

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 810038

Fluid

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.

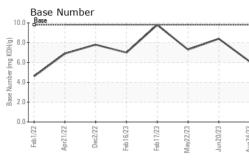
Fluid Condition

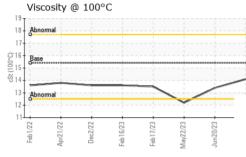
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0091481	GFL0082772	GFL0081297
Sample Date		Client Info		24 Aug 2023	20 Jun 2023	22 May 2023
Machine Age	hrs	Client Info		1091	0	58963
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.3
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	21	12	26
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m		1	<1	<1
Aluminum	ppm	ASTM D5185m		<1	0	<1
Lead	ppm	ASTM D5185m	>40	0	1	<1
Copper	ppm	ASTM D5185m		10	2	3
Tin	ppm	ASTM D5185m	>15	1	1	3
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method				history2
ADDITIVES Boron	maa					history2 137
Boron	ppm pom	ASTM D5185m	limit/base 0 0	12	history1 9 4	137
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	12 0	9 4	137 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	12 0 58	9 4 57	137 0 15
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	12 0 58 1	9 4 57 2	137 0 15 6
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	12 0 58 1 914	9 4 57 2 965	137 0 15 6 215
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	12 0 58 1 914 1096	9 4 57 2 965 1232	137 0 15 6 215 2022
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	12 0 58 1 914 1096 1035	9 4 57 2 965 1232 1061	137 0 15 6 215 2022 998
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	12 0 58 1 914 1096	9 4 57 2 965 1232	137 0 15 6 215 2022
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	12 0 58 1 914 1096 1035 1165	9 4 57 2 965 1232 1061 1315	137 0 15 6 215 2022 998 1294
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	12 0 58 1 914 1096 1035 1165 3384	9 4 57 2 965 1232 1061 1315 3701	137 0 15 6 215 2022 998 1294 3869
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	12 0 58 1 914 1096 1035 1165 3384 current 7	9 4 57 2 965 1232 1061 1315 3701 history1 12	137 0 15 6 215 2022 998 1294 3869 history2 66
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	12 0 58 1 914 1096 1035 1165 3384 current	9 4 57 2 965 1232 1061 1315 3701 history1	137 0 15 6 215 2022 998 1294 3869 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	12 0 58 1 914 1096 1035 1165 3384 current 7 6	9 4 57 2 965 1232 1061 1315 3701 history1 12 4	137 0 15 6 215 2022 998 1294 3869 history2 66 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 0 1010 1070 1150 1270 2060 2060 225 >25	12 0 58 1 914 1096 1035 1165 3384 current 7 6 0	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 3 history1	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 13 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	12 0 58 1 914 1096 1035 1165 3384 <i>current</i> 7 6 0 <i>current</i> 0.8	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 history1 0.3	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 13 history2 0.3
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 2060 225 >25 >20 <u>limit/base</u> >20	12 0 58 1 914 1096 1035 1165 3384 current 7 6 0	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 3 history1	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	12 0 58 1 914 1096 1035 1165 3384 <i>current</i> 7 6 0 <i>current</i> 0.8 7.4	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 history1 0.3 6.4	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 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 D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 220 220 220 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	12 0 58 1 914 1096 1035 1165 3384 <i>current</i> 7 6 0 <i>current</i> 0.8 7.4 27.5 <i>current</i>	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 history1 0.3 6.4 19.6 history1	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 history2 0.3 7.2 20.5 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 2060 225 20 225 20 imit/base >20 20 20	12 0 58 1 914 1096 1035 1165 3384 <i>current</i> 7 6 0 <i>current</i> 0.8 7.4 27.5	9 4 57 2 965 1232 1061 1315 3701 history1 12 4 3 <u>history1</u> 0.3 6.4 19.6	137 0 15 6 215 2022 998 1294 3869 history2 66 11 13 history2 0.3 7.2 20.5



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	history1	history2				
\sim	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE				
\sim	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				
May22/23 Jun20/23 Aug24/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML				
Ma Jun Aun	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		method	limit/base	current	history1	history2				
	Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.4	12.2				
	GRAPHS										
	Ferrous Alloys										
23	iron	•									
May22/23 Jun20/23	50 - nickel										
	⁴⁰ 30−		$\mathbf{\lambda}$								
	20										
		/	\sim								
	10-										
	122 0	3/23 //23	2/23	4/23							
	Feb1/22 Apr21/22 Dec2/22	Feb 16/23	May22/23 Jun20/23	Aug24/23							
	Non-ferrous Metals										
	30 copper	٨									
	25 - sessesses lead	$-\Lambda$									
	20-										
	<u>۾</u> 15-										
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	Feb1/22 Apr21/22 Dec2/22	Feb 16/23 Feb 17/23	May22/23 Jun20/23	Aug24/23							
			Ma	Au							
	Viscosity @ 100°C	, 		10.0	Base Number						
	18 - Abnormal			10.0		\wedge					
	17						\bigvee				
	Base			HOY BE 6.0		~					
	(2)16 Base [1] 15 30 14			je u.u							
	⁸³ 14			.6.0)-						
	13 - Abnormal			2.0)						
	12-										
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	Feb 1/22 Apr2 1/22 Dec2/22	Feb 16/23 Feb 17/23	May22/23 Jun20/23	Aug24/23	Feb1/22 Apr21/22 Dec2/22	Feb 16/23 Feb 17/23	May22/23 Jun20/23 Aug24/23				
			_								
Laboratory Sample No.	: WearCheck USA - 5 : GFL0091481	501 Madia Received		ry, NC 27513 Sep 2023	GFL E	nvironmenta	888 Baldwin				
Lab Number		Received		Sep 2023 Sep 2023			Pontiac, MI				
Unique Number		Diagnost		n Felton			US 48340				



Unique Number : 10632309 Diagnostician : Sean Felton Test Package : FLEET Certificate L2367 rickymathews@gflenv.com To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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