

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine PETRO CANADA DURON SHP 15W40 (36 QTS)

SAMPLE INFORMATION method

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.

		method	iiiiii/base	current	Thistory I	nistoryz
Sample Number		Client Info		GFL0124777	GFL0115124	GFL0059203
Sample Date		Client Info		28 May 2024	10 Mar 2024	29 Sep 2022
Machine Age	hrs	Client Info		12835	10069	7500
Oil Age	hrs	Client Info		600	0	7500
Oil Changed		Client Info		Changed	Not Changd	N/A
Sample Status				NORMAL	NORMAL	NORMAL
-						
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	c	method	limit/base	current	history1	history2
	0					
Iron	ppm		>75	7	8	8
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	2	5
Lead	ppm	ASTM D5185m	>25	<1	0	0
Copper	ppm	ASTM D5185m	>100	0	6	1
Tin	ppm	ASTM D5185m	>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
Boron	ppm		limit/base	current 2	history1 <1	history2 2
	ppm ppm					
Boron Barium	ppm	ASTM D5185m	0	2 <1	<1	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0	2 <1 52	<1 0 59	2 <1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 <1 52 <1	<1 0 59 0	2 <1 62 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 <1 52 <1 854	<1 0 59 0 884	2 <1 62 0 915
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 <1 52 <1 854 951	<1 0 59 0 884 1005	2 <1 62 0 915 1089
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 <1 52 <1 854 951 999	<1 0 59 0 884 1005 959	2 <1 62 0 915 1089 1033
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	2 <1 52 <1 854 951 999 1146	<1 0 59 0 884 1005 959 1153	2 <1 62 0 915 1089 1033 1251
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	2 <1 52 <1 854 951 999 1146 3338	<1 0 59 0 884 1005 959 1153 2863	2 <1 62 0 915 1089 1033 1251 3310
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 <1 52 <1 854 951 999 1146 3338 current	<1 0 59 0 884 1005 959 1153 2863 history1	2 <1 62 0 915 1089 1033 1251 3310 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	2 <1 52 <1 854 951 999 1146 3338 current 4	<1 0 59 0 884 1005 959 1153 2863 history1 4	2 <1 62 0 915 1089 1033 1251 3310 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 limit/base	2 <1 52 <1 854 951 999 1146 3338 current 4 5	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 <1 52 <1 854 951 999 1146 3338 current 4	<1 0 59 0 884 1005 959 1153 2863 history1 4	2 <1 62 0 915 1089 1033 1251 3310 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1 2 2 history1	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2 current 0.2	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1 2 2 history1 0.5	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 history2 0.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2 current 0.2 7.3	<1 0 59 0 884 1005 959 1153 2863 history1 4 <11 2 history1 0.5 7.7	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 6 12 history2 0.8 10.0
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2 current 0.2	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1 2 2 history1 0.5	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 history2 0.8
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2 current 0.2 7.3	<1 0 59 0 884 1005 959 1153 2863 history1 4 <11 2 history1 0.5 7.7	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 6 12 history2 0.8 10.0
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 imit/base >6 >20 20	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 2 current 0.2 7.3 18.8 current	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1 2 history1 0.5 7.7 19.2	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 6 12 history2 0.8 10.0 21.6
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 TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	2 <1 52 <1 854 951 999 1146 3338 current 4 5 2 current 0.2 7.3 18.8	<1 0 59 0 884 1005 959 1153 2863 history1 4 <1 2 history1 0.5 7.7 19.2 history1	2 <1 62 0 915 1089 1033 1251 3310 history2 2 6 12 2 6 12 history2 0.8 10.0 21.6 history2



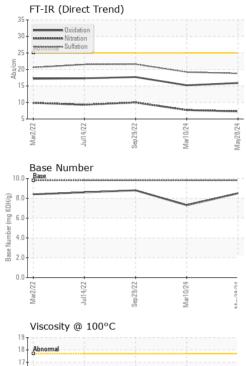
Base

13 Abnormal 12 11 Mar2/22

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Jul14/22 -

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
and the state of t	No. 10 of the Operation of Contraction of Contracti	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Association and the second second		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	**************************************	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Sep29/22	Mar10/24 May28/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep	Mar	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	14.0	13.7	13.9
		GRAPHS						
		Ferrous Alloys						
22	24	16 14						
Sep 29/22	Mar10/24	12						
õ	M M	10						
		E 8						
	1	6						
		4						
		2						
			5		4			
	1	Mar2/22 Jul14/22	Sep29/22	Mar10/24	May28/24			
				W	Ma			
22	24 -	Non-ferrous Meta	als					
Sep 29/22	Mar10/24	copper						
\$	2 2	8 - encourse lead						
		6 -						
		ш dd						
		4						
		2						
					\mathbf{N}			
			12	47				
		Mar2/22 Jul14/22	Sep29/22	Mar10/24	May28/24			
		ے Viscosity @ 100°		M	Ma			
		¹⁹ T			10	Base Number		
		18 - Abnormal			10.			
		17			₍₆ 8.	D		
		G ¹⁶			KOH			
		C2 ¹⁶ Base 00115 53			Base Number (mg KOH/g)			
		53 14				0-		
				1	ase			
		13 Abnormal			- 00	0		
		12		I I I I I	<u> </u>	0-		
		13 Abnormal	2		0.		2	
		13 Abnormal	29/22	r10/24	0.		29/22	r10/24
		13 Abnormal	Sep29/22	Mar10/24 +			Sep29/22	Mar10/24
		13 Abnormal	Sep29/22	Mar10/24			Sep29/22	Mar1 0,24 +
d	Laboratory	: WearCheck USA - 50	01 Madiso	n Ave., Cary	, NC 27513	Mar2/22	vironmental - 4	05 - Arbor Hi
NAB	Sample No.	: WearCheck USA - 50 : GFL0124777	01 Madiso Recei	n Ave., Cary ved : 06	, NC 27513 5 Jun 2024	Mar2/22	vironmental - 4	1 05 - Arbor Hi 7811 Chubb F
	Sample No. Lab Number	: WearCheck USA - 50 : GFL0124777 : 06201202	01 Madiso Recei Teste	n Ave., Cary ved : 06 d : 07	, NC 27513 5 Jun 2024 7 Jun 2024	GFL En	vironmental - 4	1 05 - Arbor Hi 7811 Chubb F ORTHVILLE,
	Sample No. Lab Number Unique Number	: WearCheck USA - 50 : GFL0124777 : 06201202 : 11063325	01 Madiso Recei	n Ave., Cary ved : 06 d : 07	, NC 27513 5 Jun 2024	GFL En	vironmental - 4	1 05 - Arbor Hi 7811 Chubb F DRTHVILLE, US 481
entificate L2367 o discuss th	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 50 : GFL0124777 : 06201202 : 11063325	01 Madiso Recei Teste Diagr	n Ave., Cary ved : 06 d : 07 nosed : 07	, NC 27513 5 Jun 2024 7 Jun 2024 Jun 2024 - W	GFL En	vironmental - 4 No Contact: A	1 05 - Arbor Hi 7811 Chubb F ORTHVILLE,

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