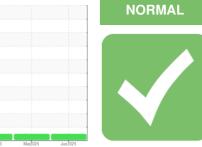


OIL ANALYSIS REPORT

Sample Rating Trend





913116 Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (28 GAL)

SAMPLE INFORMATION method

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Machine Id

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

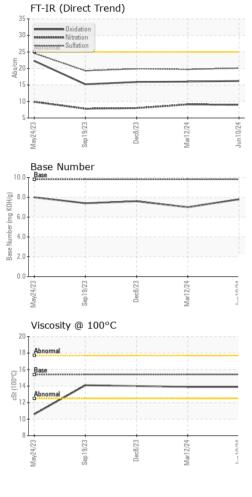
Fluid Condition

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

	VIATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0121963	GFL0109004	GFL0096879
Sample Date		Client Info		10 Jun 2024	12 Mar 2024	08 Dec 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
•			11 1.0			
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	12	14	14
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	4	4	6
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	<1	2
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	1	3	8
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
			11 1.0			history O
ADDITIVES		method				history2
Boron	ppm	ASTM D5185m	limit/base		history1 4	<1
	ppm ppm	ASTM D5185m		6 0		
Boron Barium	ppm		0	6	4	<1
Boron		ASTM D5185m ASTM D5185m	0	6 0	4	<1 12
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 61	4 0 59	<1 12 61
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 61 <1	4 0 59 <1	<1 12 61 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	6 0 61 <1 964	4 0 59 <1 929	<1 12 61 <1 954
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	6 0 61 <1 964 1078	4 0 59 <1 929 1038	<1 12 61 <1 954 1062
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	6 0 61 <1 964 1078 1060	4 0 59 <1 929 1038 994	<1 12 61 <1 954 1062 960
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	6 0 61 <1 964 1078 1060 1271	4 0 59 <1 929 1038 994 1199	<1 12 61 <1 954 1062 960 1219
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 0 1010 1070 1150 1270 2060	6 0 61 <1 964 1078 1060 1271 3365	4 0 59 <1 929 1038 994 1199 2842	<1 12 61 <1 954 1062 960 1219 2878
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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	6 0 61 <1 964 1078 1060 1271 3365 current	4 0 59 <1 929 1038 994 1199 2842 history1	<1 12 61 <1 954 1062 960 1219 2878 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 0 1010 1070 1150 1270 2060 kimit/base >25	6 0 61 <1 964 1078 1060 1271 3365 current 3	4 0 59 <1 929 1038 994 1199 2842 history1 3	<1 12 61 <1 954 1062 960 1219 2878 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 kimit/base >25	6 0 61 <1 964 1078 1060 1271 3365 current 3 3 3	4 0 59 <1 929 1038 994 1199 2842 history1 3 4	<1 12 61 <1 954 1062 960 1219 2878 history2 4 0
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	6 0 61 <1 964 1078 1060 1271 3365 current 3 3 <1 current	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4	<1 12 61 <10 954 1062 960 1219 2878 history2 4 0 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	6 0 61 <1 964 1078 1060 1271 3365 current 3 3 <1 current 0.6	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4 history1 0.6	<1 12 61 1 954 1062 960 1219 2878 history2 4 0 2 history2 0.5</th
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	6 0 61 <1 964 1078 1060 1271 3365 current 3 3 <1 current	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4	<1 12 61 <10 954 1062 960 1219 2878 history2 4 0 2 history2
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	6 0 61 <1 964 1078 1060 1271 3365 <u>current</u> 3 3 <1 <u>current</u> 0.6 9.0 20.1	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 history1 0.6 9.1 19.7	<1 12 61 1 954 1062 960 1219 2878 history2 4 0 2 history2 0.5 8.0 19.9</th
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	6 0 61 <1 964 1078 1060 1271 3365 <i>current</i> 3 3 3 <1 <i>current</i> 0.6 9.0 20.1 <i>current</i>	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4 history1 0.6 9.1 19.7 history1	<1 12 61 <1 954 1062 960 1219 2878 history2 4 0 2 history2 0.5 8.0 19.9 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20 30 imit/base	6 0 61 <1 964 1078 1060 1271 3365 current 3 3 <1 current 0.6 9.0 20.1 current 16.2	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4 history1 0.6 9.1 19.7 history1 16.0	<1 12 61 <1 954 1062 960 1219 2878 history2 4 0 2 history2 0.5 8.0 19.9 history2 15.9
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	6 0 61 <1 964 1078 1060 1271 3365 <i>current</i> 3 3 3 <1 <i>current</i> 0.6 9.0 20.1 <i>current</i>	4 0 59 <1 929 1038 994 1199 2842 history1 3 4 4 4 history1 0.6 9.1 19.7 history1	<1 12 61 <1 954 1062 960 1219 2878 history2 4 0 2 history2 0.5 8.0 19.9 history2



OIL ANALYSIS REPORT



		VISUAL		method				history2	
		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	
Dec8/23	Mar12/24 Jun10/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
ă	Mar	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	ERTIES	method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.9	14.0	
		GRAPHS							
		Ferrous Alloys							
/23	/24 ^^	35 - iron							
Dec8/23	Mar12/24	30 - nickel							
		25		 					
		<u><u>a</u>20</u>							
		15							
		10-							
		5-		States Street and stre					
		23 23	/23 -	/24	/24				
		May24/23 Sep19/23	Dec8/23	Mar12/24	Jun 10/24				
		Non-ferrous Meta	als	-	,				
Dec8/23 -	Mar12/24 -	²⁰⁰ T							
Dec	Marl	copper							
		150							
		₫ 100							
		50							
		0							
		flay/24/23 Sep 19/23	Dec8/23	lar12/24	Jun10/24				
		≝ Viscosity @ 100°		N	Jr				
		19 T		1	10.	Base Number			
		18 - Abnormal 17 -							
		16 - Base			(B/HC	0			
		ç 15-)y Bu 6.	.0 -			
		(2,15 00) 14 37 13 Abnormal			. 9 . 9 . 9 . 9 . 9 . 9 . 9 . 9 . 9 . 9				
		313 Abnormal			4. N as	.0-			
		11			⁶⁶ 2.	.0 -			
		10		· · · · · · · · · · · · · · · · · · ·		0			
		4/23	Dec8/23 -	2/24 -	0/24		Dec8/23	2/24 -	
		May24/23 Sep19/23	Dec	Mar12/24	Jun 10/24	May24/23 Sep19/23	Dec	Mar12/24	
4	Laboratory	: WearCheck USA - 50				GFL Envir	onmental - 401 - I		
4	Sample No.								
	I ah Number								
					Jun 2024 - V	Ves Davis		US 468	
NG LASORATORY	Unique Number Test Package	: 11084110	Diagr	n osed : 18		Ves Davis		-	

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Submitted By: See also GFL401 - ZACHORY ROEHM

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