

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 4658M Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

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

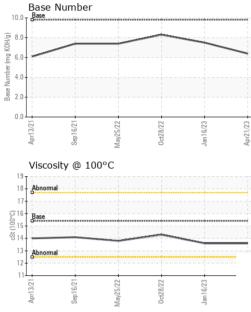
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0081322	GFL0071168	GFL0057038	
Sample Date		Client Info		21 Apr 2023	16 Jan 2023	28 Oct 2022	
Machine Age	mls	Client Info		12816	12206	11627	
Oil Age	mls	Client Info	600		600	600	
Oil Changed		Client Info	Changed		Changed	Changed	
Sample Status				NORMAL	NORMAL	ABNORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>5	<1.0	<1.0	<1.0	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>90	51	41	59	
Chromium	ppm	ASTM D5185m	>20	4	3	6	
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1	
Titanium	ppm	ASTM D5185m		0	<1	<1	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>20	5	5	<u> </u>	
Lead	ppm	ASTM D5185m	>40	0	0	<1	
Copper	ppm	ASTM D5185m	>330	<1	1	2	
Tin	ppm	ASTM D5185m	>15	0	0	<1	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		mathad	limit/base		biotor (1	history2	
		method			riistory i	TIStory Z	
	maa				history1 0		
Boron Barium	ppm ppm	ASTM D5185m	0 0	2	0 0	0 0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0		0 0	0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	2 0	0	0 0	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0	2 0 62	0 0 55	0 0 59	
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 62 1 992	0 0 55 <1	0 0 59 <1 917	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 62 1	0 0 55 <1 866	0 0 59 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 62 1 992 1119 1005	0 0 55 <1 866 971	0 0 59 <1 917 1121	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 62 1 992 1119	0 0 55 <1 866 971 871	0 0 59 <1 917 1121 968	
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	2 0 62 1 992 1119 1005 1296	0 0 55 <1 866 971 871 1075	0 0 59 <1 917 1121 968 1201	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 62 1 992 1119 1005 1296 3086	0 0 55 <1 866 971 871 1075 2959 history1	0 0 59 <1 917 1121 968 1201 3270	
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	0 0 60 1010 1070 1150 1270 2060	2 0 62 1 992 1119 1005 1296 3086 current 17	0 0 55 <1 866 971 871 1075 2959 history1 15	0 0 59 <1 917 1121 968 1201 3270 history2 ▲ 30	
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	0 0 60 1010 1070 1150 1270 2060	2 0 62 1 992 1119 1005 1296 3086 current	0 0 55 <1 866 971 871 1075 2959 history1	0 0 59 <1 917 1121 968 1201 3270 history2	
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	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	2 0 62 1 992 1119 1005 1296 3086 <u>current</u> 17 6	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0	0 0 59 <1 917 1121 968 1201 3270 history2 ▲ 30 6 2	
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	2 0 62 1 992 1119 1005 1296 3086 current 17 6 1 1 current	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 0 history1	0 0 59 <1 917 1121 968 1201 3270 history2 ▲ 30 6 2 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 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	2 0 62 1 992 1119 1005 1296 3086 current 17 6 1 1 7 6 1 1 0.8	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 0 history1 0.5	0 0 59 <1 917 1121 968 1201 3270 history2 3 30 6 2 2 history2 0.6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	2 0 62 1 992 1119 1005 1296 3086 <i>current</i> 17 6 1 17 6 1 1 <i>current</i> 0.8 10.0	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 history1 0.5 9.7	0 0 59 <1 917 1121 968 1201 3270 history2 ▲ 30 6 2 history2 0.6 11	
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 >25 imit/base >6 >20	2 0 62 1 992 1119 1005 1296 3086 <u>current</u> 17 6 1 1 0.8 10.0 19.5	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 0 history1 0.5 9.7 20.2	0 0 59 <1 917 1121 968 1201 3270 history2 30 6 2 2 history2 0.6 11 11 22.5	
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	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	2 0 62 1 992 1119 1005 1296 3086 <i>current</i> 17 6 1 17 6 1 17 6 1 0.8 10.0 19.5 <i>current</i>	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 0 history1 0.5 9.7 20.2 history1	0 0 59 <1 917 1121 968 1201 3270 history2 ▲ 30 6 2 history2 0.6 11 22.5 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 >25 imit/base >6 >20	2 0 62 1 992 1119 1005 1296 3086 <u>current</u> 17 6 1 1 0.8 10.0 19.5	0 0 55 <1 866 971 871 1075 2959 history1 15 4 0 0 history1 0.5 9.7 20.2	0 0 59 <1 917 1121 968 1201 3270 history2 30 6 2 2 history2 0.6 11 22.5	



OIL ANALYSIS REPORT

VISUAL



	Laboratory Sample No. Lab Number	: WearC : GFL008 : <mark>058331</mark> : 104466	31322	Receive Diagnos	01 Madison Ave., Cary, NC 27513 Received : 28 Apr 2023 Diagnosed : 02 May 2023 Diagnostician : Sean Felton ce at 1-800-237-1369. 7025 scope of accreditation.			GFL Environmental - 465 - Pontiad 888 Baldwir Pontiac, M US 48340 Contact: Ricky Matthews rickymathews@gflenv.com T: (586)825-9514				
		12 11 12 11 12 12 12	Sep16/21 +	May25/22	Jan 16/23	Apr21/23	2.0 4013/21	Sep16/21	May25/22	0ct28/22	Jan 16/23	Apr21/23
		(16 Base (1) 15 14 13				Base Number (mg KOH/g)	6.0					/
		VISCOS	ity @ 100 ⁴	, C			Base No	umber		~		
		April3/21	Sep16/21	0 May25/22	Jan 16/23	Apr21/23						
		4 2										
		6 -	copper lead									
		Non-fe	errous Met	sle: 0ct28/22	Jan 16/22	Apr21/23						
				5 5 5								
May25/22 0ct28/22	Jan 16/23	40 E 30	m nickel		\sim							
5/22 +	5/23		IS Alloys	/								
		Visc @ GRA		cSt	ASTM D445	15.4	13.6		13.6		14.3	
		_	D PROP		method	limit/bas		ent	histo	ry1	histor	ry2
		Emulsifi Free Wa	ed Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG		NEG NEG		NEG NEG	
May25/22 0ct28/22	Jan 16/23 Apr21/23	Odor		scalar	*Visual	NORML	NORM		NORM		NORM	
/22 /22	/23 /23/23 /23/23/23/23/23/23/23/23	_ Sand/D Appeara		scalar scalar	*Visual *Visual	NONE NORML	NONE		NONE		NONE NORM	
	Debris		scalar	*Visual	NONE	NONE		NONE		NONE		
	Precipit Silt	ale	scalar scalar	*Visual *Visual	NONE NONE	NONE		NONE		NONE NONE		
	Yellow I		scalar	*Visual	NONE	NONE		NONE		NONE		

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Submitted By: Ricky Matthews

Page 2 of 2