

OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 228111

Component Diesel Engine

Fluid 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.

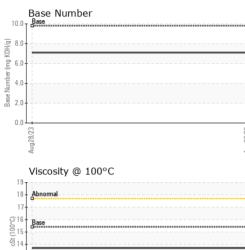
SAMPLE INFOR	VIATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0085289		
Sample Date		Client Info		28 Aug 2023		
Machine Age	mls	Client Info		0		
Oil Age	mls	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				NORMAL		
CONTAMINAT		method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method	>0	×1.0		
-		WC Method		NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	13		
Chromium	ppm	ASTM D5185m	>20	<1		
Nickel	ppm	ASTM D5185m	>2	4		
Titanium	ppm	ASTM D5185m	>2	0		
Silver	ppm	ASTM D5185m	>2	<1		
Aluminum	ppm	ASTM D5185m	>25	0		
Lead	ppm	ASTM D5185m	>40	0		
Copper	ppm	ASTM D5185m	>330	20		
Tin	ppm	ASTM D5185m	>15	0		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		mathad	limit/base	ourropt	biotonut	history2
					TIISIOI VI	
				current	history1	
Boron	ppm	ASTM D5185m	0	0		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 58		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 58 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 58 1 925		
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 58 1 925 1012	 	
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 58 1 925 1012 940	 	
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	0 0 58 1 925 1012 940 1190	 	
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 58 1 925 1012 940	 	
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 58 1 925 1012 940 1190	 	
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 58 1 925 1012 940 1190 3161		
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 Jimit/base	0 0 58 1 925 1012 940 1190 3161 current		
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 0 1010 1070 1150 1270 2060 limit/base	0 0 58 1 925 1012 940 1190 3161 current 4		
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 0 1010 1070 1150 1270 2060 limit/base	0 0 58 1 925 1012 940 1190 3161 <u>current</u> 4 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 <i>current</i>	 history1 	 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 2060 225 >25 >20 limit/base >20	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 <1 <i>current</i> 0.5	 history1 history1	 history2 history2 history2
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 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> >3 >20	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 <1 <i>current</i> 0.5 8.0	 history1 	 history2 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 D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >3 >20	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 <1 <i>current</i> 0.5 8.0 20.3	 history1 history1 history1	 history2 history2 history2
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	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 c1 <i>current</i> 0.5 8.0 20.3	 history1 history1 	 history2 history2 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 D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >3 >20	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 <1 <i>current</i> 0.5 8.0 20.3	 history1 history1 history1	 history2 history2 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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 58 1 925 1012 940 1190 3161 <i>current</i> 4 3 c1 <i>current</i> 0.5 8.0 20.3	 history1 history1 history1	 history2 history2 history2



13 Abnormal 12 11 Aug28/23

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OIL ANALYSIS REPORT



	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE		
	Yellow Metal	scalar	*Visual	NONE	NONE		
	Precipitate	scalar	*Visual	NONE	NONE		
	Silt	scalar	*Visual	NONE	NONE		
	Debris	scalar	*Visual	NONE	NONE		
	Sand/Dirt	scalar	*Visual	NONE	NONE		
Aug 28/23	Appearance	scalar	*Visual	NORML	NORML		
Aug		scalar	*Visual	NORML	NORML		
С	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.7		
	GRAPHS						
	Ferrous Alloys						
	14 iron						
	12 - chromium						
	10-						
	8- E						
	G						
	4 -						
	2-						
	0	*****					
	Aug28/23			Aug28/23			
				Au			
	Non-ferrous Meta	ls					
	20 copper	ls					
	²⁰ T	ls					
	20 copper	ls					
	20 copper	ls					
	20 15	ls					
	20 15	ls					
	20 15 15 10	ls					
	20 15 E 10 5 0	ls		33			
	20 15 15 10	ls		ug28/23			
	20 15 15 10 10 10 10 10 10 10 10 10 10			Aug28/23			
	20 15 E 10 5 0				Base Number		
	Viscosity @ 100°C			4ng28/23			
	20 15 16 10 5 0 Viscosity @ 100°C			10.	Base		
	20 15 15 10 10 10 10 10 10 10 10 10 10			10.	0 - Base		
	20 15 15 10 10 10 10 10 10 10 10 10 10			10.	0 - Base		
	20 15 10 10 10 10 10 10 10 10 10 10			10.	0 - <u>Base</u>		
	20 15 15 10 10 10 10 10 10 10 10 10 10			10.1 (6)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)	0 - Base 0		
	20 15 16 10 10 10 10 10 10 10 10 10 10			10.	0 - Base 0		
	20 15 16 10 10 10 10 10 10 10 10 10 10			10. (0)HO() 0)HO() 0,HO	0 - Base		
	20 15 16 10 10 10 10 10 10 10 10 10 10			10. (0)HO() 0)HO() 0,HO	0 - Base		1928/23
	20 15 16 10 10 10 10 10 10 10 10 10 10			10. (6)HO XOH 4, 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 9 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	0 - Base		Aug20/23
Laboratory	20 15 15 15 15 15 15 15 15 15 15	501 Madis		10.1 (9)Hoy Bull Jaquerung Berg 2,1 C2082BBry ry, NC 27511	Page		i County HC Morton
Sample No.	20 15 15 15 15 15 15 15 15 15 15	501 Madis Received	1 :31 /	10.1 0)HOU Bull Jaquer (0)HOU Bull Jaquer (1) Jaquer (1	Page		i County HC Morton W. Jefferson St.
Sample No. Lab Number	20 15 15 16 10 10 10 10 10 10 10 10 10 10	501 Madia Received Diagnose	d : 31 /	10.1 (9)HOX Bull Jaquer (9)HOX B	Page		i County HC Mortor W. Jefferson St Morton, IL
Certificate L2367 Sample No. Lab Number Unique Number Test Package	20 20 15 15 15 15 15 15 16 20 15 16 20 20 20 20 20 20 20 20 20 20	501 Madia Received Diagnost	d : 31 / ed : 05 % iician : Sea	10.1 (9)H03 Paul 21, (9)H03 Paul 21, (1)H03 Pa	Page	1090 \	i County HC Morton W. Jefferson St. Morton, IL US 61550
Certificate 12367 To discuss this sample report,	20 15 15 15 15 15 15 15 16 10 10 10 10 10 10 10 10 10 10	501 Madia Received Diagnost Diagnost	d : 31 / ed : 05 % ician : Sea	10.1 (9)H03 Paul 21 (9)H03 Paul 21 (1)H03 Paul 21 (Page	1090 ^v Con	i County HC Morto r W. Jefferson St. Morton, IL US 61550 tact: Bryan Link ink@gflenv.com
Certificate L2367 Sample No. Lab Number Unique Number Test Package	20 15 15 10 10 10 10 10 10 10 10 10 10	501 Madia Received Diagnost Vice at 1-8	d : 31 / ed : 05 % ician : Sea 200-237-1368 pe of accrea	10.1 ()HO () ()HO ()HO () ()HO () ()HO ()HO () ()HO ()HO () ()HO ()HO () ()HO ()HO ()HO () ()HO ()HO ()HO ()HO ()HO ()HO ()HO ()HO	3 GFL Enviro	1090 ^v Con bli	i County HC Morton W. Jefferson St. Morton, IL US 61550 Itact: Bryan Link ink@gflenv.com T: F:

Submitted By: Also GFL958,958A, 958B - Bryan Link