

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.

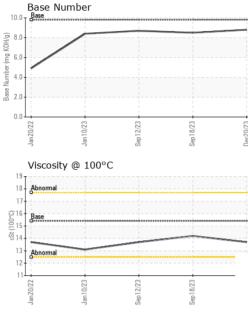
Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0107104	GFL0091551	GFL0091497
Sample Date		Client Info		20 Dec 2023	18 Sep 2023	12 Sep 2023
Machine Age	hrs	Client Info		7874	7329	8865
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Not Changd	N/A	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	>110	10	4	8
Chromium	ppm	ASTM D5185m	>4	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	3	1	2
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	<1	1	<1
Tin	ppm	ASTM D5185m	>4	0	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 2	history2 1
	ppm ppm					
Boron		ASTM D5185m	0	0	2	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0	2 0	1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 58	2 0 58	1 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 58 0	2 0 58 0	1 0 62 <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	0 0 58 0 914	2 0 58 0 945	1 0 62 <1 1061
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	0 0 58 0 914 1053	2 0 58 0 945 1140	1 0 62 <1 1061 1258
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	0 0 58 0 914 1053 1020	2 0 58 0 945 1140 1005	1 0 62 <1 1061 1258 1106
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	0 0 58 0 914 1053 1020 1196	2 0 58 0 945 1140 1005 1237	1 0 62 <1 1061 1258 1106 1379
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	0 0 58 0 914 1053 1020 1196 3396	2 0 58 0 945 1140 1005 1237 3580	1 0 62 <1 1061 1258 1106 1379 4010
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	0 0 58 0 914 1053 1020 1196 3396 current	2 0 58 0 945 1140 1005 1237 3580 history1	1 0 62 <1 1061 1258 1106 1379 4010 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 0 1010 1070 1150 1270 2060 limit/base	0 0 58 0 914 1053 1020 1196 3396 current 3	2 0 58 0 945 1140 1005 1237 3580 history1 4	1 0 62 <1 1061 1258 1106 1379 4010 history2 3
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 0 1010 1070 1150 1270 2060 limit/base	0 0 58 0 914 1053 1020 1196 3396 current 3 0	2 0 58 0 945 1140 1005 1237 3580 history1 4 2	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 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 60 0 1010 1070 1150 1270 2060 limit/base >30	0 0 58 0 914 1053 1020 1196 3396 current 3 0 3	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 2 <1	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20 Imit/base	0 0 58 0 914 1053 1020 1196 3396 current 3 0 3 2 0	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 <1 4	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4 4
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 Imit/base >30 >20 Imit/base	0 0 58 0 914 1053 1020 1196 3396 current 3 0 3 current 0.3	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 <1 4 2 <1 history1 0.1	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4 4 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 imit/base >30 220 imit/base >3 >20	0 0 58 0 914 1053 1020 1196 3396 <i>current</i> 3 0 3 <i>current</i> 0.3 6.4	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 <1 4 2 <1 history1 0.1 5.3	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4 4 history2 0.3 7.2
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 D7844 *ASTM D7624 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	0 0 58 0 914 1053 1020 1196 3396 current 3 0 3 0 3 current 0.3 6.4 18.4 current	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 <1 4 2 <1 history1 0.1 5.3 17.7 history1	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4 4 history2 0.3 7.2 18.5 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 20 Imit/base >3 >20	0 0 58 0 914 1053 1020 1196 3396 <u>current</u> 3 0 3 0 3 <u>current</u> 0.3 6.4 18.4	2 0 58 0 945 1140 1005 1237 3580 history1 4 2 <1 4 2 <1 0.1 5.3 17.7	1 0 62 <1 1061 1258 1106 1379 4010 history2 3 2 4 4 history2 0.3 7.2 18.5



OIL ANALYSIS REPORT



		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
2/23	3/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
Sep 12/23	Sep18/23 Dec20/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.2	NEG	NEG	NEG
		FLUID PROPE		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.7	14.2	13.7
			001	710 T M D + +0	10.4	10.7	17.2	10.7
		GRAPHS						
		Ferrous Alloys						
5		iron						
Sep12/23	Sep 18/23	60 - chromium						
Se	Se	50						
		₫ 30						
		30						
		20						
		10						
			Ulbanopensation					
		Jan 20/22 Jan 10/23	Sep 12/23	Sep18/23	Dec20/23			
		Jan2 Jan1	Sep1	Sep1	Dec2			
		Non-ferrous Metal	s					
		¹²						
		10 - copper lead						
		8 -						
		E 6						
		4						
		2						
		10/23 0/23 0/23	12/23	23	23			
		lan 20/22 Jan 10/23	3ep12/	3ep18/23	ec20/23			
		Viscosity @ 100°C	07	\$				
		¹⁹			10.0	Base Number		
		18 - Abnormal				_		
		17-			6/HO			
		S Base		*****	B 6.0			
		016 Base 15 53 14			0.0 HON Base Number (mg KOH/0)			
					N as			
		Abitoittiai	1	1	⁶⁶ 2.0			
					0.0			
		0/22	1/23	3/23 -		1/23 -	1/23 -	3/23 -
		Jan 20 Jan 10	Sep12	Sep18	Dec20	Jan 20	Sep 12	Sep 18/23
	Laboratory Sample No. Lab Number Unique Numbel Test Package	: WearCheck USA - 5 : GFL0107104 : 06045794 r : 10806402	601 Madia Recieved Diagnose	d : 27 l ed : 28 l	•0.0 •0.0 Dec50/23	der 10/23	Environmental - 465 - Pont 888 Bald Pontiac, US 48 Contact: Ricky Matthe rickymathews@gflenv.c	

Submitted By: Ricky Matthews

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