

OIL ANALYSIS REPORT



Machine Id 913151

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.

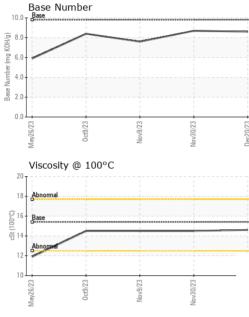
Fluid Condition

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

		in a the set	line it //		la la travent	la i a tarra Ora
SAMPLE INFOR	VIATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0077269	GFL0093601	GFL0093533
Sample Date		Client Info		20 Dec 2023	30 Nov 2023	09 Nov 2023
Machine Age	hrs	Client Info		2124	1967	1817
Oil Age	hrs	Client Info		157	150	554
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>110	2	3	8
Chromium	ppm	ASTM D5185m		2 <1	0	o <1
Nickel	ppm ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	<i>>L</i>	34	<1	1
Silver	ppm	ASTM D5185m	>2	0 0	<1	<1
Aluminum	ppm	ASTM D5185m		2	2	6
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm		>85	<1	<1	1
Tin	ppm		>05	<1	0	0
Vanadium	ppm	ASTM D5185m	~7	<1	0	<1
Cadmium	ppm	ASTM D5185m		<1	0	0
oddiniani	pp					0
		method	limit/base	current	history1	history?
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	51	<1	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	51 0	<1 0	1 7
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	51 0 38	<1 0 62	1 7 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	51 0 38 0	<1 0 62 0	1 7 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	51 0 38 0 772	<1 0 62 0 893	1 7 62 0 970
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	51 0 38 0 772 1321	<1 0 62 0 893 1071	1 7 62 0 970 1081
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	51 0 38 0 772 1321 1101	<1 0 62 0 893 1071 995	1 7 62 0 970 1081 1070
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	51 0 38 0 772 1321 1101 1274	<1 0 62 0 893 1071 995 1169	1 7 62 0 970 1081 1070 1283
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	51 0 38 0 772 1321 1101	<1 0 62 0 893 1071 995 1169 3027	1 7 62 0 970 1081 1070 1283 3183
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	51 0 38 0 772 1321 1101 1274	<1 0 62 0 893 1071 995 1169 3027 history1	1 7 62 0 970 1081 1070 1283
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 1010 1070 1150 1270 2060	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4	<1 0 62 0 893 1071 995 1169 3027 history1 2	1 7 62 0 970 1081 1070 1283 3183 history2 4
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 1010 1070 1150 1270 2060	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4 5	<1 0 62 0 893 1071 995 1169 3027 history1 2 0	1 7 62 0 970 1081 1070 1283 3183 history2 4 <
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4	<1 0 62 0 893 1071 995 1169 3027 history1 2	1 7 62 0 970 1081 1070 1283 3183 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	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4 5	<1 0 62 0 893 1071 995 1169 3027 history1 2 0	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1
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 >30	51 0 38 0 772 1321 1101 1274 3644 current 4 5 4	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 <u>history1</u> 0.1	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16
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 Imit/base >30 -20	51 0 38 0 772 1321 1101 1274 3644 current 4 5 4 5 4	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 5 history1	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16 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 limit/base >30 200 limit/base	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4 5 4 <u>current</u> 0.1	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 <u>history1</u> 0.1	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16 history2 0.3
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 imit/base >30 220 imit/base >3 >20	51 0 38 0 772 1321 1101 1274 3644 <i>current</i> 4 5 4 <i>current</i> 0.1 6.4	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 <u>history1</u> 0.1 6.0	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16 history2 0.3 8.9
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 ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	51 0 38 0 772 1321 1101 1274 3644 Current 4 5 4 Current 0.1 6.4 18.0 Current	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 history1 0.1 6.0 17.9 history1	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16 history2 0.3 8.9 19.6 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 >30 imit/base >3 >20 >3	51 0 38 0 772 1321 1101 1274 3644 <u>current</u> 4 5 4 <u>current</u> 0.1 6.4 18.0	<1 0 62 0 893 1071 995 1169 3027 history1 2 0 5 <u>history1</u> 0.1 6.0 17.9	1 7 62 0 970 1081 1070 1283 3183 history2 4 <1 16 kistory2 0.3 8.9 19.6



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		
. CZ/EADAI	Nov30/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
ADAI	Nov3 Dec2	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	14.6	14.5	14.5		
		GRAPHS								
1		Ferrous Alloys								
3		40 35								
C7/EA0AI	Nov30/23	30 - nickel								
_	2	25								
		<u>۾</u> 20								
		15								
		10								
		5								
		0								
		May26/23 0ct9/23	Nov9/23	Nov30/23	Dec20/23					
		May	No	Nov	Dec					
		Non-ferrous Meta	als							
		12 copper								
		10 - Internet lead		 						
		8								
		E 6								
		4								
		2								
		0								
			9/23 .	0/23 -)/23					
		May26/23 0ct9/23	Nov9/23	Nov30/23	Dec20/23					
		Z Viscosity @ 100°	С			Paco Number				
		19 T		1	10.	Base Number				
		18 - Abnormal 17 -			€.					
		16			B/HO)					
		0 15 -			да б.					
		(2-0015- 114-			(B/HOX fill) Base Number (mg KOH/G)					
		13 Abnormal		·	N se					
		12		I	⁶⁶ 2.	0 -				
		11			0.					
			Nov9/23 -	0/23 -			Nov9/23 -	0/23 -		
		May26/23 0ct9/23	Nov	Nov30/23	Dec20/23	May26/23 0ct9/23	Nov	Nov30/23		
	Laboratory		- 501 Madison Ave., Cary, NC 27513				GFL Environmental - 891 - Oklahoma City Hauli			
	Laboratory Sample No.	: WearCheck USA - : GFL0077269		GFL Environmental - 891 - Oklanoma City Hauli 1001 South Rockw						
AB	Lab Number	: 06041871	Recieved		Dec 2023			ahoma City, C		
ORATORY	Unique Number	: 10802479	•	Diagnostician : Wes Davis				US 7312		
		: FLEET			Contact: Andy Smi					
e L2367	Test Package	contact Customer Serv						ith@gflenv.co		