

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 712037 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

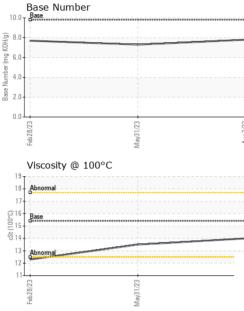
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086665	GFL0081386	GFL0073869
Sample Date		Client Info		07 Aug 2023	31 May 2023	28 Feb 2023
Machine Age	hrs	Client Info		5759	5183	4424
Oil Age	hrs	Client Info		5183	4424	3033
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	1.7
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	9	17	19
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver		ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m		0 <1	2	3
Lead	ppm	ASTM D5185m	>20	<1	<1	0
	ppm			u <1		
Copper	ppm	ASTM D5185m			<1	<1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	Method ASTM D5185m	0	2	3	2
Boron Barium	ppm ppm		0		3 0	2 0
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2	3	2 0 62
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	2 0	3 0	2 0 62 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 55	3 0 59 <1 981	2 0 62 <1 901
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 55 <1	3 0 59 <1	2 0 62 <1 901 1096
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 55 <1 932 1003 999	3 0 59 <1 981 1071 1030	2 0 62 <1 901 1096 1007
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	2 0 55 <1 932 1003	3 0 59 <1 981 1071	2 0 62 <1 901 1096
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	2 0 55 <1 932 1003 999	3 0 59 <1 981 1071 1030	2 0 62 <1 901 1096 1007
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 55 <1 932 1003 999 1237	3 0 59 <1 981 1071 1030 1303	2 0 62 <1 901 1096 1007 1236
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 1010 1070 1150 1270 2060 limit/base	2 0 55 <1 932 1003 999 1237 3473	3 0 59 <1 981 1071 1030 1303 3493	2 0 62 <1 901 1096 1007 1236 3179
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 limit/base	2 0 55 <1 932 1003 999 1237 3473 current	3 0 59 <1 981 1071 1030 1303 3493 history1	2 0 62 <1 901 1096 1007 1236 3179 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	2 0 55 <1 932 1003 999 1237 3473 current 3	3 0 59 <1 981 1071 1030 1303 3493 history1 3	2 0 62 <1 901 1096 1007 1236 3179 history2 2
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 >25	2 0 55 <1 932 1003 999 1237 3473 2473 current 3 3 3	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4
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 >25	2 0 55 <1 932 1003 999 1237 3473 <u>current</u> 3 3 2	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >6	2 0 55 <1 932 1003 999 1237 3473 <i>current</i> 3 3 2 2 <i>current</i>	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1 history1	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4 3 3
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 limit/base >25 >20 limit/base >6	2 0 55 <1 932 1003 999 1237 3473 <i>current</i> 3 3 2 2 <i>current</i> 0.4	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1 4 history1 0.6	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4 3 3 history2 0.7
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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 .20 limit/base >6 >20	2 0 55 <1 932 1003 999 1237 3473 <i>current</i> 3 3 2 2 <i>current</i> 0.4 7.2	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1 4 history1 0.6 9.2	2 0 62 <1 901 1096 1007 1236 3179 history2 2 2 4 3 3 history2 0.7 9.6
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 imit/base >25 imit/base >20 imit/base >6 >20 >30	2 0 55 <1 932 1003 999 1237 3473 <i>current</i> 3 3 2 <i>current</i> 0.4 7.2 18.6	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1 5 <1 history1 0.6 9.2 21.3 history1	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4 3 history2 0.7 9.6 20.7 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >6 >20	2 0 55 <1 932 1003 999 1237 3473 <i>current</i> 3 3 2 <i>current</i> 0.4 7.2 18.6	3 0 59 <1 981 1071 1030 1303 3493 history1 3 5 <1 3 5 <1 0.6 9.2 21.3	2 0 62 <1 901 1096 1007 1236 3179 history2 2 4 3 3 history2 0.7 9.6 20.7



OIL ANALYSIS REPORT

VISUAL



	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
1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May31/23	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	14.0	13.5	12.3
	GRAPHS						
	Ferrous Alloys						
23	20 iron						
May31/23	15 - nickel		<hr/>				
2							
	튭 10-						
	5-						
		22					
	-eb28/2	May31/23		Aug7/23			
		-		4			
	Non-ferrous Metal	IS					
	copper						
	8 - tin						
	6 -						
	E d						
	4						
	2						
	~						
			and the state of t	20			
	Feb 28/23	May31/23		Aug7/23			
				A			
	Viscosity @ 100°C				Base Number		
	18 - Abnormal			10.0	Base		
				- 8.0			
				3			
	17			KOH			
				HON Bu 6.0			
				HOY DE 6.0 ·			
	(2) ¹⁶ 0015 15 14 12			MOH generation of the second s			
	0-16 0-15 73 14			ber (n			
	Co ¹⁶ Base 115 ³³ 14 Abnormal			0.0			
	Contraction 16 Base 000000000000000000000000000000000000	1/23		0.0	8/23	1/23	
	Co ¹⁶ Base 115 ³³ 14 Abnormal	May31/23		2.0	Fab28/23		
l shoreter;	C-0115 33 14 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 12			•0.0			5 - Minhimon Fr
Laboratory Sample No.	: WearCheck USA - 5	501 Madis		e 2.0 e 2.0 e 2.0 e 2.0 e 2.0 e 0.0 e			
Laboratory Sample No. Lab Numbe	: WearCheck USA - 5 : GFL0086665		: 09 /	•0.0		ironmental - 41	5 - Michigan E a 6200 Elmride rling Heights, I
Sample No. Lab Numbe Unique Numb	: WearCheck USA - 5 : GFL0086665 er : 05919636 ber : 10591550	501 Madis Received	i : 09 / ed : 09 /	ry, NC 27513 Aug 2023		ironmental - 41 Ste	6200 Elmrid rling Heights, US 483
Sample No. Lab Numbe Unique Numb	: WearCheck USA - 5 : GFL0086665 er : 05919636 ber : 10591550	501 Madis Received Diagnose Diagnosti	ed : 09 / ed : 09 / ician : We	ry, NC 27513 Aug 2023 Aug 2023 s Davis		ironmental - 41 Ste Conta	6200 Elmrid rling Heights,



Statements of conformity to spe ifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: GFL415 [WUSCAR] 05919636 (Generated: 08/09/2023 17:41:48) Rev: 1