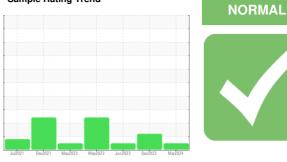


OIL ANALYSIS REPORT

Sample Rating Trend



Component Diesel Engine

Machine Id

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

SAMPLE INFORMATION method

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.

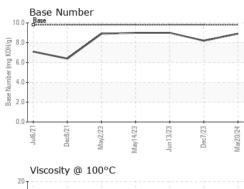
Fluid Condition

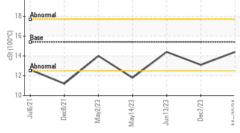
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number		Client Info		GFL0108765	GFL0105649	GFL0069832
Sample Date		Client Info		20 Mar 2024	07 Dec 2023	13 Jun 2023
Machine Age	hrs	Client Info		6887	6666	6125
Oil Age	hrs	Client Info		6887	6666	600
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINATI		method	limit/base	current	history1	history2
Fuel Water		WC Method	>3.0	<1.0 NEG	<1.0 NEG	0.3 NEG
		WC Method	>0.2	NEG		
Glycol				NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	7	47	0
Chromium	ppm	ASTM D5185m	>20	<1	2	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	<1
Lead	ppm	ASTM D5185m	>40	<1	13	0
Copper	ppm	ASTM D5185m	>330	<1	2	0
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
//BBIIIVE0		methou	iiiiii/base	current	Thistory I	THSTOLYZ
Boron	ppm	ASTM D5185m	0	0	4	5
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	0	4	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	4	5
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 60	4 0 86	5 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 60 0	4 0 86 <1	5 0 56 <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 60 0 949	4 0 86 <1 823	5 0 56 <1 956
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 60 0 949 1053	4 0 86 <1 823 929	5 0 56 <1 956 997
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 60 0 949 1053 985	4 0 86 <1 823 929 737	5 0 56 <1 956 997 1077
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 60 0 949 1053 985 1200	4 0 86 <1 823 929 737 1098	5 0 56 <1 956 997 1077 1271
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 1010 1070 1150 1270 2060	0 0 60 0 949 1053 985 1200 2879	4 0 86 <1 823 929 737 1098 2857	5 0 56 <1 956 997 1077 1271 3246
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 0 60 949 1053 985 1200 2879 current	4 0 86 <1 823 929 737 1098 2857 history1	5 0 56 <1 956 997 1077 1271 3246 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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 0 60 0 949 1053 985 1200 2879 current 5	4 0 86 <1 823 929 737 1098 2857 history1 13	5 0 56 <1 956 997 1077 1271 3246 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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	0 0 60 949 1053 985 1200 2879 current 5 3 1	4 0 86 <1 823 929 737 1098 2857 history1 13 ▲ 663	5 0 56 <1 956 997 1077 1271 3246 history2 3 2
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 0 1010 1070 1150 1270 2060 limit/base >25	0 0 60 949 1053 985 1200 2879 current 5 3 1	4 0 86 <1 823 929 737 1098 2857 history1 13 13 ▲ 663 4	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25	0 0 60 949 1053 985 1200 2879 current 5 3 1 1	4 0 86 <1 823 929 737 1098 2857 history1 13 663 4 history1	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 <1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	0 0 60 949 1053 985 1200 2879 current 5 3 1 1 current 0.1	4 0 86 <1 823 929 737 1098 2857 history1 13 663 4 history1 1.7	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 <1 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	0 0 60 949 1053 985 1200 2879 <i>current</i> 5 3 1 <i>current</i> 0.1 5.0	4 0 86 <1 823 929 737 1098 2857 history1 13 ▲ 663 4 history1 1.7 1.7	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 <1 \$ history2 0.1 4.2
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 >25 imit/base >6 >20 >30	0 0 60 949 1053 985 1200 2879 <u>current</u> 5 3 1 1 <u>current</u> 0.1 5.0 17.7	4 0 86 <1 823 929 737 1098 2857 history1 13 663 4 history1 1.7 1.7 1.5.0 26.0	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 <1 history2 0.1 4.2 16.5 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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	0 0 60 949 1053 985 1200 2879 Current 5 3 1 Current 0.1 5.0 17.7 Current	4 0 86 <1 823 929 737 1098 2857 history1 13 ▲ 663 4 history1 1.7 1.7 1.5.0 26.0 history1	5 0 56 <1 956 997 1077 1271 3246 history2 3 2 <1 history2 0.1 4.2 16.5



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	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Dec7/23 Mar20/24	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		15.4	14.4	13.1	14.4	
	GRAPHS							
	Ferrous Alloys							
	¹²⁰							
Dec7/23 -	100- iron							
Dec7/20	80							
	ق 60-							
	40-		\wedge					
	20-							
	0	_						
	Jul6/21 Dec8/21 May2/23	/lay14/23	Jun13/23 Dec7/23	Mar20/24				
	Ju De Mar	May	Juni	Mará				
	Non-ferrous Meta	s						
	14 copper		Å					
	12 - exercise lead							
	10-		/ \					
			///					
	6-		1					
	4							
	2		1~	1				
		23	53 53	54				
	Jul6/21 Dec8/21 May2/23	May14/23	Jun 13/23 Dec7/23	Mar20/24				
	Viscosity @ 100°C		7	2	_ ·· ·			
	19 T			10.	Base Numbe	r		
	18 - Abnormal							
	17- 16 Proc			(B/HC				
				Bu 6.	.0-			
	0015 14		\wedge	nher (r				
	Abnormal	$\langle /$	\sim	Base Number (mg KOH/g)	.0+			
	12	\sim		²⁰ 2.	.0 -			
	11			0.	0			
	Jul6/21+	4/23	un13/23 - Dec7/23 -		Jul6/21	2/23 . 4/23 -	Dec7/23 +	
	Jul6/21 Dec8/21 May2/23	May14/23	Jun 13/23 Dec7/23	Mar20/24	Dec	May2/23 May14/23	Dec7/23 Mar20/24	
1 - 4								
Laboratory Sample No.	: WearCheck USA - 50 : GFL0108765	1 Madisc Rece		v, NC 27513 2 Mar 2024	GFL Er	vironmental - 415	6200 Elmridge	
	: 06126175	Teste		4 Mar 2024		Ster	ling Heights, MI	
Unique Number				Mar 2024 - V	Ves Davis	0.01	US 48313	
Test Package		3				Contact: Frank Wolak		



US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514 2012) F:

Page 2 of 2