

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (7 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 INFORI	MATION	method	limit/base	current	history1	history2						
Sample Number		Client Info		GFL0090133	GFL0075178	GFL0075177						
Sample Date		Client Info		15 Feb 2024	24 Nov 2023	20 Oct 2023						
Machine Age	hrs	Client Info		4830	4746	4178						
Oil Age	hrs	Client Info		652	4746	4178						
Oil Changed		Client Info		Changed	Changed	Changed						
Sample Status				NORMAL	ABNORMAL	NORMAL						
CONTAMINAT	ION	method	limit/base	current	history1	history2						
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0						
Water		WC Method	>0.2	NEG	NEG	NEG						
Glycol		WC Method		NEG	NEG	NEG						
WEAR METALS method limit/base current history1 history2												
Iron	ppm	ASTM D5185m	>75	14	12	18						
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1						
Nickel	ppm	ASTM D5185m	>4	0	0	<1						
Titanium	ppm	ASTM D5185m	>2	<1	0	0						
Silver	ppm	ASTM D5185m	>2	0	0	0						
Aluminum	ppm	ASTM D5185m	>15	10	1 9	12						
Lead	ppm	ASTM D5185m	>25	0	0	<1						
Copper	ppm	ASTM D5185m	>100	<1	1	1						
Tin	ppm	ASTM D5185m	>4	<1	0	<1						
Vanadium	ppm	ASTM D5185m		0	<1	0						
Cadmium	ppm	ASTM D5185m		0	0	0						
ADDITIVES		method	limit/base	current	history1	history2						
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1 2	history2 2						
	ppm ppm	ASTM D5185m										
Boron		ASTM D5185m	0	<1	2	2						
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	<1 0	2 0	2						
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 56	2 0 61	2 0 67						
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 56 <1	2 0 61 0	2 0 67 0						
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 56 <1 922	2 0 61 0 977	2 0 67 0 962						
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	<1 0 56 <1 922 1033	2 0 61 0 977 1127	2 0 67 0 962 1132						
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	0 0 60 0 1010 1070 1150	<1 0 56 <1 922 1033 989	2 0 61 0 977 1127 1070	2 0 67 0 962 1132 1073						
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	<1 0 56 <1 922 1033 989 1228	2 0 61 0 977 1127 1070 1303	2 0 67 0 962 1132 1073 1276						
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 0 56 <1 922 1033 989 1228 2928	2 0 61 0 977 1127 1070 1303 3090	2 0 67 0 962 1132 1073 1276 3519						
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	<1 0 56 <1 922 1033 989 1228 2928 current	2 0 61 0 977 1127 1070 1303 3090 history1	2 0 67 0 962 1132 1073 1276 3519 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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	<1 0 56 <1 922 1033 989 1228 2928 2928 current 4	2 0 61 0 977 1127 1070 1303 3090 history1 3	2 0 67 0 962 1132 1073 1276 3519 history2 4						
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	<1 0 56 <1 922 1033 989 1228 2928 Current 4 4 4 14	2 0 61 0 977 1127 1070 1303 3090 history1 3 5	2 0 67 0 962 1132 1073 1276 3519 history2 4 2						
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 56 <1 922 1033 989 1228 2928 Current 4 4 4 14	2 0 61 0 977 1127 1070 1303 3090 history1 3 5 35	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21						
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 56 <1 922 1033 989 1228 2928 current 4 4 4 14 24	2 0 61 977 1127 1070 1303 3090 history1 3 5 35 35	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21 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 Limit/base >20	<1 0 56 <1 922 1033 989 1228 2928 <u>current</u> 4 4 14 14 <u>current</u> 0.4	2 0 61 0 977 1127 1070 1303 3090 history1 3 5 35 5 35 history1 0.4	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21 history2 0.5						
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	0 0 0 1010 1070 1150 1270 2060 2060 225 225 220 1imit/base >20	<1 0 56 <1 922 1033 989 1228 2928 <u>current</u> 4 4 4 14 14 0.4 8.5 19.1	2 0 61 0 977 1127 1070 1303 3090 history1 3 5 35 5 35 history1 0.4 8.1	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21 history2 0.5 8.2						
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 >6 >20	<1 0 56 <1 922 1033 989 1228 2928 <u>current</u> 4 4 4 14 14 0.4 8.5 19.1	2 0 61 0 977 1127 1070 1303 3090 history1 3 5 35 5 35 history1 0.4 8.1 18.8	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21 history2 0.5 8.2 18.9						
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	<1 0 56 <1 922 1033 989 1228 2928 Current 4 4 4 14 0.4 14 0.4 8.5 19.1 Current	2 0 61 0 977 1127 1070 1303 3090 history1 3 5 35 5 35 history1 0.4 8.1 18.8 history1	2 0 67 0 962 1132 1073 1276 3519 history2 4 2 21 history2 0.5 8.2 18.9 history2						



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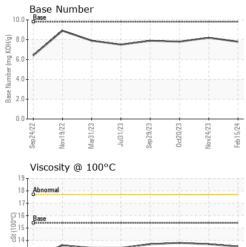
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Nov19/22

Mar31/23

OIL ANALYSIS REPORT



		VISUAL		method	limit/base	current	history1	history2
Jul31/23		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
	UcczU/23 Nov24/23 Feb15/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep	Nová Feb	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	13.5	13.7	13.8
		GRAPHS						
		Ferrous Alloys						
Sep 29/23 +	UGIZU/23 +	100 80 60 40 20	/					
		Non-ferrous Metal	Sep29/23	0ct20/23	Feb15/24			
		Viscosity @ 100°C	Jul31/23	0ct20/23				
	Laboratory	0 15 3 14 13 12 11 12	Sep29/23	EZ/02P0	(PHOX Bul) and (PHOX	Sep24/22	EZIE Sec2923 Formental - 04	EZI-67-00 EZI-67-00N 4 - Flizabeth C
	Sample No. Lab Number Unique Number Test Package s sample report	: GFL0090133 : 06091583 : 10884436	ived : 16 ed : 19 nosed : 19 800-237-1368	6 Feb 2024 9 Feb 2024 9 Feb 2024 - W 9.	ronmental - 044 - Elizabeth Ci 657 Old US 1 Elizabeth City, N US 2790 Contact: TOM BAIR tom.baird@gflenv.co T: (252)562-264 2012) F: (252)264-441			

VISUAI method limit/base current historv1 historv2

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