

OIL ANALYSIS REPORT

Sample Rating Trend





Component

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.

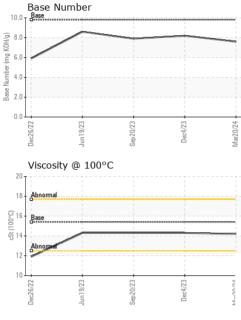
Fluid Condition

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

SAMPLE INFORI	MAT <u>IO</u> N	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0116161	GFL0092604	GFL0082511	
Sample Date		Client Info		20 Mar 2024	04 Dec 2023	20 Sep 2023	
Machine Age	hrs	Client Info		3265	2631	2199	
Oil Age	hrs	Client Info		634	612	602	
Oil Changed		Client Info		Changed	Not Changd	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	ppm	ASTM D5185m	>110	15	12	17	
Chromium	ppm	ASTM D5185m	>4	<1	<1	0	
Nickel	ppm	ASTM D5185m	>2	<1	0	0	
Titanium	ppm	ASTM D5185m		<1	0	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>25	5	7	8	
Lead	ppm	ASTM D5185m	>45	1	0	<1	
Copper	ppm	ASTM D5185m	>85	2	<1	1	
Tin	ppm	ASTM D5185m	>4	1	0	0	
Vanadium	ppm	ASTM D5185m		<1	0	0	
Cadmium	ppm	ASTM D5185m		<1	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 0	history1 0	history2 0	
	ppm ppm						
Boron		ASTM D5185m	0	0	0	0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 1	0	0 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 1 64	0 0 63	0 0 61	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 1 64 <1	0 0 63 0	0 0 61 <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 1 64 <1 1009	0 0 63 0 1006	0 0 61 <1 1062	
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	0 1 64 <1 1009 1278	0 0 63 0 1006 1089	0 0 61 <1 1062 1172	
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 1 64 <1 1009 1278 1164	0 0 63 0 1006 1089 1015	0 0 61 <1 1062 1172 1111	
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 1 64 <1 1009 1278 1164 1394	0 0 63 0 1006 1089 1015 1307	0 0 61 <1 1062 1172 1111 1386	
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	0 0 60 0 1010 1070 1150 1270 2060	0 1 64 <1 1009 1278 1164 1394 3744 <i>current</i> 8	0 0 63 0 1006 1089 1015 1307 3062 history1 7	0 0 61 <1 1062 1172 1111 1386 4007 history2 7	
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	0 1 64 <1 1009 1278 1164 1394 3744 current	0 0 63 0 1006 1089 1015 1307 3062 history1	0 0 61 <1 1062 1172 1111 1386 4007 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 method	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 1 64 <1 1009 1278 1164 1394 3744 <i>current</i> 8	0 0 63 0 1006 1089 1015 1307 3062 history1 7	0 0 61 <1 1062 1172 1111 1386 4007 history2 7	
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 1 64 <1 1009 1278 1164 1394 3744 current 8 0 11 current	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 15 history1	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 36 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 limit/base >30 limit/base >20	0 1 64 <1 1009 1278 1164 1394 3744 current 8 0 11 current 0.4	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 15 history1 0.3	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 36 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 20 Imit/base >30	0 1 64 <1 1009 1278 1164 1394 3744 current 8 0 11 current	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 3 15 history1 0.3 7.9	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 36 history2 0.3 8.2	
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 limit/base >30 limit/base >20	0 1 64 <1 1009 1278 1164 1394 3744 current 8 0 11 current 0.4	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 15 history1 0.3	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 36 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	0 1 64 <1 1009 1278 1164 1394 3744 Current 8 0 11 Current 0.4 9.4	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 3 15 history1 0.3 7.9	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 36 history2 0.3 8.2	
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 20 Imit/base >3 >20	0 1 64 <1 1009 1278 1164 1394 3744 Current 8 0 11 Current 0.4 9.4 19.5	0 0 63 0 1006 1089 1015 1307 3062 <u>history1</u> 7 3 15 <u>history1</u> 0.3 7.9 18.9	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 history2 0.3 8.2 18.8	
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 imit/base >30 >20 imit/base >3 >20 >30	0 1 64 <1 1009 1278 1164 1394 3744 Current 8 0 11 Current 0.4 9.4 19.5 Current	0 0 63 0 1006 1089 1015 1307 3062 history1 7 3 15 history1 0.3 7.9 18.9 history1	0 0 61 <1 1062 1172 1111 1386 4007 history2 7 6 36 7 6 36 history2 0.3 8.2 18.8 history2	



OIL ANALYSIS REPORT



INTING LABORATORY	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0116161 : 06128424 : 10942575 : FLEET	Rece Teste Diagr	ived : 25 Mar 2024			N729 Con	onmental - 947 - WB Horicon HC N7296 County Rd V Horicon, WI US 53032 Contact: Tim Kieffer tim.kieffer@gflenv.com	
		10 10 10 10 10 10 10 10 10 10	Sep20/23	Dec4/23 +	0.0	Dec26/22	Sep20/23	Dec4/23	
		Abnorral 12- 11-			(B) HOX HOX bui Jaq umy asse 2.0-				
		17 16 Base 15 15 14			(B, 8.0) (B, 70) (B, 7				
		Viscosity @ 100°(10.0	Base Number			
		0 Dec26/22	Sep20/23	Dec4/23	Mar20/24 +				
		4							
		16 14 12							
		Dec29/323 Jun19/23 Non-ferrous Meta	Sep20/23	Dec4/23	Mar20/24				
		20	\sim						
03	đ	E 30							
Sep20/23	Dec4/23	for iron 60 50							
		GRAPHS Ferrous Alloys							
		FLUID PROPE Visc @ 100°C	cSt	method ASTM D445	limit/base	current	history1 14.3	history2 14.3	
		Free Water	scalar	*Visual		NEG	NEG	NEG	
Se	Wi	Odor Emulsified Water	scalar scalar	*Visual *Visual	NORML >0.2	NORML NEG	NORML NEG	NORML NEG	
Sep20,23	Dec4/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
	Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE	NONE NONE		
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE		
	Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE NONE		
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE		

Submitted By: See also GFL935 - Tim Kieffer