

OIL ANALYSIS REPORT

Sample Rating Trend

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Component

Diesel Engine Fluic

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

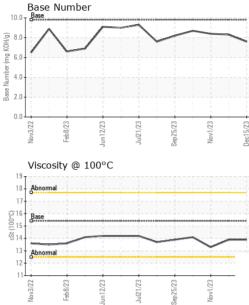
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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SAMPLE INFORI			limit/base	current	history1	history2
Sample Number		Client Info		GFL0094780	GFL0078685	GFL0094783
Sample Date		Client Info		15 Dec 2023	20 Nov 2023	01 Nov 2023
Machine Age	hrs	Client Info		5125	4986	4855
Oil Age	hrs	Client Info		1099	960	829
Oil Changed		Client Info		Changed	N/A	N/A
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	12	6	4
Chromium	ppm	ASTM D5185m	>4	<1	0	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	3	2
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	<1	<1	<1
Tin	ppm	ASTM D5185m	>4	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
	1-1-					
ADDITIVES	1-1-	method	limit/base	current	history1	history2
	ppm		limit/base	current		history2 16
ADDITIVES		method	0		history1	
ADDITIVES Boron	ppm	method ASTM D5185m	0	13	history1 16	16
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	13 0	history1 16 0	16 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	13 0 96	history1 16 0 95	16 0 91
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	13 0 96 0	history1 16 0 95 0	16 0 91 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	13 0 96 0 890	history1 16 0 95 0 924	16 0 91 <1 966
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	13 0 96 0 890 1063	history1 16 0 95 0 924 1106	16 0 91 <1 966 1128
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	13 0 96 0 890 1063 863	history1 16 0 95 0 924 1106 1031	16 0 91 <1 966 1128 1062
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	13 0 96 0 890 1063 863 1181	history1 16 0 95 0 924 1106 1031 1226	16 0 91 <1 966 1128 1062 1265
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	13 0 96 0 890 1063 863 1181 2940	history1 16 0 95 0 924 1106 1031 1226 2984	16 0 91 <1 966 1128 1062 1265 2855
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	13 0 96 0 890 1063 863 1181 2940 current	history1 16 0 95 0 924 1106 1031 1226 2984 history1	16 0 91 <1 966 1128 1062 1265 2855 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus 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	13 0 96 0 890 1063 863 1181 2940 current 8	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7	16 0 91 <1 966 1128 1062 1265 2855 history2 3
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	13 0 96 0 890 1063 863 1181 2940 current 8 0	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sidium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >30	13 0 96 0 890 1063 863 1181 2940 current 8 0 19	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11
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 ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 -20	13 0 96 0 890 1063 863 1181 2940 current 8 0 19 20 current	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15 history1	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11 11 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	13 0 96 0 890 1063 863 1181 2940 current 8 0 19 current 0.4	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15 history1 0.3	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11 11 history2 0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur 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> >30 200 <i>limit/base</i> >3 >20	13 0 96 0 890 1063 863 1181 2940 current 8 0 19 current 0.4 7.7	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15 history1 0.3 6.9	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11 11 history2 0.2 6.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7185M ASTM D7624 *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 1270 2060 imit/base >30 220 imit/base >30 >20 >30	13 0 96 0 890 1063 863 1181 2940 current 8 0 19 current 0.4 7.7 19.2 current	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15 history1 0.3 6.9 18.9 history1	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11 11 history2 0.2 6.4 18.9 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 >30 220 imit/base >30 >20 >30	13 0 96 0 890 1063 863 1181 2940 current 8 0 19 current 0.4 7.7 19.2	history1 16 0 95 0 924 1106 1031 1226 2984 history1 7 2 15 history1 0.3 6.9 18.9	16 0 91 <1 966 1128 1062 1265 2855 history2 3 <1 11 11 history2 0.2 6.4 18.9



OIL ANALYSIS REPORT

VISUAL



	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal		*Visual	NONE	NONE	NONE	NONE
	Precipitate		*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
Nov1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
No	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	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.9	13.3
\sim	GRAPHS						
	Ferrous Alloys						
Nov1/23 -	iron chromium						
Nov	40 - nickel						
	30						
	20						
		~	~				
	10	1		1			
	0						
	Nov3/22 Feb8/23 Jun12/23	Jul21/23	Sep25/23	Dec15/23			
	∠ Non-ferrous Metal		Se Se	D			
	40 copper						
	35 - seeseeseese lead	۸ ا					
	30 - 25 -						
le	20-						
c	15-	1					
	10						
	5-		1				
		22	n n				
	Nov3/22 Feb8/23 Jun12/23	Jul21/23	Sep25/23 Nov1/23	Dec15/23			
	 Viscosity @ 100°C		ö -	ā			
				10.0 T	Base Number		
	¹⁹ T				Dase		
	18 - Abnormal			10.04	Base		
							$\sim \sim$
2	18 - Abnormal 17-						
10000174	18 - Abnormal 17-					~	~~~
10-000 L1 +00-	18 Abnormal		~~			~	\sim
(1900) 1970	Abnormal		~~	-0.8 (0,0 		~	~~
Labour AS.	Abnormal 177 5 5 5 5 6 15 3 Abnormal 12		~~	(b) H(O) Bull add (b) H(O) Bul		~~	~~~
1.1.100 U * 90°	Abnormal	1/23	5/23	0,0 HOX Building 2,0	\sim	123	1/23
(1900) 1907	Abnormal 177 5 5 5 5 6 15 3 Abnormal 12		Sep25/23	0,0 HOX Building 2,0	Feb8/23	Ju[21/23	Nev1/23 Dec15/23
	Abnormal Abnormal Abnormal Abnormal Abnormal EZZ[Unn EZZ[Unn EZZ[Unn EZZ[Unn EZZ[Unn			-0.8 -0.4 -0.4 -0.4 -0.5 Base Mumber -0.5 Base Mumber -0.0 -0.0	Feb8/23 Feb8/23		
_aboratory	Abnormal Abnormal Abnormal Abnormal Abnormal EZZZIUM EZZZIUM EZZZIUM EZZZIUM EZZZIUM EZZZIUM EZZZIUM EZZZIUM EZZZIUM	01 Madiso Recieved	on Ave., Ca : 27 I	ry, NC 27513 Dec 2023	Feb8/23 Feb8/23	ımental - 867 - Traff	ord (Blount Hauling) County Line Rd
Laboratory Sample No. Lab Number	Abnormal Abnormal Abnormal Abnormal Abnormal CZCENN CZZ CLUM CZZ CZZ CLUM CZZ CZZ CLUM CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ	i01 Madis Recieved Diagnose	on Ave., Ca : 27 I d : 28 I	ry, NC 27513 Dec 2023 Dec 2023	Feb8/23 Feb8/23	ımental - 867 - Traff	ord (Blount Hauling) County Line Rd Trafford, AL
-aboratory Sample No.	Abnormal Abnormal Abnormal Abnormal Abnormal CZCENN CZZ CLUM CZZ CZZ CLUM CZZ CZZ CLUM CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ CZZ	01 Madiso Recieved	on Ave., Ca : 27 I d : 28 I	ry, NC 27513 Dec 2023	Feb8/23 Feb8/23	nmental - 867 - Traffo 1130 (ord (Blount Hauling) County Line Rd

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Submitted By: see also GFL868 - Chelsea Bryan

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