

OIL ANALYSIS REPORT



Machine Id 927085-260324

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Sodium and/or potassium levels are high.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0109170	GFL0109155	GFL0109156
Sample Date		Client Info		05 Mar 2024	13 Feb 2024	31 Jan 2024
Machine Age	hrs	Client Info		18449	18320	18241
Oil Age	hrs	Client Info		129	600	700
Oil Changed		Client Info		N/A	Changed	Not Changd
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	historv1	history2
Fuel		WC Method	>5	<10	<10	<10
Water		WC Method	>0.2	NEG	NEG	NEG
	-					
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	25	27	24
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	4	2
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	1	<1	1
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		U	0	<1
		mothod	limit/hooo		the second se	history O
ADDITIVES		methou	iinii/base	current	nistory i	nistory2
Boron	ppm	ASTM D5185m	0	3	<1	1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0 0	3 0	<1 0	1 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 75	<1 0 58	1 0 70
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 75 <1	<1 0 58 0	1 0 70 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 75 <1 920	<1 0 58 0 970	1 0 70 <1 1023
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	3 0 75 <1 920 1021	<1 0 58 0 970 1062	1 0 70 <1 1023 1104
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 ASTM D5185m	0 0 60 0 1010 1070 1150	3 0 75 <1 920 1021 1028	<pre><1 0 58 0 970 1062 1002</pre>	1 0 70 <1 1023 1104 1052
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	3 0 75 <1 920 1021 1028 1222	<pre>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>></pre>	1 0 70 <1 1023 1104 1052 1325
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	3 0 75 <1 920 1021 1028 1222 3075	<pre>> > ></pre>	1 0 70 <1 1023 1104 1052 1325 2968
ADDITIVES 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 limit/base	Current 3 0 75 <1 920 1021 1028 1222 3075 Current	 <1 0 58 0 970 1062 1002 1239 2812 history1 	1 0 70 <1 1023 1104 1052 1325 2968 history2
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	3 0 75 <1 920 1021 1028 1222 3075 current 6	 <1 0 58 0 970 1062 1002 1239 2812 history1 7 	1 0 70 <1 1023 1104 1052 1325 2968 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	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176	 <1 0 58 0 970 1062 1002 1239 2812 history1 7 4 	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m	Imm/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 46	<pre>rilstory1 </pre> <1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25 >20	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 46 NEG	 <1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG 	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	Immit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base Iimit/base	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 46 NEG Current	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2
ADDITIVES Boron Barium Molybdenum Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844	Immit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20 limit/base >23	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 46 NEG Current 0.9	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7844	Imili/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200 200	3 0 75 <1 920 1021 1028 1222 3075 current 6 ▲ 176 ▲ 46 NEG current 0.9 9.0	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1 9.2	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8 10.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7844	Inni/base 0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25 >20 Iimit/base >20 Iimit/base >3 >20	3 0 75 <1 920 1021 1028 1222 3075 current 6 176 46 NEG current 0.9 9.0 20.1	Nistory 1 <1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1 9.2 20.7	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8 10.4 21.8
ADDITIVES Boron Barium Molybdenum Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm 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 ASTM D5185m *ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7624	Imit/base 0 0 0 1010 1070 1150 1270 2060 Imit/base >25 >20 Imit/base >3 >20 >30 Imit/base	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 176 ▲ 46 NEG Current 0.9 9.0 20.1 Current	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1 9.2 20.7 history1	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8 10.4 21.8 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm % % Abs/cm Abs/1mm	ASTM D5185m *ASTM D7844 *ASTM D7415 method *ASTM D7414	Imil/base 0 60 0 1010 1070 1150 1270 2060 limit/base >25	Current 3 0 75 <1 920 1021 1028 1222 3075 Current 6 ▲ 176 ▲ 176 ▲ 46 NEG Current 0.9 9.0 20.1 Current 15.3	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1 9.2 20.7 history1 16.3	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8 10.4 21.8 history2 18.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation Base Number (BN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7415 method *ASTM D7414 ASTM D2896	Inni/base 0 0 0 1010 1070 1150 1270 2060 Iimit/base >25 >20 Iimit/base >3 >20 Jimit/base >3 >20 Jimit/base	Current 3 0 75 <1 920 1021 1028 1222 3075 current 6 ▲ 176 ▲ 46 NEG current 0.9 9.0 20.1 current 15.3 9.2	<1 0 58 0 970 1062 1002 1239 2812 history1 7 4 0 NEG history1 1.1 9.2 20.7 history1 16.3 8.0	1 0 70 <1 1023 1104 1052 1325 2968 history2 6 58 8 NEG history2 0.8 10.4 21.8 history2 18.9 7.1



OIL ANALYSIS REPORT



VISUAL		method	limit/base	current	history1	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
			11 1. 11			
FLUID PROPEI	RHES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	14.0	13.8
GRAPHS						



