

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **212002** Component **Diesel Engine**

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

Recommendation

Resample at the next service interval to monitor.

Fluid

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

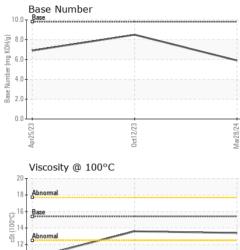
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108783	GFL0089139	GFL0069865
Sample Date		Client Info		28 Mar 2024	12 Oct 2023	25 Apr 2023
Machine Age	hrs	Client Info		8547	7235	5709
Oil Age	hrs	Client Info		7235	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	1 0.9
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	>80	32	15	22
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	9	3	2
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	0	<1	0
Tin	ppm		>5	0	0	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	current 1	history1 1	history2 4
	ppm ppm	ASTM D5185m			· · · · ·	
Boron		ASTM D5185m	0	1	1	4
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	1 0 55 <1	1 <1 57 0	4 0 51 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 55 <1 902	1 <1 57 0 861	4 0 51 <1 854
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 55 <1 902 1048	1 <1 57 0 861 1005	4 0 51 <1 854 911
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	1 0 55 <1 902 1048 966	1 <1 57 0 861 1005 978	4 0 51 <1 854 911 937
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	1 0 55 <1 902 1048 966 1219	1 <1 57 0 861 1005 978 1186	4 0 51 <1 854 911 937 1152
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	1 0 55 <1 902 1048 966 1219 3195	1 <1 57 0 861 1005 978 1186 2798	4 0 51 <1 854 911 937 1152 2610
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 00 00 1010 1070 1150 1270 2060	1 0 55 <1 902 1048 966 1219 3195 current	1 <1 57 0 861 1005 978 1186 2798 history1	4 0 51 <1 854 911 937 1152 2610 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 00 00 1010 1070 1150 1270 2060	1 0 555 <1 902 1048 966 1219 3195 current 5	1 <1 57 0 861 1005 978 1186 2798 history1 3	4 0 51 <1 854 911 937 1152 2610 history2 5
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 1010 1070 1150 1270 2060 kimit/base	1 0 555 <1 902 1048 966 1219 3195 current 5 6	1 <1 57 0 861 1005 978 1186 2798 history1 3 1	4 0 51 <1 854 911 937 1152 2610 history2 5 3
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 Jimit/base >20	1 0 55 <1 902 1048 966 1219 3195 current 5 6 8	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 1 3	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1
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 Imit/base >20 S	1 0 55 <1 902 1048 966 1219 3195 current 5 6 8 8	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 1 3 <i>history1</i>	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20	1 0 55 <1 902 1048 966 1219 3195 <u>current</u> 5 6 8 8 <u>current</u> 0.7	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 history1 0.6	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 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 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	1 0 55 <1 902 1048 966 1219 3195 <i>current</i> 5 6 8 <i>current</i> 0.7 11.8	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 history1 0.6 7.8	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 history2 0.7 9.1
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 2060 2060 220 20 20 20	1 0 55 <1 902 1048 966 1219 3195 <u>current</u> 5 6 8 8 <u>current</u> 0.7	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 history1 0.6	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	1 0 55 <1 902 1048 966 1219 3195 <i>current</i> 5 6 8 <i>current</i> 0.7 11.8	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 history1 0.6 7.8	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 history2 0.7 9.1
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 >20 imit/base >3 >20 >3 >30	1 0 55 <1 902 1048 966 1219 3195 <u>current</u> 5 6 8 <u>current</u> 0.7 11.8 22.7	1 <1 57 0 861 1005 978 1186 2798 history1 3 1 3 history1 0.6 7.8 19.2	4 0 51 <1 854 911 937 1152 2610 history2 5 3 1 history2 0.7 9.1 19.1



10 8. Apr25/23

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
0ct12/23 Mar28/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
0ct1 Mar2	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	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.6	▲ 10.4
· · · · · · · · · · · · · · · · · · ·	GRAPHS						
	Ferrous Alloys						
	35						
0ct12/23 	30 - chromium		/				
00 V 10	25		/				
	20	/	/				
	15-	\sim					
	10-						
	5-						
	Apr25/23	0ct12/23		Mar28/24			
	Apri	0ct1		Mar2			
	Non-ferrous Meta	ls					
	10 copper						
	8						
	tin the second s						
	6						
	2						
	0						
	Apr25/23	0ct12/23.		lar28/24			
				Mará			
	Viscosity @ 100°	C		10.0	Base Number		
	18 - Abnormal						
	17						
	17- 16 - P			(B) 8.0			
	16 Base			0.0 KOH/d)			
	16 Base			0.0 0.0 KOH/d) per			
	16 Base 0 15 14 3 13 Abnormal	_		(b) HOX Bu Jag mn 4.0			
	16 Base	_		6.0 HOX Bull How KOHV			
	16 Base 3-15 0014 14 3/3 12 Abnormal			(0,0.0 (0,10) Bull Jag Will Koll Bull Jag Bull J			
	16 G 15 G 15 4 4 4 4 4 5 6 14 4 4 4 5 6 15 4 4 4 5 6 15 6 15 6 15 6 15 6 15 15 15 15 15 15 15 15 15 15	3		2.0			
	16 G 15 G 15 4 4 4 4 4 5 6 14 4 4 4 5 6 15 4 4 4 5 6 15 6 15 6 15 6 15 6 15 15 15 15 15 15 15 15 15 15	ct12/23		2.0		ct12/23	
	16 Base Co00114 13 12 11 10 9 E2/SZ1dV	0ct12/23		0.0 Horse Base Number (mg K0H(Apr25/23	0et12/23	
Laboratory Sample No	Base 500014 13 12 14 13 12 10 500014 13 12 10 500014 12 12 10 500014 12 12 12 12 12 12 12 12 12 12)1 Madiso		HC 27513	Apr25/23		15 - Michigan Ea
Laboratory Sample No. Lab Number	Base 500014 13 12 14 10 12 10 10 10 10 10 10 10 10 10 10		ived : 29	0.0 Horse Base Number (mg K0H(Apr25/23	vironmental - 4	1 5 - Michigan Ea 6200 Elmridg
Sample No. Lab Number Unique Number	: WearCheck USA - 50 : GFL0108783 : 06132986 : 10952451)1 Madiso Rece	ived : 29 ed : 31	HCX 27513 Mar 2024	GFL Env	vironmental - 4	1 5 - Michigan Ea 6200 Elmridg erling Heights, N US 4831
Sample No. Lab Number	: WearCheck USA - 50 : GFL0108783 : 06132986 : 10952451 : FLEET	01 Madiso Recei Teste Diagr	ived : 29 ed : 31 nosed : 31	NC 27513 Mar 2024 Mar 2024 - W	GFL Env	r ironmental - 4 Ste Cont	1 5 - Michigan Ea 6200 Elmridg erling Heights, N

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Submitted By: Frank Wolak

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