

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Engine) $% \label{eq:commutative}$

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

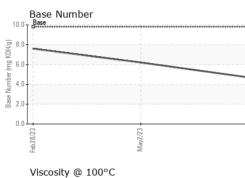
Fluid Condition

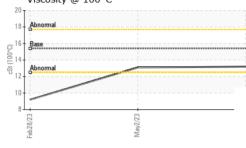
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current		history2
Sample Number		Client Info		GFL0085481	GFL0075372	GFL0075353
Sample Date		Client Info		10 Oct 2023	02 May 2023	28 Feb 2023
Machine Age	mls	Client Info		37103	18835	11198
Oil Age	mls	Client Info		37103	18835	0
Oil Changed		Client Info		N/A	Changed	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.7
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	12	7	30
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	<1	1	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	<1	2	<1
Aluminum	ppm	ASTM D5185m	>20	2	0	13
Lead	ppm	ASTM D5185m	>40	0	1	3
Copper	ppm	ASTM D5185m	>330	12	80	176
Tin	ppm	ASTM D5185m	>15	<1	1	3
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 0	history1 7	history2 189
	ppm ppm		0			
Boron		ASTM D5185m	0	0	7	189
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	7 0	189 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 43	7 0 47	189 0 123
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 43 <1	7 0 47 <1	189 0 123 5
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 43 <1 39	7 0 47 <1 55	189 0 123 5 702
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 1070	0 0 43 <1 39 2317	7 0 47 <1 55 2431	189 0 123 5 702 1486
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	0 0 43 <1 39 2317 1001	7 0 47 <1 55 2431 1031	189 0 123 5 702 1486 648
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	0 0 43 <1 39 2317 1001 1154	7 0 47 <1 55 2431 1031 1232	189 0 123 5 702 1486 648 851 2393 history2
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	0 0 43 <1 39 2317 1001 1154 2788	7 0 47 <1 55 2431 1031 1232 3520	189 0 123 5 702 1486 648 851 2393
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	0 0 43 <1 39 2317 1001 1154 2788 current	7 0 47 <1 55 2431 1031 1232 3520 history1	189 0 123 5 702 1486 648 851 2393 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	0 0 43 <1 39 2317 1001 1154 2788 current 8	7 0 47 <1 55 2431 1031 1232 3520 history1 16	189 0 123 5 702 1486 648 851 2393 history2 ▲ 72
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 1010 1070 1150 1270 2060 kimit/base >25	0 0 43 <1 39 2317 1001 1154 2788 current 8 6	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3	189 0 123 5 702 1486 648 851 2393 history2 ∧ 72 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 0 1010 1070 1150 1270 2060 limit/base >25	0 0 43 <1 39 2317 1001 1154 2788 current 8 6 8	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8	189 0 123 5 702 1486 648 851 2393 history2 ▲ 72 4 28
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 imit/base >20	0 0 43 <1 39 2317 1001 1154 2788 current 8 6 8 6 8	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8 8	189 0 123 5 702 1486 648 851 2393 history2 4 28
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 imit/base >20	0 0 43 <1 39 2317 1001 1154 2788 <u>current</u> 8 6 8 6 8 <i>current</i> 0.2	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8 8 history1 0.2	189 0 123 5 702 1486 648 851 2393 history2 72 4 28 72 4 28 bistory2
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> >4 >20	0 0 43 <1 39 2317 1001 1154 2788 <i>current</i> 8 6 8 6 8 <i>current</i> 0.2 8.7	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8 <u>history1</u> 0.2 7.1	189 0 123 5 702 1486 648 851 2393 history2 ▲ 72 4 28 28 history2 0.3 10.8
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 >4 >20 >30	0 0 43 <1 39 2317 1001 1154 2788 <u>current</u> 8 6 8 6 8 6 8 <u>current</u> 0.2 8.7 22.7	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8 <u>history1</u> 0.2 7.1 17.0	189 0 123 5 702 1486 648 851 2393 history2 2 72 4 28 bistory2 0.3 10.8 24.1
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 >25 imit/base >4 >20 >30	0 0 43 <1 39 2317 1001 1154 2788 <u>current</u> 8 6 8 6 8 6 8 <u>current</u> 0.2 8.7 22.7	7 0 47 <1 55 2431 1031 1232 3520 history1 16 3 8 <u>history1</u> 0.2 7.1 17.0	189 0 123 5 702 1486 648 851 2393 history2 ▲ 72 4 28 history2 0.3 10.8 24.1



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		
0ct10/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
Oct1	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	13.2	13.1	9 .2		
	GRAPHS								
	Ferrous Alloys								
	30 iron 1								
	25 - chromium								
	20								
	<u>ة</u> 15								
	10	1-							
	5-								
	0								
	Feb 28/23	May2/23		0ct10/23					
	—			00					
	Non-ferrous Meta	ls							
	160 - copper								
	140								
	120								
	100								
	60								
	40 -								
	20-								
				5					
	eb 28/23	May2/23		0ct10/23					
	LL.			D					
	Viscosity @ 100°C Base Number								
	18 - Abnormal			10.					
				(B/)	0				
	္ ¹⁶ Base			HOX BL	0				
	(5-001) 14 Abnormal			Base Number (mg KOH/g)					
	3 Abnormal			4.	0				
				ase 2	0				
	10								
	84					23			
	Feb 28/23	May2/23		0ct10/23	Feb 28/23	May2/23	0ct10/23		
	LE.	~			LE.	~	0		
Laboratory	: WearCheck USA -				3 GFL Env		Sugar Land Hauling		
Sample No.		Receive		Oct 2023		16011 W	est Belfort Street		
Lab Number		Diagnos		Oct 2023			Sugar Land, TX US 77498		
Unique Number Test Package	: 10696560 : FLEET	Diagnos		n Baldridge		Cont	act: Gino Griego		
	contact Customer Serv	vice at 1-8	200-237-1360	2			act. and ancyo		



* - 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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