

OIL ANALYSIS REPORT

Sample Rating Trend





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

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.

IAL)				Jan2023 Feb2023 Mar2023 Apr2023 Mar2023 Ju2023 Aug2023 Aug2023 Sep2023									
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2							
Sample Number		Client Info	GFL0088243		GFL0088257	7 GFL0088175							
Sample Date		Client Info		11 Sep 2023	28 Aug 2023	3 10 Aug 2023							
Machine Age	hrs	Client Info	0		0	0							
Oil Age	hrs	Client Info	0		0	0							
Oil Changed		Client Info	N/A		N/A N/A								
Sample Status			NORMAL		NORMAL	NORMAL							
CONTAMINATI	ON	method	limit/base	current	history1	history2							
Fuel		WC Method	>5	<1.0	<1.0	<1.0							
Glycol		WC Method		NEG	NEG	NEG							
WEAR METALS	S	method	limit/base	current	history1	history2							
Iron	ppm	ASTM D5185m	>80	4	4	3							
Chromium	ppm	ASTM D5185m	>5	<1	0	0							
Nickel	ppm	ASTM D5185m	>2	0	0	0							
Titanium	ppm	ASTM D5185m		0	0	<1							
Silver	ppm	ASTM D5185m	>3	0	0	0							
Aluminum	ppm	ASTM D5185m	>30	2	1	0							
Lead	ppm	ASTM D5185m	>30	<1	0	0							
Copper	ppm	ASTM D5185m	>150	<1	0	<1							
Tin	ppm	ASTM D5185m	>5	0	0	0							
Vanadium	ppm	ASTM D5185m		0	<1	<1							
	ppin	AGTIVI DJ TOJITI		U	< 1								
Cadmium	ppm	ASTM D5185m		0	0	0							
			limit/base										
Cadmium		ASTM D5185m	limit/base 0	0	0	0							
Cadmium ADDITIVES Boron	ppm	ASTM D5185m method		0 current	0 history1	0 history2							
Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m method ASTM D5185m	0	0 current 0	0 history1 0	0 history2 0							
Cadmium ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60	0 current 0 0	0 history1 0 0	0 history2 0 0							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 current 0 0 63	0 history1 0 0 58	0 history2 0 0 57							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 current 0 0 63 <1	0 history1 0 0 58 0	0 history2 0 0 57 <1							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 current 0 0 63 <1 945	0 history1 0 0 58 0 974	0 history2 0 0 57 <1 934							
Cadmium 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	0 0 60 0 1010 1070	0 current 0 0 63 <1 945 1083	0 history1 0 0 58 0 974 1093	0 history2 0 0 57 <1 934 1047							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 current 0 63 <1 945 1083 1010	0 history1 0 0 58 0 974 1093 981	0 history2 0 0 57 <1 934 1047 957							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 current 0 63 <1 945 1083 1010 1261	0 history1 0 0 58 0 974 1093 981 1254	0 history2 0 0 57 <1 934 1047 957 1189							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 current 0 63 <1 945 1083 1010 1261 3451	0 history1 0 0 58 0 974 1093 981 1254 3487	0 history2 0 0 57 <1 934 1047 957 1189 3428							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 current 0 0 63 <1 945 1083 1010 1261 3451 current	0 history1 0 58 0 974 1093 981 1254 3487 history1	0 history2 0 57 <1 934 1047 957 1189 3428 history2							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method 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 kimit/base >20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3	0 history1 0 0 58 0 974 1093 981 1254 3487 history1 2	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2							
Cadmium 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 method 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 kimit/base >20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4	0 history1 0 0 58 0 974 1093 981 1254 3487 history1 2 4	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3							
Cadmium 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 method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4 1	0 history1 0 0 58 0 974 1093 981 1254 3487 history1 2 4 2	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3 <1							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >20 S 20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4 1 current	0 history1 0 58 0 974 1093 981 1254 3487 history1 2 4 2 4 2 5	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3 <1 *							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >20 Imit/base >3 >20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4 1 current 0	0 history1 0 58 0 974 1093 981 1254 3487 history1 2 4 2 4 2 4 5 2 4 5 5	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3 <1 2 3 <1 bistory2 0.4							
Cadmium 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	0 0 0 1010 1070 1150 1270 2060 Imit/base >20 Imit/base >3 >20	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4 1 current 0 7.7	0 history1 0 58 0 974 1093 981 1254 3487 history1 2 4 2 4 2 history1 0.5 6.6	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3 428 kistory2 0.4 5.7							
Cadmium ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	0 current 0 0 63 <1 945 1083 1010 1261 3451 current 3 4 1 current 0 7.7 21.9	0 history1 0 58 0 974 1093 981 1254 3487 history1 2 4 2 4 2 5 history1 0.5 6.6 17.8	0 history2 0 57 <1 934 1047 957 1189 3428 history2 2 3 <1 kistory2 0.4 5.7 17.5							



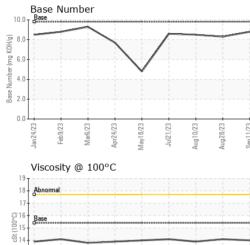
13 Abnormal 12 11

Jan24/23

Feb9/23 Mar6/23

OIL ANALYSIS REPORT

VISUAL



May 18/23	Aug10/23 +	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual ASTM D445	NONE NONE NONE NONE NONE NONE NORML NORML >0.2 Imit/base 15.4	NONE NONE NONE NONE NONE NONE NORML NORML NEG NEG NEG NEG 14.0	NONE NONE NONE NONE NONE NORML NORML NEG NEG NEG NEG 14.1	NONE NONE NONE NONE NONE NORML NORML NEG NEG history2 13.9
Apr24/23		GRAPHS Ferrous Alloys	May18/23	Aug10/23 Aug28/23 Aug28/23 4ug28/23 4ug28/28	-0.0 -0.8 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9		Api24/23 May 18/23	Aug10/23
Certificate L2367 To discuss this s * - Denotes test	methods that a		l : 19 5 ed : 21 5 ician : Wes 00-237-1369 pe of accred		GFL Environmental - 820 - Joplin Hauling 3700 West 7th Street Joplin, MO US 64801 Contact: James Jarrett jjarrett@gflenv.com T: (417)310-2802 SM 106:2012) F:			

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