

OIL ANALYSIS REPORT



Machine Id 229028

Component
Diesel Engine

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

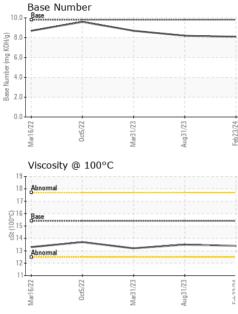
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0095358	GFL0076933	GFL0052986
Sample Date		Client Info		23 Feb 2024	31 Aug 2023	31 Mar 2023
Machine Age	hrs	Client Info		5622	5100	4513
Oil Age	hrs	Client Info		525	587	503
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	11	15	10
Chromium	ppm	ASTM D5185m	>5	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	7	8	6
Lead	ppm	ASTM D5185m	>30	0	<1	0
Copper	ppm	ASTM D5185m	>150	1	2	<1
Tin	ppm	ASTM D5185m	>5	<1	<1	0
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 7	history1 11	history2 19
	ppm ppm					
Boron		ASTM D5185m	0	7	11	19
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	7 0	11 0	19 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	7 0 58	11 0 66	19 0 85
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	7 0 58 <1	11 0 66 <1	19 0 85 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	7 0 58 <1 940 1082 1049	11 0 66 <1 987 1201 1016	19 0 85 <1 904 1132 943
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 0 58 <1 940 1082	11 0 66 <1 987 1201 1016 1256	19 0 85 <1 904 1132 943 1235
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	7 0 58 <1 940 1082 1049	11 0 66 <1 987 1201 1016	19 0 85 <1 904 1132 943
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 0 58 <1 940 1082 1049 1246	11 0 66 <1 987 1201 1016 1256	19 0 85 <1 904 1132 943 1235
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 0 1010 1070 1150 1270 2060	7 0 58 <1 940 1082 1049 1246 3025	11 0 66 <1 987 1201 1016 1256 3618	19 0 85 <1 904 1132 943 1235 3367
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	7 0 58 <1 940 1082 1049 1246 3025 current	11 0 66 <1 987 1201 1016 1256 3618 history1	19 0 85 <1 904 1132 943 1235 3367 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	7 0 58 <1 940 1082 1049 1246 3025 <u>current</u> 5	11 0 66 <1 987 1201 1016 1256 3618 history1 4	19 0 85 <1 904 1132 943 1235 3367 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base	7 0 58 <1 940 1082 1049 1246 3025 current 5 1 6	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2	19 0 85 <1 904 1132 943 1235 3367 history2 4 0
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 60 0 1010 1070 1150 1270 2060 limit/base >20	7 0 58 <1 940 1082 1049 1246 3025 current 5 1 6	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11
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 60 0 1010 1070 1150 1270 2060 2060 200 200 200 200	7 0 58 <1 940 1082 1049 1246 3025 <u>current</u> 5 1 6 <u>current</u>	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9 9	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11 11 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 2060 220 220 220 220 20 20 20 20	7 0 58 <1 940 1082 1049 1246 3025 <i>current</i> 5 1 6 <i>current</i>	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9 9 history1 0.5	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11 history2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20 20 20 20 20 20 20 20 2	7 0 58 <1 940 1082 1049 1246 3025 <i>current</i> 5 1 6 <i>current</i> 0.4 9.9	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9 history1 0.5 10.0	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11 history2 0.3 8.7
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 D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3 >20	7 0 58 <1 940 1082 1049 1246 3025 <u>current</u> 5 1 6 <u>current</u> 0.4 9.9 19.8	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9 <u>history1</u> 0.5 10.0 20.4	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11 history2 0.3 8.7 19.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	7 0 58 <1 940 1082 1049 1246 3025 Current 5 1 6 Current 0.4 9.9 19.8 Current	11 0 66 <1 987 1201 1016 1256 3618 history1 4 2 9 history1 0.5 10.0 20.4 history1	19 0 85 <1 904 1132 943 1235 3367 history2 4 0 11 history2 0.3 8.7 19.2 history2



OIL ANALYSIS REPORT

VISUAL



Mai31/23	Aug31/23 Feb23/24	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NONE NONE NORML NORML NEG NEG	NONE NONE NONE NONE NORML NORML NEG	NONE NONE NONE NONE NORML NORML NEG NEG
		FLUID PROPE			limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.5	13.2
		GRAPHS						
		Ferrous Alloys						
Mar31/23 + -	Aug31/23 -	iron iron chromium nickel iron chromium nickel 6 4 2		\frown	<u> </u>			
		Mar16/22	Mar31/23	Aug31/23 -	Feb23/24			
		Non-ferrous Meta	ls					
		Mar16/22 0ct5/22	Mar31/23	Aug31/23	Feb23/24			
		Viscosity @ 100°C		P.	10.1 (6)HOX (bu) per unit (b)HOX (bu) per unit (b)HOX (bu) per unit (b)HOX (b) (b) (b)HOX (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c			
		Mar16/22	Mar31/23 -	Aug31/23 .	Feb23/24 -	Mar16/22 - 0ct5/22 -	Mar31/23 -	Aug31/23 - Feb23/24 -
* - Denotes tes	t methods that	 WearCheck USA - 50 : GFL0095358 : 06103597 : 10901827 	11 Madiso Recei Teste Diagr vice at 1-8	in Ave., Cary ived : 28 id : 29 nosed : 29 800-237-1369 ope of accred	, NC 27513 Feb 2024 Feb 2024 Feb 2024 - W 9. itation.	⊃ GFL Env /es Davis	ironmental - 9: 1372 Si Co T	30 - Mosinee HC tate Highway 34 MOSINEE, WI US 54455 ontact: Kirk Koss : (715)571-2784 F:

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