

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 429094

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

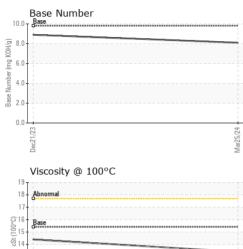
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			Dec2023	Mar2024		
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0097852	GFL0103596	
Sample Date		Client Info		25 Mar 2024	21 Dec 2023	
Machine Age	hrs	Client Info		0	0	
Oil Age	hrs	Client Info		500	590	
Oil Changed		Client Info		N/A	N/A	
Sample Status		-		NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method		NEG	NEG	
		WC Method	20.2	NEG	NEG	
Glycol		WC Method		-		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	6	3	
Chromium	ppm	ASTM D5185m	>20	0	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	2	3	
Lead	ppm	ASTM D5185m	>40	0	0	
Copper	ppm	ASTM D5185m	>330	<1	<1	
Tin			>15		<1	
	ppm	ASTM D5185m	>10	0		
Vanadium	ppm	ASTM D5185m		0	0	
Cadmium	ppm	ASTM D5185m		0	0	
				-	Ũ	
ADDITIVES		method	limit/base		history1	history2
ADDITIVES Boron	ppm		limit/base		-	history2
	ppm ppm	method		current	history1	
Boron		method ASTM D5185m	0	current 3	history1 1	
Boron Barium	ppm	method ASTM D5185m ASTM D5185m	0	current 3 0	history1 1 9	
Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 3 0 54	history1 1 9 61	
Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	Current 3 0 54 0	history1 1 9 61 0	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 3 0 54 0 969	history1 1 9 61 0 942	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 3 0 54 0 969 1055 916	history1 1 9 61 0 942 1041	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 3 0 54 0 969 1055	history1 1 9 61 0 942 1041 1021	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 3 0 54 0 969 1055 916 1216 3479	history1 1 9 61 0 942 1041 1021 1201	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 3 0 54 0 969 1055 916 1216 3479	history1 1 9 61 0 942 1041 1021 1201 3198	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 3 0 54 0 969 1055 916 1216 3479 Current 4	history1 1 9 61 0 942 1041 1021 1201 3198 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 3 0 54 0 969 1055 916 1216 3479 Current	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	Current 3 0 54 0 969 1055 916 1216 3479 Current 4 <1 1	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	Current 3 0 54 0 969 1055 916 1216 3479 Current 4 <1 1 Current	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1	 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 TS ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3 7.4	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1 5.0	 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3 7.4 18.7	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1 5.0 17.5	 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3 7.4 18.7	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1 5.0	 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3 7.4 18.7	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1 5.0 17.5	 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	method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7415 method	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	Current 3 0 54 0 969 1055 916 1216 3479 current 4 <1 1 current 0.3 7.4 18.7 current	history1 1 9 61 0 942 1041 1021 1201 3198 history1 5 0 2 history1 0.1 5.0 17.5 history1	 history2 history2 history2 history2



