

OIL ANALYSIS REPORT

Sample Rating Trend



411016-1387

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

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0090483	GFL0090503	GFL0083946
Sample Date		Client Info		15 Nov 2023	30 Aug 2023	09 Jun 2023
Machine Age	hrs	Client Info		3836	3412	3173
Oil Age	hrs	Client Info		580	155	625
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINATI	ON	method	limit/hase	current	history1	history2
Final			0.0		1.0	1.0
Fuel		WC Wethod	>3.0	<1.0	<1.0	<1.0
water		WC Wethod	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	45	22	44
Chromium	ppm	ASTM D5185m	>20	1	<1	1
Nickel	ppm	ASTM D5185m	>5	0	0	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	34	18	<u> </u>
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	2	2	5
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	<1	0
O a sharehouse				-	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	method	limit/base	0 current	0 history1	0 history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	0 current <1	0 history1 3	0 history2 <1
ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base 0 0	0 current <1 0	0 history1 3 0	0 history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	0 current <1 0 63	0 history1 3 0 60	0 history2 <1 0 63
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	0 current <1 0 63 <1	0 history1 3 0 60 <1	0 history2 <1 0 63 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	0 current <1 0 63 <1 996	0 history1 3 0 60 <1 976	0 history2 <1 0 63 <1 951
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070	0 current <1 0 63 <1 996 1120	0 history1 3 0 60 <1 976 1118	0 history2 <1 0 63 <1 951 1092
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	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	0 current <1 0 63 <1 996 1120 1075	0 history1 3 0 60 <1 976 1118 991	0 history2 <1 0 63 <1 951 1092 992
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	limit/base 0 0 60 0 1010 1070 1150 1270	0 current <1 0 63 <1 996 1120 1075 1316	0 history1 3 0 60 <1 976 1118 991 1242	0 history2 <1 0 63 <1 951 1092 992 1244
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	limit/base 0 0 60 0 1010 1070 1150 1270 2060	0 current <1 0 63 <1 996 1120 1075 1316 3058	0 history1 3 0 60 <1 976 1118 991 1242 3507	0 history2 <1 0 63 <1 951 1092 992 1244 2989
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current <1 0 63 <1 996 1120 1075 1316 3058 current	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1	0 history2 <1 0 63 <1 951 1092 992 1244 2989 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	Imit/base 0 0 60 0 1010 1070 1150 1270 2060 Imit/base >25	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4	0 history2 <1 0 63 <1 951 1092 992 1244 2989 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	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1	history2 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20	0 history2 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 0 1010 1070 1150 1270 2060 ■ >25 >20 ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1	history2 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2
ADDITIVES 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	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >4	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3	0 history2 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 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	ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 1010 1010 1150 1270 2060 255 >20 imit/base >4 >20	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7 11.4	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3 7.8	0 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2 0.5 10.5
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 ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 60 0 1010 1070 1270 2060 imit/base >20 imit/base >20 1 >20	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7 11.4 21.7	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3 7.8 18.9	history2 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2 0.5 10.5 21.7
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	ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7 11.4 21.7	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3 7.8 18.9 history1	0 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2 0.5 10.5 21.7 history2
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	ASTM D5185m ASTM	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7 11.4 21.7 current 19.4	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3 7.8 18.9 history1 15.0	0 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2 0.5 10.5 21.7 history2 20.5
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	ASTM D5185m ASTM	imit/base 0 0 0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >20 1mit/base >20 1mit/base >20 1mit/base >20 9.8	0 current <1 0 63 <1 996 1120 1075 1316 3058 current 8 2 40 current 0.7 11.4 21.7 current 19.4 6.8	0 history1 3 0 60 <1 976 1118 991 1242 3507 history1 4 1 20 history1 0.3 7.8 18.9 history1 15.0 8 9	0 <1 0 63 <1 951 1092 992 1244 2989 history2 6 0 25 history2 0.5 10.5 21.7 history2 20.5 6.3



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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
	RTIES	method	limit/base	current	historv1	history2
		initialitica		Ganoni	inotory i	
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	13.3	12.7
GRAPHS						





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Submitted By: TECHNICIAN ACCOUNT