

OIL ANALYSIS REPORT





Machine Id 511027-1360

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.

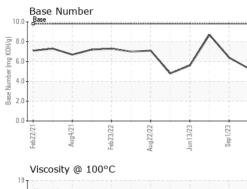
Fluid Condition

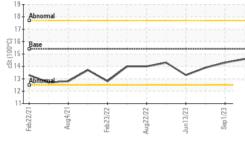
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0090461	GFL0090453	GFL0083955
Sample Date		Client Info		10 Oct 2023	01 Sep 2023	16 Jun 2023
Machine Age	hrs	Client Info		7795	7485	6913
Oil Age	hrs	Client Info		895	535	13
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
-						
CONTAMINAT	ION	method	limit/base -	current	history1	history2
Fuel		WC Method	>5	<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	>100	58	40	7
Chromium	ppm	ASTM D5185m	>20	4	2	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	2	<1
Lead	ppm	ASTM D5185m	>40	10	6	<1
Copper	ppm	ASTM D5185m	>330	2	<1	<1
Tin	ppm	ASTM D5185m	>15	1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	7	8	6
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	7	8	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	7 3	8 0	6 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	7 3 62	8 0 67	6 2 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	7 3 62 1	8 0 67 <1	6 2 63 <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	7 3 62 1 885	8 0 67 <1 1035	6 2 63 <1 916
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	7 3 62 1 885 1112	8 0 67 <1 1035 1229	6 2 63 <1 916 1091
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	7 3 62 1 885 1112 937	8 0 67 <1 1035 1229 1071	6 2 63 <1 916 1091 1012
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	7 3 62 1 885 1112 937 1152	8 0 67 <1 1035 1229 1071 1373	6 2 63 <1 916 1091 1012 1210
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	7 3 62 1 885 1112 937 1152 2208	8 0 67 <1 1035 1229 1071 1373 3193	6 2 63 <1 916 1091 1012 1210 3348
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	0 0 60 1010 1070 1150 1270 2060	7 3 62 1 885 1112 937 1152 2208 current	8 0 67 <1 1035 1229 1071 1373 3193 history1	6 2 63 <1 916 1091 1012 1210 3348 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	7 3 62 1 885 1112 937 1152 2208 current 7	8 0 67 <1 1035 1229 1071 1373 3193 history1 5	6 2 63 <1 916 1091 1012 1210 3348 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	7 3 62 1 885 1112 937 1152 2208 current 7 7	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	7 3 62 1 885 1112 937 1152 2208 current 7 7 7 4	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 2 history1	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 20	7 3 62 1 885 1112 937 1152 2208 current 7 7 4 current 2.3	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 2 history1 1.8	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 +istory2 0.3
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 TCS 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	7 3 62 1 885 1112 937 1152 2208 current 7 7 7 4 current 2.3 12.8	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 2 history1 1.8 11.4	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 2 <1 history2 0.3 5.5
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 >3 >20	7 3 62 1 885 1112 937 1152 2208 current 7 7 4 current 2.3 12.8 27.8	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 2 history1 1.8 11.4 24.4	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 history2 0.3 5.5 18.7
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 3 3 20 20 3 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	7 3 62 1 885 1112 937 1152 2208 Current 7 7 7 4 Current 2.3 12.8 27.8 Current	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 history1 1.8 11.4 24.4 history1	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 history2 0.3 5.5 18.7 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAM	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 33 20 20 30 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20	7 3 62 1 885 1112 937 1152 2208 current 7 7 7 4 current 2.3 12.8 27.8 current 23.0	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 history1 1.8 11.4 24.4 history1 19.4	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 5.5 18.7 history2 0.3 5.5 18.7 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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 220 20 33 220 30 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20	7 3 62 1 885 1112 937 1152 2208 Current 7 7 7 4 Current 2.3 12.8 27.8 Current	8 0 67 <1 1035 1229 1071 1373 3193 history1 5 6 2 history1 1.8 11.4 24.4 history1	6 2 63 <1 916 1091 1012 1210 3348 history2 3 2 <1 history2 0.3 5.5 18.7 history2

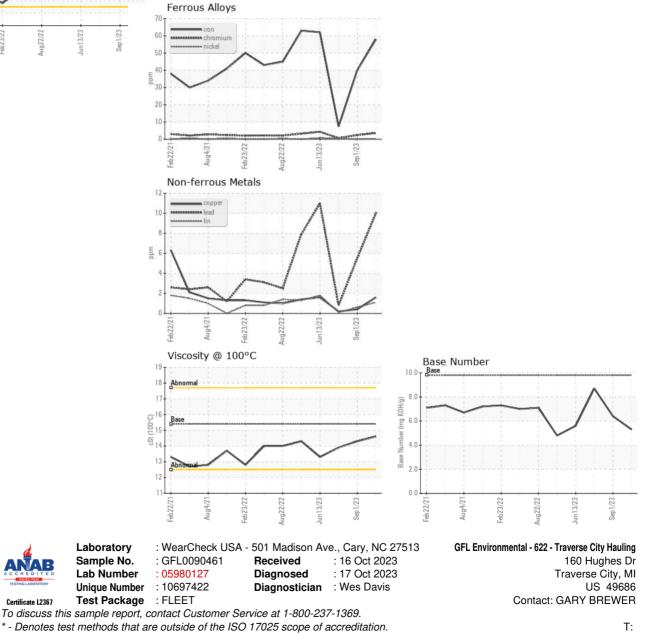


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VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*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
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.6	14.3	13.9
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)

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Certificate L2367

Submitted By: TECHNICIAN ACCOUNT