

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 912102 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.

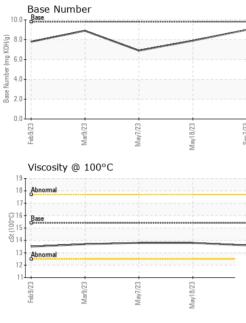
Fluid Condition

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				history2				
Sample Number		Client Info		GFL0065065	GFL0077800	GFL0077820				
Sample Date		Client Info	07 Sep 2023		18 May 2023	07 May 2023				
Machine Age	hrs	Client Info	5123		4477	5050				
Oil Age	hrs	Client Info		0	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	>3.0	<1.0	<1.0	<1.0				
Glycol		WC Method		NEG	NEG	NEG				
		method		current	history1					
Iron	ppm	ASTM D5185m		5	11	15				
Chromium	ppm	ASTM D5185m		<1	<1	<1				
Nickel	ppm	ASTM D5185m	>5	0	<1	<1				
Titanium	ppm	ASTM D5185m		0	0	0				
Silver	ppm	ASTM D5185m	>2	<1	0	<1				
Aluminum	ppm	ASTM D5185m		<1	0	2				
Lead	ppm	ASTM D5185m	>40	0	0	<1				
Copper	ppm	ASTM D5185m		6	4	4				
Tin	ppm	ASTM D5185m	>15	<1	<1	1				
Vanadium	ppm	ASTM D5185m		0	0	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES		method				history2				
ADDITIVES		methou	IIIIII/Dase	current	history1	TIStory2				
Boron	ppm	ASTM D5185m	0	10	8	4				
	ppm ppm									
Boron		ASTM D5185m	0	10	8	4				
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	10 0	8 0	4 0				
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	10 0 59	8 0 60	4 0 67				
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 59 <1	8 0 60 <1	4 0 67 <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	10 0 59 <1 898	8 0 60 <1 962	4 0 67 <1 1017				
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	10 0 59 <1 898 1044	8 0 60 <1 962 1145	4 0 67 <1 1017 1148				
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	10 0 59 <1 898 1044 992	8 0 60 <1 962 1145 999	4 0 67 <1 1017 1148 1058				
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	10 0 59 <1 898 1044 992 1169	8 0 60 <1 962 1145 999 1255	4 0 67 <1 1017 1148 1058 1365				
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	10 0 59 <1 898 1044 992 1169 3488	8 0 60 <1 962 1145 999 1255 3492	4 0 67 <1 1017 1148 1058 1365 3526				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060	10 0 59 <1 898 1044 992 1169 3488 current	8 0 60 <1 962 1145 999 1255 3492 history1	4 0 67 <1 1017 1148 1058 1365 3526 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060	10 0 59 <1 898 1044 992 1169 3488 current 3	8 0 60 <1 962 1145 999 1255 3492 history1 4	4 0 67 <1 1017 1148 1058 1365 3526 history2 5				
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base	10 0 59 <1 898 1044 992 1169 3488 current 3 3 3	8 0 60 <1 962 1145 999 1255 3492 history1 4 3	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5				
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	10 0 59 <1 898 1044 992 1169 3488 current 3 3 3 <1 current	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 1 history1	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5 2 2 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	10 0 59 <1 898 1044 992 1169 3488 current 3 3 <1 current 0.2	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 1 history1 0.6	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5 2 2 history2 0.8				
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	10 0 59 <1 898 1044 992 1169 3488 current 3 3 3 <1 current	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 1 history1	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5 2 2 history2				
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	10 0 59 <1 898 1044 992 1169 3488 <u>current</u> 3 3 3 <1 <u>current</u> 0.2 5.6	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 1 0.6 8.6 19.6	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5 2 2 history2 0.8 8.9 20.5				
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	10 0 59 <1 898 1044 992 1169 3488 <i>current</i> 3 3 3 3 <1 <i>current</i> 0.2 5.6 17.0 <i>current</i>	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 4 3 1 0.6 8.6 19.6 history1	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 2 history2 0.8 8.9 20.5 history2				
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20	10 0 59 <1 898 1044 992 1169 3488 <u>current</u> 3 3 3 <1 <u>current</u> 0.2 5.6 17.0	8 0 60 <1 962 1145 999 1255 3492 history1 4 3 1 1 0.6 8.6 19.6	4 0 67 <1 1017 1148 1058 1365 3526 history2 5 5 5 2 2 history2 0.8 8.9 20.5				



OIL ANALYSIS REPORT



-		White Metal Yellow Metal	scalar scalar	*Visual *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		
23	23 -	_ Sand/Dirt Appearance	scalar scalar	*Visual *Visual	NONE NORML	NONE NORML	NORML	NONE NORML		
May7/23	May18/23 Sep7/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
	2	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG		
		FLUID PROP		method	limit/base	current	history1	history2		
		Visc @ 100°C	cSt	ASTM D445		13.6	13.8	13.8		
		GRAPHS								
		Ferrous Alloys								
//23	3/23	60 - iron								
May7/23	May18/23	50 - nickel								
		₫ ₃₀								
		^a 30								
		20								
		10-			_					
		23 23 23	/23	1/23	/23					
		Feb9/23 Mar9/23	May7/23	May18/23 .	Sep7/23					
		Non-ferrous Met	als							
		copper lead								
		20 tin								
		_ 15-								
		\setminus								
		5								
		33	23	23	23					
		Feb 9/23 Mar9/23	May7/23	May18/23	Sep7/23					
		Viscosity @ 100°	С			Base Number				
		18 - Abnormal			10.0	Base				
		17-			(B) 8.0		~~			
		Co ¹⁶ Base			9 2 6.0		~			
		() 16 Base 00115 tg 14			uper (r					
		12			(0,0) (0,0)					
		13 Abnormal 12		1 	<u>2.0</u>					
		11	22	22	0.0	3 23	<u>n</u>	23		
		Feb9/23 Mar9/23	May7/23	May18/23	Sep7/23	Feb 9/23 Mar9/23	May7/23	May18/23		
	Laboratory Sample No.	: WearCheck USA - : GFL0065065	: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0065065 Received : 12 Sep 2023					3 GFL Environmental - 650 - West Point Haulin 7825 Parham Landing Roa		
4		: 05947825	Diagnos		Sep 2023 Sep 2023			West Point, V		
NAB	Lab Number	. 03947023	: 10643784 Diagnostician : Wes Davis							
	Lab Number Unique Number Test Package	r : 10643784			•			US 2318 ct: Jason Smit		

Contact/Location: Jason Smith - GFL650