

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 10594

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.

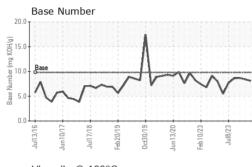


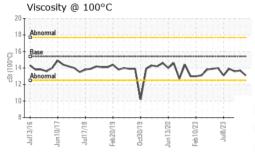


SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094805	GFL0094820	GFL0090449
Sample Date		Client Info		19 Oct 2023	28 Sep 2023	11 Sep 2023
Machine Age	hrs	Client Info		14872	14718	14584
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	Changed
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	0	mathad	limit/base	ourroat	biotory (1	history 0
	3	method		current	history1	history2
Iron	ppm	ASTM D5185m	>100	11	5	20
Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Nickel	ppm	ASTM D5185m	>4	<1	0	1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	1	4
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES			12			
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	current 2	history1 5	history2 4
	ppm ppm		0			
Boron		ASTM D5185m	0	2	5	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 19	5 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 19 58	5 0 58	4 3 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 19 58 <1	5 0 58 <1	4 3 64 <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	2 19 58 <1 803	5 0 58 <1 885	4 3 64 <1 915
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	2 19 58 <1 803 857	5 0 58 <1 885 943	4 3 64 <1 915 1064
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	2 19 58 <1 803 857 870	5 0 58 <1 885 943 972	4 3 64 <1 915 1064 1029
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 19 58 <1 803 857 870 1030	5 0 58 <1 885 943 972 1150	4 3 64 <1 915 1064 1029 1248
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 0 1010 1070 1150 1270 2060	2 19 58 <1 803 857 870 1030 3462	5 0 58 <1 885 943 972 1150 2844	4 3 64 <1 915 1064 1029 1248 3416
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	2 19 58 <1 803 857 870 1030 3462 current	5 0 58 <1 885 943 972 1150 2844 history1	4 3 64 <1 915 1064 1029 1248 3416 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 1010 1070 1150 1270 2060	2 19 58 <1 803 857 870 1030 3462 current 3	5 0 58 <1 885 943 972 1150 2844 history1 3	4 3 64 <1 915 1064 1029 1248 3416 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 1010 1070 1150 1270 2060 kimit/base >25	2 19 58 <1 803 857 870 1030 3462 current 3 6	5 0 58 <1 885 943 972 1150 2844 history1 3 4	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6
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 0 1010 1070 1150 1270 2060 limit/base >25	2 19 58 <1 803 857 870 1030 3462 current 3 6 2	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	2 19 58 <1 803 857 870 1030 3462 current 3 6 2 2	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1 history1	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 2 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 20	2 19 58 <1 803 857 870 1030 3462 <u>current</u> 3 6 2 <u>current</u> 0.3	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1 5 4 <1 history1 0.2	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 2 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 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 19 58 <1 803 857 870 1030 3462 <u>current</u> 3 6 2 <u>current</u> 0.3 7.5	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1 5.8	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 2 history2 0.4 8.3
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 >25 imit/base >3 >20	2 19 58 <1 803 857 870 1030 3462 <u>current</u> 3 6 2 <u>current</u> 0.3 7.5 18.2	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1 0.2 5.8 17.1	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 2 history2 0.4 8.3 19.3
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 33 20 20 30 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20	2 19 58 <1 803 857 870 1030 3462 Current 3 6 2 Current 0.3 7.5 18.2 Current	5 0 58 <1 885 943 972 1150 2844 history1 3 4 <1 0.2 5.8 17.1 history1	4 3 64 <1 915 1064 1029 1248 3416 history2 4 6 2 history2 0.4 8.3 19.3 history2



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	history1	history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
\sim	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Feb10/23 Jul8/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Febi	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
\sim	Visc @ 100°C	cSt	ASTM D445	15.4	13.1	13.7	13.6
	GRAPHS						
	Ferrous Alloys						
Feb 10/23	250 - iron nickel						
£ ·	200 -						
ma	150-	1					
		11					
	100-						
	50-						
		15	NV	2			
	Juil13/16 Jun10/17 Jul17/18 Feb20/19	0ct30/19 -	Jun 13/20 Feb 10/23	1			
	, –		Feb L	5			
	Non-ferrous Meta	s					
	copper						
	12 - neurosenen lead	1					
	10-						
	E 8		AA				
	6-	11	11 11				
	4 \		11/1				
	2- 1	.18	AN VI				
	n <u>i Xv v</u>	M' P		~			
	Jui13/16 Jun10/17 Jun117/18 Feb20/19	0ct30/19	Jun 13/20 - Feb 10/23 -	1			
			Ju Fel				
	Viscosity @ 100°C				Base Number		
	18 Abnormal			18.			
	17-			16. (514)			
	16 Base			HOY 12.	0-	A	
		- ~	MA -	(B/H0) 12.1 (B/H0) Bul) 10.1 Mul) 10.1 Mul) 10.1 See 8 4.1	Base		
	3 13 Abnormal	11	MA	∧ lage 8.	· A - A	NV	N
	12	V		N ese	1AM	V	- V
	11	V					
	10			2.	a state a serie serie de la serie de la serie		
		0ct30/19 -	eb 10/23	2	- 1/2/10/13/16	Feb20/19 - Oct30/19 - Jun13/20 -	Feb10/23 - Jul8/23 -
	Jul13/16 Jun 10/17 Jul17/18 Feb 20/19	0ct3-	Jun13/20 Feb10/23	2	llul Tuul	Feb20/19 0ct30/19 Jun13/20	Feb1 Jul
aboratory	: WearCheck USA - !				3 GFL Environ		rg Fines Hauling (Alpine)
Sample No. .ab Number		Receive		Oct 2023 Oct 2023			13737 Plant Rd
Jnique Number		Diagnos Diagnos		oct 2023 s Davis		C	hildersburg, AL US 35044
Fest Package	: FLEET	Liagnos		C Davio	Co	ontact: JONATH	



Test Package : FLEET Contact: JONATHAN WILLIAMS To discuss this sample report, contact Customer Service at 1-800-237-1369. jonathan.williams@gflenv.com * - 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)

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