

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 921046-260380

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.

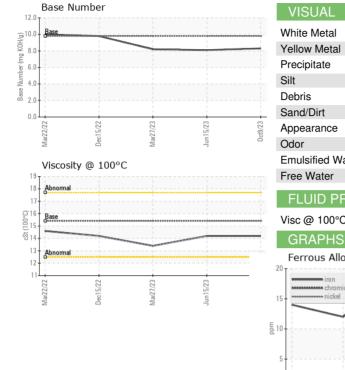
Fluid Condition

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		GFL0093721	GFL0078565	GFL0078577
Sample Date		Client Info		09 Oct 2023	15 Jun 2023	27 Mar 2023
Machine Age	hrs	Client Info		6693	5892	5533
Oil Age	hrs	Client Info		0	0	0
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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	3	10	19
Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	1	4
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	<1	0	<1
Tin	ppm		>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES			11 11 11	t		bioto m O
		method	limit/base	current	history1	riistory2
Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 <1	history2 <1
	ppm ppm					
Boron	ppm	ASTM D5185m	0	2	<1	<1
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	2 12	<1 0	<1 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 12 58	<1 0 61	<1 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 12 58 <1	<1 0 61 <1	<1 0 56 1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 12 58 <1 941	<1 0 61 <1 1002	<1 0 56 1 919
Boron Barium Molybdenum Manganese Magnesium	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	2 12 58 <1 941 1020	<1 0 61 <1 1002 1089 1055	<1 0 56 1 919 988 924
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 12 58 <1 941 1020 1002	<1 0 61 <1 1002 1089	<1 0 56 1 919 988
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	2 12 58 <1 941 1020 1002 1212	<1 0 61 <1 1002 1089 1055 1319	<1 0 56 1 919 988 924 1219
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	2 12 58 <1 941 1020 1002 1212 3054	<1 0 61 <1 1002 1089 1055 1319 3778	<1 0 56 1 919 988 924 1219 3074
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 1010 1070 1150 1270 2060	2 12 58 <1 941 1020 1002 1212 3054 current	<1 0 61 <1 1002 1089 1055 1319 3778 history1	<1 0 56 1 919 988 924 1219 3074 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 12 58 <1 941 1020 1002 1212 3054 current 3	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2	<1 0 56 1 919 988 924 1219 3074 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	2 12 58 <1 941 1020 1002 1212 3054 current 3 3 5	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2	<1 0 56 1 919 988 924 1219 3074 history2 4 6
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 limit/base >25	2 12 58 <1 941 1020 1002 1212 3054 current 3 3 5 Current	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 history1	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 8
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 12 58 <1 941 1020 1002 1212 3054 <u>current</u> 3 3 5 <u>current</u> 0.3	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 history1 0.5	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 history2 1
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 limit/base >25	2 12 58 <1 941 1020 1002 1212 3054 current 3 3 5 Current	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 history1	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 8
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> >3 >20	2 12 58 <1 941 1020 1002 1212 3054 <i>current</i> 3 3 5 <i>current</i> 0.3 5.1	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 history1 0.5 7.0	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 history2 1 8.5
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 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 12 58 <1 941 1020 1002 1212 3054 Current 3 3 5 Current 0.3 5.1 17.4 Current	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 1 history1 0.5 7.0 19.8 history1	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 history2 1 8.5 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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 12 58 <1 941 1020 1002 1212 3054 <u>current</u> 3 3 5 <u>current</u> 0.3 5.1 17.4	<1 0 61 <1 1002 1089 1055 1319 3778 history1 2 2 2 1 1 history1 0.5 7.0 19.8	<1 0 56 1 919 988 924 1219 3074 history2 4 6 4 6 4 history2 1 8.5 20.7



OIL ANALYSIS REPORT



		VISUAL		method	limit/base	current	history1	histo	iry2			
		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	-			
Mar27/23	Jun 15/23 Oct9/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORM	/L			
Mar2	Junl	Odor	scalar	*Visual	NORML	NORML	NORML	NORM	/L			
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG				
		Free Water	scalar	*Visual		NEG	NEG	NEG				
		FLUID PROPE	ERTIES	method	limit/base	current	history1	histo	ory2			
		Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.2	13.4				
		GRAPHS										
		Ferrous Alloys										
		20 iron	\wedge									
Mar27/23	Jun 15/23	15 - nickel	<									
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		copper										
		8 - sessesses lead										
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		Viscosity @ 100°	С			Base Number						
		18 - <u>A</u> bnormal			12.0	⁾ T		p				
		17-	1	I L	10.0	Base						
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		10			0.8 KOH(d) 1.8 KOH(d) 1.4 House Lange	•						
		13 Abnormal	1	1	2.0							
		11			0.0							
		2/22	7/23 -	5/23 .	0ct9/23		7/23 -	5/23 .				
		Mar22/22 Dec15/22	Mar27/23	Jun15/23	Octi	Mar22/22 Dec15/22	Mar27/23	Jun15/23				
								-				
2	Laboratory	: WearCheck USA -		3 GFL Env	GFL Environmental - 837 - Harrison							
NAB	Sample No.	: GFL0093721	Received		22820 S State Route 2							
SOACE 7025	Lab Number	: 05978675 r : 10695970	Diagnos		Harrisonville, M							
ING LABORATORY	Unique Number : 10695970 Diagnostician : Wes Davis Test Package : FLEET						US 647 Contact: BRYAN SWANSC					
tificate 12367	Test Package	; :FLEEI		, contact Customer Service at 1-800-237-1369.					bryanswanson@gflenv.co			
ificate L2367 discuss this	Test Package s sample report,		vice at 1-8	300-237-1369	9.			-	-			

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