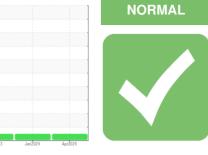


OIL ANALYSIS REPORT

Sample Rating Trend



420094 - SW4022 Component Diesel Engine Fluid

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

DIAGNOSIS

Recommendation

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

Machine Id

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	history1	history2
Sample Number		Client Info		GFL0105449	GFL0105459	GFL0094113
Sample Date		Client Info		03 Apr 2024	24 Jan 2024	26 Oct 2023
Machine Age	mls	Client Info		134054	124354	117819
Oil Age	mls	Client Info		134054	124354	117819
Oil Changed		Client Info		Changed	Changed	Changed
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	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>120	3	2	6
	ppm			ა <1	<1	<1
Chromium Nickel	ppm	ASTM D5185m	>20	<1 <1	<1	<1
	ppm	ASTM D5185m ASTM D5185m	>5	<1	<1	< 1
Titanium Silver	ppm	ASTM D5185m ASTM D5185m	>2 >2	<1 0	<1	<1
Aluminum	ppm ppm	ASTM D5185m	>2	2	1	1
Lead		ASTM D5185m	>20	2	<1	<1
	ppm	ASTM D5185m	>330	3	<1	1
Copper Tin	ppm	ASTM D5185m	>330	ა <1	<1	0
Vanadium	ppm ppm	ASTM D5185m	>15	<1	<1	0
Cadmium		ASTM D5185m		<1	<1	<1
Gaumum	ppm	ASTIVI DJIOJIII		51	< 1	< 1
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	0	0 4
Boron Barium Molybdenum		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 61	0 0 49	0 4 44
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 61 <1	0 0 49 <1	0 4 44 <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	0 0 61 <1 6	0 0 49 <1 4	0 4 44 <1 13
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	0 0 61 <1 6 2728	0 0 49 <1 4 2266	0 4 44 <1 13 2343
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 61 <1 6 2728 1120	0 0 49 <1 4 2266 1033	0 4 44 <1 13 2343 918
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 61 <1 6 2728 1120 1308	0 0 49 <1 4 2266 1033 1183	0 4 44 <1 13 2343 918 1117
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	0 0 61 <1 6 2728 1120 1308 3362	0 0 49 <1 4 2266 1033 1183 3044	0 4 44 <1 13 2343 918 1117 3120
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 61 <1 6 2728 1120 1308 3362 current	0 0 49 <1 4 2266 1033 1183 3044 history1	0 4 44 <1 13 2343 918 1117 3120 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 0 1010 1070 1150 1270 2060	0 0 61 <1 6 2728 1120 1308 3362 current 7	0 0 49 <1 4 2266 1033 1183 3044 history1 7	0 4 44 <1 13 2343 918 1117 3120 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 61 <1 6 2728 1120 1308 3362 current 7 5	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2	0 4 44 <1 13 2343 918 1117 3120 history2 5 0
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 61 <1 6 2728 1120 1308 3362 current 7 5 3	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	0 0 61 <1 6 2728 1120 1308 3362 current 7 5 3 3	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 2 history1	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	0 0 61 <1 6 2728 1120 1308 3362 current 7 5 3 3 current 0.2	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 history1 0.1	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 2 2 history2 0.1
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 225 220 220 1imit/base >22 20	0 0 61 <1 6 2728 1120 1308 3362 <i>current</i> 7 5 3 <i>current</i> 0.2 8.2	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 history1 0.1 7.7	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 2 history2 0.1 7.9
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 225 >25 >20 imit/base >20	0 0 61 <1 6 2728 1120 1308 3362 current 7 5 3 3 current 0.2	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 history1 0.1	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 2 2 history2 0.1
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 225 225 220 220 1imit/base >22 20	0 0 61 <1 6 2728 1120 1308 3362 <i>current</i> 7 5 3 <i>current</i> 0.2 8.2	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 history1 0.1 7.7	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 2 history2 0.1 7.9
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 20 20 20 20 20 20 20 20 20 20 20 20	0 0 61 <1 6 2728 1120 1308 3362 <u>current</u> 7 5 3 3 <u>current</u> 0.2 8.2 19.7	0 0 49 <1 4 2266 1033 1183 3044 history1 7 2 2 2 history1 0.1 7.7 18.6	0 4 44 <1 13 2343 918 1117 3120 history2 5 0 2 2 history2 0.1 7.9 19.5



OIL ANALYSIS REPORT

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Mar22	Aug15/23	0ct26/23	Jan 24/24	Apri
Base	Number			
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Viscos	sity @ 100°	C		
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12				
Mar22/23	Aug15/23	0ct26/23	Jan 24/24	الار دسم
Mará	Aug	Octí	Jan	Λ

	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
I - mps - the standard from the set of the	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Jan 24/24 Apr3/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Ap	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	12.7	12.9	13.6
	GRAPHS						
	Ferrous Alloys						
24	iron						
Jan 24/24 л.с. сл	10 - nickel						
	8						
	E 6-						
	4						
	2-						
	53 53 53		24				
	Mar22/23 Aug15/23	0ct26/23	Jan 24/24	Apr3/24			
	Non-ferrous Metal						
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	Mar22/23 Aug 15/23	0ct26/23	Jan 24/24	Apr3/24			
	Aug		Jan	A			
	Viscosity @ 100°C	;			Base Number		
	¹⁹			10.0	Base Number		
7					Base		
	19 18 - Abnormal 17 -				D T Base		
ć	19 18 - Abnormal 17 -				D T Base		
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	19 18 Abnormal 17 16 Base 15 3 14						
	Abnormal Base Base Abnormal Abnormal Abnormal		19	(b)HOX Bull Jack Market 4.0 Bull Jack Market 4.0 Dubl Jack Market 4.0 Du			67
	Abnormal Base Base Abnormal Abnormal Abnormal		an24/24	0.8 (0) 0.6 (0) 1.0 age 988 8.0 0 HIO 988 988 2.0			an24/24
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	Abnormal Base Base Base CZCC W WearCheck USA - 50	EZU9270 1 Madisor	n Ave., Cary	(b)HOX bu) Jaquing eeg 2.0 +2/Ebdy 0.0	Mai(2223	5298270 ronmental - 983 - S	Jugar Land Hauling
Sample No.	Abnormal Base Base Base EZS SIG WearCheck USA - 50 GFL0105449	EZUNATION 1 Madison Receir	n Ave., Cary ved :15	(b)HOX Bull Jaquing Verse 2.1 4.1 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2	Mai(2223	ronmental - 983 - S 16011 Wes	ugar Land Hauling st Belfort Street
Sample No. : Lab Number :	Abnormal Base Base Base ECC ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC Base ECC ECC ECC ECC ECC ECC ECC EC	1 Madison Receir Tester	n Ave., Cary ved : 15 d : 15	(b)HOX bul) Jaquing 4.6 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7	GFL Envi	ronmental - 983 - S 16011 Wes	ugar Land Hauling st Belfort Street Sugar Land, TX
Sample No.	MearCheck USA - 50 GFL0105449 06148301 10978379	EZUNATION 1 Madison Receir	n Ave., Cary ved : 15 d : 15	(b)HOX Bull Jaquing Verse 2.1 4.1 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2	GFL Envi	ronmental - 983 - S 16011 Wes	ugar Land Hauling st Belfort Street

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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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Certificate L2367

Submitted By: TECHNICIAN ACCOUNT

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