

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



427083-402340

Component Diesel Engine

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 INFORM	ΛΑΤΙΟΝ	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086368	GFL0086354	GFL0064602
Sample Date		Client Info		21 Aug 2023	01 Aug 2023	10 Jul 2023
Machine Age	hrs	Client Info		17409	17270	17131
Oil Age	hrs	Client Info		0	426	287
Oil Changed		Client Info		N/A	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
		and the set	11.0011/10.000		In the transmission	history O
CONTAMINATI	ON	method	limit/base	current	nistory i	nistory2
Fuel		WC Method	>3.0	<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	>120	17	5	8
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	2	3
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	1	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method		current		history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 6	history1 11	history2 8
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0	current 6 0	history1 11 0	history2 8 2
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	current 6 0 67	history1 11 0 60	history2 8 2 62
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	current 6 0 67 <1	history1 11 0 60 <1	history2 8 2 62 <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 6 0 67 <1 965	history1 11 0 60 <1 900	history2 8 2 62 <1 872
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 6 0 67 <1 965 1128	history1 11 0 60 <1 900 1069	history2 8 2 62 <1 872 1108
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 6 0 67 <1 965 1128 1003	history1 11 0 60 <1 900 1069 1017	history2 8 2 62 <1 872 1108 964
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	limit/base 0 60 0 1010 1070 1150 1270	current 6 0 67 <1 965 1128 1003 1265	history1 11 0 60 <1 900 1069 1017 1240	history2 8 2 62 <1 872 1108 964 1203
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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 2060	current 6 0 67 <1 965 1128 1003 1265 3168	history1 11 0 60 <1 900 1069 1017 1240 3751	history2 8 2 62 <1 872 1108 964 1203 3036
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 0 60 0 1010 1070 1150 1270 2060	current 6 0 67 <1 965 1128 1003 1265 3168	history1 11 0 60 <1 900 1069 1017 1240 3751 history1	history2 8 2 62 <1 872 1108 964 1203 3036 history2
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 6 0 67 <1 965 1128 1003 1265 3168 current 11	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 3 3 3 3 3 3	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 2
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 0 60 0 1010 1070 1150 1270 2060 2060 2060 225 220 220	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 5 1 current	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 3 3 3 3 3 3 history1	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 2 history2
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 60 0 1010 1070 1150 1270 2060 kimit/base >25 >20 kimit/base	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 3 0.4	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 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	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9 9.3	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 0.4 5.9	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 0.5 7.6
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 ppm ppm	method ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9 9.3 21.8	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 4 5.9 17.5	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 0.5 7.6 20.2
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 D7844 *ASTM D7415 Method	limit/base 0 0 1010 1070 1150 1270 2060 limit/base >25 limit/base >4 >20 >30	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9 9.3 21.8	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 3 3 1 0.4 5.9 17.5 history1	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 0.5 7.6 20.2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation CVidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7415 method *ASTM D7414	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >4 >20 >30 limit/base	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9 9.3 21.8 current 17.3	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 3 1 0.4 5.9 17.5 history1 12.5	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 0.5 7.6 20.2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation Base Number (BN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D78444 *ASTM D7414 *ASTM D74144	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >4 >20 >30 limit/base >25 9 8	current 6 0 67 <1 965 1128 1003 1265 3168 current 11 5 1 current 0.9 9.3 21.8 current 17.3 6.2	history1 11 0 60 <1 900 1069 1017 1240 3751 history1 3 3 3 4 5.9 17.5 history1 12.5 8.2	history2 8 2 62 <1 872 1108 964 1203 3036 history2 6 2 history2 0.5 7.6 20.2 history2 15.4 8.1



OIL ANALYSIS REPORT

Ferrous Alloys





VISUAL		method				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
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	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.6	13.6
GRAPHS						





* - 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)

Certificate L2367

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