13 Abnormal 12 11 Dec21/23

OIL ANALYSIS REPORT



	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	
Mar25/24	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual	20.L	NEG	NEG	
	FLUID PROPE			limit/base		history1	
	Visc @ 100°C	cSt	method ASTM D445		current 13.4	14.4	history2
		COL	ASTIVI D445	15.4	13.4	14.4	
	GRAPHS						
	Ferrous Alloys						
	¹⁰						
20	iron						
5	8 - nickel						
2							
	E .						
	m dd						
	2						
	2						
	/23			/24			
	Dec21/23			Mar25/24			
	—			×			
	Non-ferrous Meta	S					
	¹⁰						
	copper						
	8 - management tin						
	o tin						
	6 -						
	6 E						
	6 -						
	6 -						
				(24			
				lar25/24			
				Mar25/24			
	Viscosity @ 100°C			2	Base Number		
	Viscosity @ 100°C			2	Base Number		
	Viscosity @ 100°C			≥ 10.0	Base Number	-	
	Viscosity @ 100°C			2 10.0	Base Number	-	
	Viscosity @ 100°C			2 10.0	Base Number	-	
	Viscosity @ 100°C			2 10.0	Base Number	-	
	Viscosity @ 100°C	;		2 10.0	Base Number	-	
	Viscosity @ 100°C			2 10.0	Base Number	-	
	Viscosity @ 100°C			> 10.0 (0,0)	Base Number	-	
	Viscosity @ 100°C			2 10.0	Base Number	-	
	Viscosity @ 100°C			> 10.0 (0,0)	Base Number	-	
	Viscosity @ 100°C			> 10.0 (0)HOX Bu(6.0 10,HOX Bu(6.0 10,HOX Bu(7.0) 10,000 10,0000 10,000 10,000 10,0		-	
	Viscosity @ 100°C			> 10.0 (0)HOX Bu(6.0 10,HOX Bu(6.0 10,HOX Bu(7.0) 10,000 10,0000 10,000 10,000 10,0		-	
	Viscosity @ 100°C			≥ 10.0 (0)HOX But Particle 10.0 (0)HOX But Pa	Base Number	-	
Laboratory	Viscosity @ 100°C	1 Madisc		≥ 10.0 (0,400 mu) = 0,000 (0,400 mu) = 0,000 (0,400 mu) = 0,000 (0,000 mu) = 0,000 mu) = 0,000 (0,000 mu) = 0,000 mu)	Base	ironmental - 958 - Tr	
Sample No.	Viscosity @ 100°C	1 Madisc Recei	ived : 28	≥ 10.0 (0,1,0,0, 8.0 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	Base	ironmental - 958 - Tr	W. Jefferson
Sample No. Lab Number	Viscosity @ 100°C	1 Madisc Recei Teste	ived : 28 ed : 30	≥ 10.0 (0,H0X Bu Jaquin V Bu	GFL Envi	ironmental - 958 - Tr	W. Jefferson Morton,
Sample No. Lab Number Unique Number	Viscosity @ 100°C Viscosity @ 100°C Ahnormal Constrained Base WearCheck USA - 50 : WearCheck USA - 50 : GFL0097852 : 06132676 : 10952141	1 Madisc Recei Teste	ived : 28 ed : 30	≥ 10.0 (0,1,0,0, 8.0 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	GFL Envi	ironmental - 958 - Tr 1090 V	W. Jefferson Morton, US 615
Sample No. Lab Number	Viscosity @ 100°C Viscosity @ 100°C Ahnormal Constrained Base WearCheck USA - 50 : WearCheck USA - 50 : GFL0097852 : 06132676 : 10952141	1 Madisc Recei Teste	ived : 28 ed : 30	≥ 10.0 (0,H0X Bu Jaquin V Bu	GFL Envi	ironmental - 958 - Tr 1090 \ Con	W. Jefferson S Morton, US 615 tact: Bryan Li
AB Sample No. Lab Number Unique Number te 12367 Test Package	Viscosity @ 100°C Viscosity @ 100°C Ahnormal Constrained Base WearCheck USA - 50 : WearCheck USA - 50 : GFL0097852 : 06132676 : 10952141	1 Madisc Rece Teste Diagr	ived : 28 ed : 30 nosed : 30	≥ 10.0 (0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	GFL Envi	ironmental - 958 - Tr 1090 \ Con	W. Jefferson Morton, US 615
Sample No. Lab Number Unique Number Test Package scuss this sample report	Viscosity @ 100°C Viscosity @ 100°C Ahnormal Control 12 4 4 4 4 5 5 5 6 4 4 5 5 5 6 6 6 6 6 6 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8	1 Madisc Rece Teste Diagr	ived : 28 ed : 30 nosed : 30 800-237-1369	≥ 10.0 (0,400) Put 4.0 Put	GFL Envi	ironmental - 958 - Tr 1090 \ Con	W. Jefferson Morton, US 615 tact: Bryan L

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