 GFL Env	GFL Environmental - 918 - Hartland H0 630 E Industrial Drive					
REDITED	Lab Number	: 06076550			000 E	Hartland, W				
ESTING LABORATORY	Unique Number	r : 10858641	3					US 53029		
	Test Package	: FLEET				Contact: David McCa				
rtificate L2367		contact Customer Ser				david.mccall@gflenv.co T: (262)369-306				



Submitted By: David McCall