

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 811042-101311

Component Diesel Engine

Fluid

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.

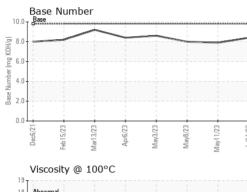
Fluid Condition

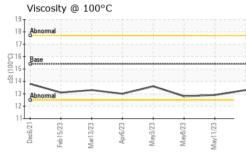
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0082668	GFL0082643	GFL0074747
Sample Date		Client Info		11 Jul 2023	11 May 2023	08 May 2023
Machine Age	hrs	Client Info		3370	2918	2878
Oil Age	hrs	Client Info		314	147	207
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method	20	NEG	NEG	NEG
-				NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	33	94	9 3
Chromium	ppm	ASTM D5185m	>20	2	2	1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	11	26	23
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	<1	2	1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
			11 1. 4			
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 12	history1 15	history2 20
	ppm ppm					
Boron		ASTM D5185m	0	12	15	20
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	12 0	15 0	20 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	12 0 70	15 0 71	20 0 74
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	12 0 70 1	15 0 71 2	20 0 74 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	12 0 70 1 1036	15 0 71 2 981	20 0 74 <1 1012
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	12 0 70 1 1036 1170	15 0 71 2 981 1124	20 0 74 <1 1012 1181
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 70 1 1036 1170 1114	15 0 71 2 981 1124 1002	20 0 74 <1 1012 1181 1029
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 70 1 1036 1170 1114 1386	15 0 71 2 981 1124 1002 1281	20 0 74 <1 1012 1181 1029 1297
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	0 0 60 0 1010 1070 1150 1270 2060	12 0 70 1 1036 1170 1114 1386 3835	15 0 71 2 981 1124 1002 1281 3514	20 0 74 <1 1012 1181 1029 1297 3425
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 0 1010 1070 1150 1270 2060	12 0 70 1 1036 1170 1114 1386 3835 current	15 0 71 2 981 1124 1002 1281 3514 history1	20 0 74 <1 1012 1181 1029 1297 3425 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	0 0 60 1010 1070 1150 1270 2060 limit/base >25	12 0 70 1 1036 1170 1114 1386 3835 current 6	15 0 71 2 981 1124 1002 1281 3514 history1 8	20 0 74 <1 1012 1181 1029 1297 3425 history2 8
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	12 0 70 1 1036 1170 1114 1386 3835 current 6 5	15 0 71 2 981 1124 1002 1281 3514 history1 8 2	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1
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 0 1010 1070 1150 1270 2060 limit/base >25	12 0 70 1 1036 1170 1114 1386 3835 current 6 5 20	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 2 56	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 1 55
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 20	12 0 70 1 1036 1170 1114 1386 3835 current 6 5 20 current	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 56 history1	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 55 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 20	12 0 70 1 1036 1170 1114 1386 3835 <u>current</u> 6 5 20 <u>current</u> 0.7	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 56 history1 0.5	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 55 history2 0.4
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	12 0 70 1 1 1036 1170 1114 1386 3835 <i>current</i> 6 5 20 <i>current</i> 0.7 8.2	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 56 history1 0.5 9.3	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 55 history2 0.4 9.3
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 >25 imit/base >3 >20	12 0 70 1 1036 1170 1114 1386 3835 <i>current</i> 6 5 20 <i>current</i> 0.7 8.2 20.1 <i>current</i>	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 56 history1 0.5 9.3 20.6	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 55 history2 0.4 9.3 19.3
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	12 0 70 1 1036 1170 1114 1386 3835 current 6 5 20 current 0.7 8.2 20.1	15 0 71 2 981 1124 1002 1281 3514 history1 8 2 56 history1 0.5 9.3 20.6 history1	20 0 74 <1 1012 1181 1029 1297 3425 history2 8 1 55 history2 0.4 9.3 19.3 history2



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		
3/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
May8/23 May11/23 Jul11/23	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	RTIES	method	limit/base	current	history1	history2		
	Visc @ 100°C	cSt	ASTM D445	15.4	13.3	12.9	12.8		
	GRAPHS								
	Ferrous Alloys								
23	iron								
May8/23 May11/23	80 - nickel								
2	60 -								
			/ = = =	\mathbf{A}					
	40-								
	20	1							
	20								
		~ ~ ~							
	Dec6/21 Feb15/23 Mar13/23	Apr6/23 May3/23	May8/23 Vlay11/23	Jul11/23					
	—		Mar	٦٢					
	Non-ferrous Meta	ls							
	10 copper								
	8 - Bessessesses lead								
	E .								
	4								
	2								
	0	\rightarrow							
	Dec6/21 Feb15/23 Mar13/23	Apr6/23 May3/23	May8/23 Aay11/23	Jul11/23					
	De Febl	Ap	Mar May1	Jul					
	Viscosity @ 100°C	2			Base Number	e Number			
	19			10.0	Base				
	18 - Abnormal		· · · · · · · · · · · · · · · · · · ·						
	17-			(B/HC					
	0-16 Base 15- 3 14-			0.0 Base Number (mg KOH/g)					
	≘15- 炭			nber (r					
		\sim		4.0	+				
	13 Abnormal			2.0	-				
	12-								
	11	23	23	0.0		23+	23 +		
	Dec6/21 Feb15/23 Mar13/23	Apr6/23 May3/23	May8/23 May11/23	Jul11/23	Dec6/21 Feb15/23 Mar13/23	Apr6/23 May3/23	May8/23 May11/23 Jul11/23		
1 - k - ·			~	NO 077 (7	-				
Laboratory Sample No	: WearCheck USA -	501 Madis Received		ry, NC 27513 Jul 2023	GFL Envi	ronmental - 814 - L			
Sample No. Lab Number		Diagnose		Jul 2023 Jul 2023			05 Hwy 161 N. Llttle Rock, AR		
Unique Number		Diagnost		s Davis			US 72117		
Test Package	: FLEET					Contact:	Brad Manager		
	contact Customer Serv	vice at 1-8	00-237-1369).			5		

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)

Certificate L2367