

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.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

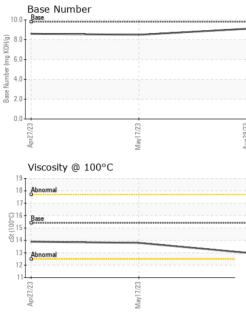
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092742	GFL0080735	GFL0080749
Sample Date		Client Info		29 Aug 2023	17 May 2023	27 Apr 2023
Machine Age	hrs	Client Info		17492	17492	17328
Oil Age	hrs	Client Info		17492	600	600
Oil Changed		Client Info		Not Changd	Changed	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
Glycol		WC Method	20.0	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m		12	2	5
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel		ASTM D5185m		0	<1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm				2	2
Lead	ppm	ASTM D5185m		6 0	2	<1
	ppm	ASTM D5185m			0	
Copper	ppm	ASTM D5185m		<1		0
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 37	history1 5	history2 4
	ppm ppm					
Boron		ASTM D5185m	0	37	5	4
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	0 0 60	37 0	5 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	37 0 37	5 0 58	4 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	37 0 37 <1	5 0 58 <1	4 0 60 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	37 0 37 <1 493	5 0 58 <1 960	4 0 60 <1 979
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	37 0 37 <1 493 1505	5 0 58 <1 960 1078	4 0 60 <1 979 1097
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	37 0 37 <1 493 1505 679	5 0 58 <1 960 1078 1065	4 0 60 <1 979 1097 1088
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	37 0 37 <1 493 1505 679 850	5 0 58 <1 960 1078 1065 1317	4 0 60 <1 979 1097 1088 1345
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 limit/base	37 0 37 <1 493 1505 679 850 2615	5 0 58 <1 960 1078 1065 1317 3910	4 0 60 <1 979 1097 1088 1345 3886
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 limit/base	37 0 37 <1 493 1505 679 850 2615 current	5 0 58 <1 960 1078 1065 1317 3910 history1	4 0 60 <1 979 1097 1088 1345 3886 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	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	37 0 37 <1 493 1505 679 850 2615 2615 current 5	5 0 58 <1 960 1078 1065 1317 3910 history1 3	4 0 60 <1 979 1097 1088 1345 3886 history2 4
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 0 1010 1070 1150 1270 2060 limit/base >25	37 0 37 <1 493 1505 679 850 2615 2615 <u>current</u> 5 19	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2
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 60 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	37 0 37 <1 493 1505 679 850 2615 current 5 19 11 11 current	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2 2
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4	37 0 37 <1 493 1505 679 850 2615 2615 5 19 11 11 current 0.3	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1 0.2	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2 2 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4	37 0 37 <1 493 1505 679 850 2615 2615 2615 5 19 11 11 current 0.3 8.0	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2 2 2 history2 0.3 7.3
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	37 0 37 <1 493 1505 679 850 2615 current 5 19 11 11 current 0.3 8.0 22.2	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1 0.2 5.8 18.6	4 0 60 379 1097 1088 1345 3886 history2 4 2 2 history2 0.3 7.3 19.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4 >20 >30 imit/base	37 0 37 <1 493 1505 679 850 2615 <i>current</i> 5 19 11 <i>current</i> 0.3 8.0 22.2	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1 0.2 5.8 18.6 history1	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2 2 history2 0.3 7.3 19.2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4 >20 >30 imit/base	37 0 37 <1 493 1505 679 850 2615 current 5 19 11 11 current 0.3 8.0 22.2	5 0 58 <1 960 1078 1065 1317 3910 history1 3 <1 2 history1 0.2 5.8 18.6	4 0 60 <1 979 1097 1088 1345 3886 history2 4 2 2 2 history2 0.3 7.3 19.2



OIL ANALYSIS REPORT

VISUAL



		VICONE						
		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
May17/23	Aug29/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May	Aug	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
С		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	PERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.0	13.8	13.9
		GRAPHS						
		Ferrous Alloys						
/23 -		10 - iron						
May17/23		nickel		/				
2		8-						
		ud 6-						
		4	/					
		2	\checkmark					
		23 23	/23 -		1/23			
		Apr27/23	May17/23		Aug 29/23			
		Non-ferrous Me			4			
		¹⁰ T						
		8 - copper						
		the second secon						
		6						
		ш dd 4						
		2						
		0						
		Apr27/23	May17/23		Aug29/23			
					Aug			
		Viscosity @ 100	°C			Base Number		
		18 - Abnormal			10.	Base		
		17-			(B 8.	0 -		
		G-16 Page			KOH	0		
		G 16 Base 15 75 14			ш. ш. та	U		
		^영 14 -			Base Number (mg KOH/g)	0		
		13 Abnormal			Base 2	0		
					Z.			
		12-				0		
		12	3				2	2
		12	ay17/23				ay17/23 -	ıg29/23 -
			May17/23 +		Aug29/23 +	Apr27/23	May17/23 -	Aug29/23 -
æ	Laboratory	: WearCheck USA	- 501 Madis		ry, NC 2751	Apr27/23	_ Environmen	tal - 455 - Flint
ANAB	Sample No.	: WearCheck USA	- 501 Madia Received	1 :01 \$	ry, NC 2751 Sep 2023	Apr27/23	Environmen 205	tal - 455 - Flint 1 W. Bristol Rd
	Sample No. Lab Number	: WearCheck USA : GFL0092742 : 05941169	- 501 Madis Received Diagnose	d :01 \$	ry, NC 2751 Sep 2023 Sep 2023	Apr27/23	Environmen 205	tal - 455 - Flin t 1 W. Bristol Ro nt Township, M
TESTIC LABORATORY	Sample No. Lab Number Unique Number	: WearCheck USA : GFL0092742 : 05941169 r : 10631781	- 501 Madia Received	d :01 \$	ry, NC 2751 Sep 2023	Apr27/23	- Environmen 205 Flir	tal - 455 - Flin t 1 W. Bristol Ro
To discuss this	Sample No. Lab Number Unique Number Test Package sample report,	: WearCheck USA : GFL0092742 : 05941169 r : 10631781	- 501 Madis Received Diagnose Diagnost	l : 01 9 ed : 06 9 ician : Dor 200-237-1369	ry, NC 2751 Sep 2023 Sep 2023 a Baldridge	Apr27/23	- Environmen 205 Flir Contact: M mwomb	t al - 455 - Flin t 1 W. Bristol Rc nt Township, M US 48507

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Submitted By: MARK WOMBLE

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