

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 911010

Component Diesel Engine

Fluid

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

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. 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.

	ΛΑΤΙΟΝ	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0055970	GFL0055963	GFL0042463
Sample Date		Client Info		28 Jun 2023	25 Apr 2023	23 Jan 2023
Machine Age	hrs	Client Info		6848	6375	5802
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	0.5	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>100	5	9	16
Chromium	ppm	ASTM D5185m	>20	<1	0	1
Nickel	ppm	ASTM D5185m	>4	0	0	3
Titanium	ppm	ASTM D5185m		29	2	3
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	0	4	6
Lead	ppm	ASTM D5185m	>40	<1	0	3
Copper	ppm	ASTM D5185m	>330	1	8	4
Tin	ppm	ASTM D5185m	>15	<1	1	1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history 1	history 2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 30	history 1 13	history 2 9
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0	current 30 0	history 1 13 0	history 2 9 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	current 30 0 36	history 1 13 0 57	history 2 9 0 69
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	current 30 0 36 <1	history 1 13 0 57 <1	history 2 9 0 69 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	current 30 0 36 <1 682	history 1 13 0 57 <1 908	history 2 9 0 69 <1 913
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070	current 30 0 36 <1 682 1305	history 1 13 0 57 <1 908 1173	history 2 9 0 69 <1 913 1337
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150	current 30 0 36 <1 682 1305 922	history 1 13 0 57 <1 908 1173 982	history 2 9 0 69 <1 913 1337 1021
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270	current 30 0 36 <1 682 1305 922 1162	history 1 13 0 57 <1 908 1173 982 1239	history 2 9 0 69 <1 913 1337 1021 1255
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060	current 30 0 36 <1 682 1305 922 1162 3655	history 1 13 0 57 <1 908 1173 982 1239 3374	history 2 9 0 69 <1 913 1337 1021 1255 3706
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	limit/base 0 60 0 1010 1070 1150 1270 2060	current 30 0 36 <1 682 1305 922 1162 3655 current	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	method ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 30 0 36 <1 682 1305 922 1162 3655 current 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	method ASTM D5185m	limit/base 0 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 0 0 1010 1010 1150 1270 2060 limit/base >25 >20	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 3 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 2	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >20 limit/base	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 3 3 3 3 3 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 4 history 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	method ASTM D5185m	limit/base 0 0 0 1010 1010 1070 1150 1270 2060 limit/base >20 limit/base >3	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1 0.5	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 4 history 2 0.5
ADDITIVES 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	<pre>imit/base 0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20</pre>	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 0.3 8.1	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1 0.5 7.6	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 4 0.5 9.4
ADDITIVES 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 t spm ppm ppm ppm spm ppm spm ppm spm	method ASTM D5185m ASTM D7844 *ASTM D7624	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >20 >3 >20 >30	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1 0.3 8.1 19.9	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1 0.5 7.6 16.7	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 history 2 0.5 9.4 20.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 imit/base	current 30 0 36 <1 682 1305 922 1162 3655 current 3 4 5 6 6 19 9 0 3	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1 0.5 7.6 16.7 history 1	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 0.5 9.4 20.5 history 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm Abs/cm Abs/cm Abs/.1mm	method ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7415 Method *ASTM D7414	<pre>limit/base 0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 limit/base >3 20 33 220 20 20 20 20 20 20 20 20 20 20 20 20</pre>	current 30 0 36 <1 682 1305 922 1162 3655 current 3 3 3 3 3 3 3 3 3 3 0.3 8.1 19.9 current 14.8	history 1 13 0 57 <1 908 1173 982 1239 3374 history 1 6 2 history 1 0.5 7.6 16.7 history 1 12.7	history 2 9 0 69 <1 913 1337 1021 1255 3706 history 2 7 4 4 0.5 9.4 20.5 history 2 15.3



12 10 Apr19/21

OIL ANALYSIS REPORT



Jun16/22

Jan 23/23

Apr25/23

		methou	iiiiii/base	current	TIISTOLA I	Thotory
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	history 1	history
Visc @ 100°C	cSt	ASTM D445	15.4	12.5	12.3	11.9
GRAPHS						
Ferrous Alloys						
iron						
- nickel						
		\sim				
/						
	- in the second second second					
AMARKA MARKANA		other Designation of the local division of the	and the second s			
9/21 1/21 6/22	3/23	2/23	8/23			
Apr19/21 Jun21/21 Jun16/22	Jan23/23 +-	Apr25/23	Jun28/23			
Non-ferrous Metal	Jan 23/23 +-	Apr25/23	Jun28/23			
Non-ferrous Metal	Jan 23/23 +	Apr25/23	Jun28/23			
Non-ferrous Metal	Jan 23/23 +	Apr25/23	Jun28/23			
Non-ferrous Metal	S	Api25/23	7nu128/23			
Non-ferrous Metal	+ 62/62/10	Apr25/23	7nu 58/23			
Non-ferrous Metal	+ ^{62/62} / ¹⁰	Apr25/23	7mm			
Non-ferrous Metal	+ 82/82 uer	Ap/25/23	Jun 28/23			
Non-ferrous Metal	+ E2/E2/uer	Ap/25/23	7m158/23			
Non-ferrous Metal	5 S	Apr25/23	7mu28/23			
Non-ferrous Metal	5 S	Apr25/23	Jun 28/23			
LIZIEInnr Non-ferrous Metal	5 S	5/23	8/23 Nun28/23			
Non-ferrous Metal	5 S	Apr25/23	Jun28/23			
Viscosity @ 100°C	52/52/uer	Apr25/23	Jun 28/23	Page Number		
ZZ91un Non-ferrous Metal	S	Apr25/23	10.0	Base Number		
IZ261/uW Non-ferrous Metal	S	Apr25/23	10.0	Base Number		
IZUBLING Viscosity @ 100°C	5 S	Api25/23	nu128/23	Base Number		
IZUBLING Non-ferrous Metal	S	Api25/23	Pun28/23	Base Number		
Non-ferrous Metal	5 S	Apr25/23	Jun28/23 Jun28/23 10.0 0.0 0.0	Base Number		
Non-ferrous Metal	5 S	Apr25/23	۹٫۵۵۲ ۲۰۱۳ ۲۰۱۳ ۲۰۱۳ ۲۰۱۳ ۲۰۱۳ ۲۰۱۳ ۲۰۱۳ ۲۰۱	Base Number		
Non-ferrous Metal	5 S	Apr25/23	Pinu28/23 Pinu28	Base Number		
Non-ferrous Metal	S S	Apr25/23	70,000 70,00000000	Base Number		
IZUBLING Non-ferrous Metal	S	Apr25/23	10.0 10.0	Base Number		
Non-ferrous Metal	S S	Apr25/23	10.0 10.0	Base Number	22	23



Test Package : FLEET Contact: TECHNICIAN ACCOUNT Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. catherine.anastasio@wearcheck.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

: GFL0055970

: 05890760

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: 05 Jul 2023

: 07 Jul 2023

Diagnostician : Angela Borella

Received

Diagnosed

Report Id: GFL663S [WUSCAR] 05890760 (Generated: 07/07/2023 13:18:28) Rev: 1

Laboratory Sample No.

Lab Number

Unique Number : 10546570

Submitted By: TECHNICIAN ACCOUNT

GFL Environmental - 663S - Greely (Lake Ariel Satellite)

US 18644

T:

F:

301 Swetland Lane

West Wyoming, PA