

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id Component

Fluid

Diesel Engine 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.

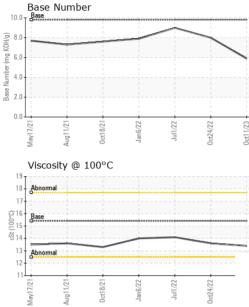
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093222	GFL0057399	GFL0055145
Sample Date		Client Info		11 Oct 2023	24 Oct 2022	01 Jul 2022
Machine Age	hrs	Client Info		12439	10008	9177
Oil Age	hrs	Client Info		10008	9177	7968
Oil Changed		Client Info		Changed	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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	12	6	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	<1	2
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	3	3	3
Lead	ppm	ASTM D5185m	>40	2	<1	<1
Copper	ppm	ASTM D5185m	>330	2	1	<1
Tin	ppm		>15	<1	<1	<1
Antimony	ppm	ASTM D5185m				
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	current 9	history1 5	history2 7
	ppm ppm					
Boron		ASTM D5185m	0	9	5	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	9 0	5 0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	9 0 62 <1 942	5 0 60 <1 860	7 0 61 <1 977
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	9 0 62 <1 942 1099	5 0 60 <1	7 0 61 <1 977 1126
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	9 0 62 <1 942 1099 1016	5 0 60 <1 860 1133 1008	7 0 61 <1 977 1126 1055
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	9 0 62 <1 942 1099 1016 1258	5 0 60 <1 860 1133 1008 1219	7 0 61 <1 977 1126 1055 1278
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	0 0 60 0 1010 1070 1150	9 0 62 <1 942 1099 1016	5 0 60 <1 860 1133 1008	7 0 61 <1 977 1126 1055
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	9 0 62 <1 942 1099 1016 1258 2720 current	5 0 60 <1 860 1133 1008 1219 3449 history1	7 0 61 <1 977 1126 1055 1278 3828 history2
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	9 0 62 <1 942 1099 1016 1258 2720 current 4	5 0 60 <1 860 1133 1008 1219 3449 history1 2	7 0 61 <1 977 1126 1055 1278 3828 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	9 0 62 <1 942 1099 1016 1258 2720 current 4 4	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0	7 0 61 <1 977 1126 1055 1278 3828 history2 3 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 >25 >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 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 >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1 2	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 5 history1	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 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 Limit/base >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1 2 0.6	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 5 history1 0.5	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 2 history2 0.4
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> >4 >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1 current 0.6 8.6	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 history1 0.5 8.9	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 2 3 1 2 history2 0.4 7.7
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 Limit/base >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1 2 0.6	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 5 history1 0.5	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 2 history2 0.4
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 ppm	ASTM D5185m ASTM D51854 ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	9 0 62 <1 942 1099 1016 1258 2720 current 4 4 1 current 0.6 8.6	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 history1 0.5 8.9	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 2 3 1 2 history2 0.4 7.7
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	ASTM D5185m ASTM D51854 ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20	9 0 62 <1 942 1099 1016 1258 2720 <u>current</u> 4 4 1 1 <u>current</u> 0.6 8.6 21.0	5 0 60 <1 860 1133 1008 1219 3449 history1 2 0 5 5 history1 0.5 8.9 20.5	7 0 61 <1 977 1126 1055 1278 3828 history2 3 1 2 3 1 2 history2 0.4 7.7 19.1



OIL ANALYSIS REPORT

VISUAL

method



		1100/12						
		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
Jan 6/22	Juni / 24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Lar		Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROI	PERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.4	13.6	14.1
		GRAPHS						
		Ferrous Alloys						
		12 iron			1			
Jan6/22	Juny 24	10 - chromium			1			
- -	20	8		/				
		الله و-						
		a ·						
		4 -						
		2-		~				
		0		Annest Contraction of the local division of t	AND			
		May17/21 Aug11/21	Jan 6/22 .	Jul1/22 - 0ct24/22 -	0ct11/23 -			
		May17/2 Aug11/2	Jan	Jul Oct2	0ct1			
		Non-ferrous Me	etals					
		10 copper 1						
		8						
		ensesses tin						
		6						
		udd 4						
		2						
		And and a state of the state of	Constantian Constantian		Manager and a			
		7/21 1/21	Jan6/22 -	Jul1/22 -	/23			
		May17/21 Aug11/21	Jan6	Jul1/22 0ct24/22	0ct11/23			
		Viscosity @ 100)°C					
		¹⁹	1		10.	Base Number		
		18 - Abnormal						\sim
		17			(B/H	°		
		2 ¹⁶ Base			ý)		
		016 015 314			6.0 6.1 Base Number (mg KOH(g)			
		³ 14	-		4.)+		
		13 - Abnormal)		
		12-						
								3 12 15
			2		0	2 2 2	10 10	12 12
			an 6/22	Jul1/22	st11/	ay17,	an 6	11 22 11
		May17/21 Aug11/21	Jan 6/22	Jul1/22 0ct24/22	0ct11/23	May17/21 Aug11/21	Jan 6/22	Jul1/22 0ct24/22 0ct11/23
	Laboratory	May17/21 Aug11/21 Oct18/21		0				0 0
	Laboratory Sample No.	17/11/hew : WearCheck USA		son Ave., Ca	ry, NC 2751			5 - Michigan Eas
ANAB	Laboratory Sample No. Lab Number	17/11 ^{be} W : WearCheck USA : GFL0093222	- 501 Madi	son Ave., Ca d : 13 (ironmental - 41	5 - Michigan East 6200 Elmridge fling Heights, M
	Sample No.	17/11/hew : WearCheck USA : GFL0093222 : 05978008	- 501 Madia Receive	son Ave., Ca d : 13 (ed : 17 (ry, NC 2751: Oct 2023		ironmental - 41	5 - Michigan Eas 6200 Elmridge
TESTING LEMONTORY	Sample No. Lab Number Unique Numbe Test Package	: WearCheck USA : GFL0093222 : 05978008 er : 10695303 e : FLEET	- 501 Madia Received Diagnos Diagnost	son Ave., Ca d : 13 (ed : 17 (tician : We	ry, NC 27513 Oct 2023 Oct 2023 s Davis		ironmental - 41 Ster Conta	5 - Michigan Eas 6200 Elmridge rling Heights, M US 48313 cct: Frank Wolał
o discuss this	Sample No. Lab Number Unique Numbe Test Package s sample report	: WearCheck USA : GFL0093222 : 05978008 er : 10695303	- 501 Madia Received Diagnos Diagnost	son Ave., Ca d : 13 (ed : 17 (tician : We	ry, NC 2751; Oct 2023 Oct 2023 s Davis 9.		ironmental - 41 Ster Conta fwol	5 - Michigan Eas 6200 Elmridge ling Heights, M US 48313