

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 812019

Fluid

Component
Diesel Engine

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

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.

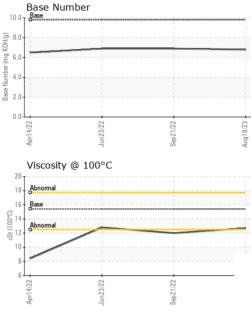
Fluid Condition

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

SAMPLE INFOR	MATION	method				history2
Sample Number		Client Info		GFL0079777	GFL0031023	GFL0055058
Sample Date		Client Info		18 Aug 2023	21 Sep 2022	23 Jun 2022
Machine Age	hrs	Client Info		3562	1802	1195
Oil Age	hrs	Client Info		599	1802	1195
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	ATTENTION	NORMAL
CONTAMINAT		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.6	<1.0
Glycol		WC Method	>0.0	<1.0 NEG	NEG	NEG
		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	13	23	22
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	5	3	2
Titanium	ppm	ASTM D5185m	>2	8	3	2
Silver	ppm	ASTM D5185m	>2	0	0	1
Aluminum	ppm	ASTM D5185m	>20	2	1	2
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	4	30	220
Tin	ppm	ASTM D5185m	>15	<1	2	2
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		mathad	limit/base		In the second	history2
ADDITIVES		methoa			nistory i	TIIStOLYZ
	maa	method ASTM D5185m			history1 9	
Boron	ppm mag	ASTM D5185m	0	13	9	19
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	13 0	9 1	19 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	13 0 54	9 1 65	19 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	13 0 54 <1	9 1 65 <1	19 0 64 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	13 0 54 <1 903	9 1 65 <1 842	19 0 64 1 822
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	13 0 54 <1 903 1220	9 1 65 <1 842 1193	19 0 64 1 822 1129
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	13 0 54 <1 903 1220 945	9 1 65 <1 842 1193 922	19 0 64 1 822 1129 872
Boron Barium Molybdenum Manganese Magnesium Calcium	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	13 0 54 <1 903 1220 945 1230	9 1 65 <1 842 1193 922 1173	19 0 64 1 822 1129 872 1094
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	13 0 54 <1 903 1220 945 1230 3254	9 1 65 <1 842 1193 922 1173 2785	19 0 64 1 822 1129 872 1094 2493
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	13 0 54 <1 903 1220 945 1230 3254 current	9 1 65 <1 842 1193 922 1173 2785 history1	19 0 64 1 822 1129 872 1094 2493 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	13 0 54 <1 903 1220 945 1230 3254 current 4	9 1 65 <1 842 1193 922 1173 2785 history1 6	19 0 64 1 822 1129 872 1094 2493 history2 13
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	13 0 54 <1 903 1220 945 1230 3254 current 4 4	9 1 65 <1 842 1193 922 1173 2785 history1 6 2	19 0 64 1 822 1129 872 1094 2493 history2 13 2
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	13 0 54 <1 903 1220 945 1230 3254 current 4	9 1 65 <1 842 1193 922 1173 2785 history1 6	19 0 64 1 822 1129 872 1094 2493 history2 13
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	13 0 54 <1 903 1220 945 1230 3254 current 4 4	9 1 65 <1 842 1193 922 1173 2785 history1 6 2	19 0 64 1 822 1129 872 1094 2493 history2 13 2
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 >20	13 0 54 <1 903 1220 945 1230 3254 current 4 4 4	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2	19 0 64 1 822 1129 872 1094 2493 history2 13 2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	13 0 54 <1 903 1220 945 1230 3254 current 4 4 4 <1 current	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2 history1	19 0 64 1 822 1129 872 1094 2493 history2 13 2 2 2 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	13 0 54 <1 903 1220 945 1230 3254 <i>current</i> 4 4 4 <1 <i>current</i>	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2 history1 0.6	19 0 64 1 822 1129 872 1094 2493 history2 13 2 2 2 history2 0.5
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> >25 >20 <i>limit/base</i> >20	13 0 54 <1 903 1220 945 1230 3254 <i>current</i> 4 4 4 <1 <i>current</i> 0.5 7.9	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2 history1 0.6 9.1	19 0 64 1 822 1129 872 1094 2493 history2 13 2 2 history2 0.5 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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	13 0 54 <1 903 1220 945 1230 3254 <i>current</i> 4 4 4 4 <1 <i>current</i> 0.5 7.9 19.2 <i>current</i>	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2 history1 0.6 9.1 21.7 history1	19 0 64 1 822 1129 872 1094 2493 history2 13 2 2 history2 0.5 9.1 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 >4 >20	13 0 54 <1 903 1220 945 1230 3254 <i>current</i> 4 4 4 4 <1 <i>current</i> 0.5 7.9 19.2	9 1 65 <1 842 1193 922 1173 2785 history1 6 2 2 history1 0.6 9.1 21.7	19 0 64 1 822 1129 872 1094 2493 history2 13 2 2 2 history2 0.5 9.1 20.7



OIL ANALYSIS REPORT



		VISUAL White Metal	scalar	method *Visual	limit/base	current	history1 NONE	history2 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		
						NONE	NONE			
22	23	_ Sand/Dirt	scalar	*Visual	NONE			NONE		
Sep21/22	Aug18/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
ŏ	Aı		scalar	*Visual	NORML	NORML	NORML	NORML		
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
		Free Water	scalar	*Visual		NEG	NEG	NEG		
		FLUID PROPE		method	limit/base	current	history1	history2		
		Visc @ 100°C	cSt	ASTM D445	15.4	12.7	▲ 12.0	12.8		
		GRAPHS								
		Ferrous Alloys								
Sep21/22 -		80 -								
Sepl		nickel								
		E 60								
		^a 40								
		20								
		0								
				1/22	8/23 -					
		Apr14/22 Jun23/22		Sep21/22	Aug18/23					
		Non-ferrous Meta	als							
		²⁵⁰ T								
		copper lead								
		200 tin	\ \							
		150-								
		udd								
		100								
		50-	\ \	<u></u>						
		All And Description of the local division of								
		0 0		2	m					
		Apr14/22 Jun23/22		3ep21/22	ug18/23					
		~ ~ ~	-	S.	Au					
		Viscosity @ 100°	С		10.0	Base Numbe	er			
		18- Abnormal				0				
		16 - Base			(B/H)		1			
		T			9 g 6.0					
		0 14 Abnormal නු 12			(0)HOX (0					
					H 4.0-					
		10			2.0 ·					
		8 -			2.0					
		64			0.0	2		4		
		Apr14/22 Jun23/22		Sep 21/22	Aug18/23	Apr14/22	Jun23/22	77171/27		
		Ap		Set	Aug	Ap	Jur	5		
d	Laboratory	: WearCheck USA -			GFL Environmental - 663 - Lake Ariel (Scranton Haulir					
NAB	Sample No.	: GFL0079777		Sep 2023	17 Industrial Park R					
REDITED	Lab Number	: 05945378	Diagnos		Sep 2023			Lake Ariel, P		
ISONC (7025	Unique Number	r : 10635990	tician : We	s Davis			US 1843			
ISONG DOUG ING LABORATORY			-				Contact: Eric Meror emerone@countyrecycling.n			
ificate L2367	Test Package		vice at 1 C	200-227.1260	3					

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Submitted By: Eric Buchanan Page 2 of 2