

OIL ANALYSIS REPORT



Machine Id 424076

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (--- QTS)

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.

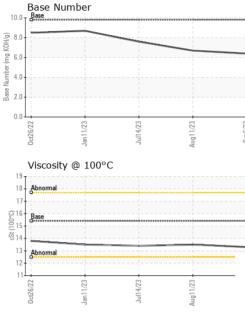
Fluid Condition

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

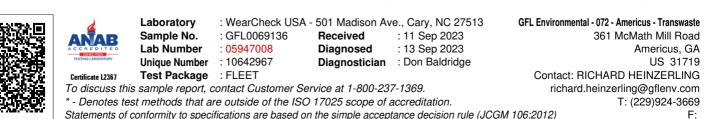
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0069136	GFL0083044	GFL0083046
Sample Date		Client Info		06 Sep 2023	11 Aug 2023	14 Jul 2023
Machine Age	hrs	Client Info		0	0	820
Oil Age	hrs	Client Info		0	0	820
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	24	40	36
Chromium	ppm	ASTM D5185m	>20	2	2	2
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	12	3	1
Lead	ppm	ASTM D5185m	>40	0	3	1
Copper	ppm	ASTM D5185m	>330	2	89	115
Tin	ppm	ASTM D5185m	>15	_ <1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	le le		limit/booo	-	-	history2
	nnm		limit/base	current	history1	
Boron	ppm	ASTM D5185m	0	17	5	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	17 0	5 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	17 0 70	5 0 63	7 0 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	17 0 70 1	5 0 63 <1	7 0 65 <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	17 0 70 1 900	5 0 63 <1 857	7 0 65 <1 947
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	17 0 70 1 900 1212	5 0 63 <1 857 1081	7 0 65 <1 947 1149
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	17 0 70 1 900 1212 936	5 0 63 <1 857 1081 958	7 0 65 <1 947 1149 1021
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	17 0 70 1 900 1212 936 1250	5 0 63 <1 857 1081 958 1168	7 0 65 <1 947 1149 1021 1314
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	17 0 70 1 900 1212 936	5 0 63 <1 857 1081 958 1168 2355	7 0 65 <1 947 1149 1021 1314 3249
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	17 0 70 1 900 1212 936 1250 3313 current	5 0 63 <1 857 1081 958 1168 2355 history1	7 0 65 <1 947 1149 1021 1314 3249 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 method	0 0 60 0 1010 1070 1150 1270 2060	17 0 70 1 900 1212 936 1250 3313 current 10	5 0 63 <1 857 1081 958 1168 2355 history1 9	7 0 65 <1 947 1149 1021 1314 3249 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 1010 1070 1150 1270 2060 limit/base >25	17 0 70 1 900 1212 936 1250 3313 current 10 6	5 0 63 <1 857 1081 958 1168 2355 history1 9 5	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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 method	0 0 60 1010 1070 1150 1270 2060	17 0 70 1 900 1212 936 1250 3313 current 10	5 0 63 <1 857 1081 958 1168 2355 history1 9	7 0 65 <1 947 1149 1021 1314 3249 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	17 0 70 1 900 1212 936 1250 3313 current 10 6	5 0 63 <1 857 1081 958 1168 2355 history1 9 5	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	17 0 70 1 900 1212 936 1250 3313 current 10 6 19	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	17 0 70 1 900 1212 936 1250 3313 current 10 6 19 2	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2 2 history1	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	17 0 70 1 900 1212 936 1250 3313 <i>current</i> 10 6 19 <i>current</i> 1.2	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2 2 history1 1.2	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1 1 history2 1.1
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	17 0 70 1 900 1212 936 1250 3313 <i>current</i> 10 6 19 <i>current</i> 1.2 1.2	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2 2 history1 1.2 1.2 11.0	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1 1 history2 1.1 1.1 10.7
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 >3 >20 >30	17 0 70 1 900 1212 936 1250 3313 current 10 6 19 current 1.2 10.2 22.9	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2 2 history1 1.2 1.2 11.0 22.2	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1 1 <u>history2</u> 1.1 10.7 21.6
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 20 220 20 20 33 20 20 30 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20	17 0 70 1 900 1212 936 1250 3313 <i>current</i> 10 6 19 <i>current</i> 1.2 10.2 22.9 <i>current</i>	5 0 63 <1 857 1081 958 1168 2355 history1 9 5 2 2 history1 1.2 11.0 22.2 history1	7 0 65 <1 947 1149 1021 1314 3249 history2 7 5 1 1 history2 1.1 10.7 21.6 history2



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		method	limit/base	current	history1	history
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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.5	13.4
GRAPHS						
Ferrous Alloys						
⁰ T		and the second				
5 - iron						
chromium						
	/					
0 nickel	/					
0 -	/	· · · · · · · · · · · · · · · · · · ·				
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5						
5						
0 +						
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5 +						
5-						
0	23	23	23			
0	114/23	11/23	p6/23			
1	Jul14/23	Aug 11/23	Sep6/23			
Oct26/22		Aug11/23	Sep6/23			
Oct26/22		Aug11/23	Sep.6/23			
Non-ferrous Meta		Aug11/23	Sep 6/23			
Ron-ferrous Meta		Aug11/23	Sep6/23			
2299250 Non-ferrous Meta		Aug11/23	Sep 6/23			
Ron-ferrous Meta		Aug11/23	Sep 6/23			
2299250 Non-ferrous Meta		Aug11/23	Sep6/23			
Non-ferrous Meta		Aug 11/23	Sep 6/23			
2299250 Non-ferrous Meta		Aug11/23	Sep6/23			
Non-ferrous Meta		Aug11/23	Sep 6/23			
Non-ferrous Meta		Aug11/23	Sep6/23			
Non-ferrous Meta		Aug11/23	Sep 6/23			
Non-ferrous Meta		Aug11/23	Sep 6/23			
Non-ferrous Meta		Aug11/23	Sep.6/23			
Non-ferrous Meta		Aug11/23	Sep 6/23			
Non-ferrous Meta		Aug11/23	Sep623			
Non-ferrous Meta		Aug11/23	Sep6/23			
Non-ferrous Meta		Aug 11/23	Sept6/23			
Non-ferrous Meta						
Non-ferrous Meta						
Non-ferrous Meta						
Non-ferrous Meta		Aug11/23	Sep6/23			
Non-ferrous Meta	Is					
Non-ferrous Meta	Is			Base Number		
Non-ferrous Meta	Is		Sep6/23	Base Number		
Non-ferrous Meta	Is					
Non-ferrous Meta	Is		Sep6/23	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		E2gg45	Base Number		
Non-ferrous Meta	Is		10.0 Seption 2 Seption 2 S	Base Number		
Non-ferrous Meta	Is		0.01 10.01 10.01 10.01 10.01 10.01 10.01 10.01 10.01	Base Number		
Non-ferrous Meta	Is		10.0 Seption 2 Seption 2 S	Base Number		
Non-ferrous Meta	Is		10.0 (0,H0X) Bul Jaquin N Bul J	Base Number		
Non-ferrous Meta	ls	Aug 11/23	EZJ9des 10.0 (0,H0) umpartum 4.0 200 000			
Non-ferrous Meta	Is		10.0 (0,H0X) Bul Jaquin N Bul J	Base Number		Aug11/23



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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