

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

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

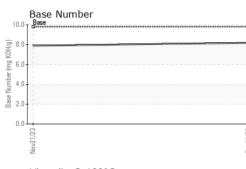
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

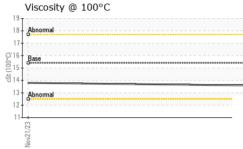
			NovZUZ3	Dec2023		
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105591	GFL0089099	
Sample Date		Client Info		11 Dec 2023	21 Nov 2023	
Machine Age	hrs	Client Info		340	179	
Oil Age	hrs	Client Info		0	179	
Oil Changed		Client Info		Not Changd	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
	<u>_</u>			-		histow 0
WEAR METAL	5	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	5	30	
Chromium	ppm	ASTM D5185m	>20	0	4	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	1	6	
Lead	ppm	ASTM D5185m	>40	<1	0	
Copper	ppm	ASTM D5185m	>330	23	7	
Tin	ppm	ASTM D5185m	>15	0	<1	
Vanadium	ppm	ASTM D5185m		0	<1	
Cadmium	10 10 100	AOTH DEADE			0	
Gaumum	ppm	ASTM D5185m		0	0	
ADDITIVES	ррп	method	limit/base	0 current	0 history1	history2
	ppm		limit/base			
ADDITIVES		method ASTM D5185m		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 52	history1 0	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 52 0	history1 0 0	history2
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 52 0 63	history1 0 0 58	history2
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 52 0 63 <1	history1 0 0 58 <1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 52 0 63 <1 947	history1 0 0 58 <1 982	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 52 0 63 <1 947 1096	history1 0 58 <1 982 1083	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current 52 0 63 <1 947 1096 1003	history1 0 58 <1 982 1083 917	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 52 0 63 <1 947 1096 1003 1183	history1 0 58 <1 982 1083 917 1333	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 52 0 63 <1 947 1096 1003 1183 3075	history1 0 0 58 <1 982 1083 917 1333 2803	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 52 0 63 <1 947 1096 1003 1183 3075 current	history1 0 0 58 <1 982 1083 917 1333 2803 history1	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current 52 0 63 <1 947 1096 1003 1183 3075 current 16	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1	history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2 current	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1 +istory1 12 2 <1 history1	history2 history2 history2 history2
ADDITIVES 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 TS ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2 current 0.1	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1 12	history2 history2 history2 history2 history2
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 20 <i>limit/base</i> >3 >20	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2 current 0.1 5.2	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1 history1 0.4 7.6	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 3 20 3 20 3 3 20 3 3 20 3 3 3 20 3 3 3 20 3 3 3 3	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2 current 0.1 5.2 18.7 current	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1 0.4 7.6 19.7 history1	history2 history2 history2 <
ADDITIVES 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	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	current 52 0 63 <1 947 1096 1003 1183 3075 current 16 0 2 current 0.1 5.2 18.7	history1 0 0 58 <1 982 1083 917 1333 2803 history1 12 2 <1 0.4 7.6 19.7	history2 history2 history2 history2 history2 history2 history2 history2 history2 history2 history2 history2 history2 history2



OIL ANALYSIS REPORT

VISUAL





VISUAL		methoa	iimit/base	current	nistory i	riistor
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual				
Precipitate	scalar	*Visual			NONE	
	scalar	*Visual			NONE	
Debris			NONE		NONE	
Sand/Dirt			NONE		NONE	
	scalar	*Visual				
	scalar	*Visual				
Emulsified Water						
Free Water	scalar	*Visual		NEG	NEG	
FLUID PROPE	RTIES	method	limit/base	current	history1	histor
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.8	
GRAPHS						
Ferrous Alloys						
³⁰ I						
25 - chromium						
ā 15						
10						
5						
	Chatter Coulder Coulder	**********************	and an and a second			
			/23			
ov21,			ec11			
			Ω			
	ls					
copper			-			
20 -						
essesses []]						
15-	and the second se					
udd	and the second se					
10						
and the second se						
5-						
0						
/23			/23			
lov21.			lec 11			
	~		ā			
	-			Base Number	-	
			10.0	Base		
18 - Abnormal						
17			(B) 8.0)-		
17			0.8 KOH/a			
17			0.8 0.0 KOH(8) 0.0 cm			
17			(5, 8.0 (5, Hoy Kong But 6.0 (1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1)-		
177- 5:16- 8ase 15- 3:14-			0.8 Bund KOH(d) se Wrumper se Wrumper)-		
177 (3) 16 (3) 16 (3) 16 (3) 16 (4) 15 (4) 15 (0.0 KOH(ć per (mg			
177 (2-00) (2-00) (2-00) (2-0) (0.0 6.0 mg KOHVe			
177- 107-16- Base 3714- 13- Abnormal 12- 11-			VHO X Bull 4.0			
177- 107-16- Base 3714- 13- Abnormal 12- 11-			VHO X Bull 4.0			
177- 177- 16 Base 15 - 14 - 13 Abnormal 12 -			WHOX But 6.0 but bag age mm 4.0 g 2.0			
177- 107-16- Base 3714- 13- Abnormal 12- 11-			VHO X Bull 4.0			
177- 107-16- Base 3714- 13- Abnormal 12- 11-	501 Madia	son Ave Ca	Dec(11/23	Nov21/23	vironmental - 415	- Michidan
	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Fluid PROPE Visc @ 100°C GRAPHS Ferrous Alloys	White Metal scalar Yellow Metal scalar Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar Visc @ 100°C cSt GRAPHS Ferrous Alloys Of Competing Com	White Metal scalar *Visual Yellow Metal scalar *Visual Precipitate scalar *Visual Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Codor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Fullioner Scalar *Visual Non-ferrous Alloys Output State Stat	White Metal scalar *Visual NONE Yellow Metal scalar *Visual NONE Precipitate scalar *Visual NONE Silt scalar *Visual NONE Sand/Dirt scalar *Visual NONE Appearance scalar *Visual NORML Odor scalar *Visual NORML Emulsified Water scalar *Visual >0.2 Free Water scalar *Visual >0.2 Free Water scalar *Visual >0.2 Free Water scalar *Visual >0.4 Composed to the scalar *Visual of the scalar *Visual *Visual *Visuar	White Metal scalar *Visual NONE NONE Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG Free Water scalar *Visual NO45 15.4 13.6 GRAPHS Ferrous Alloys	White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE Sitt scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NORML NEG NEG Free Water scalar *Visual NORML NORML NORML Visc @ 100°C cSt ASTM D445 15.4 13.6 13.8 GRAPHS Ferrous Alloys Viscosity @ 100°C metals Viscosity @ 100°C metals Viscosity @ 100°C metals Viscosity @ 100°C metals



GFL Environmental - 415 - Michigan East 6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514 106:2012) F:



Diagnostician : Wes Davis

Unique Number : 10782951