

OIL ANALYSIS REPORT

Sample Rating Trend



424044-402288

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.

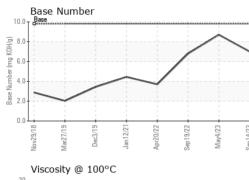
Fluid Condition

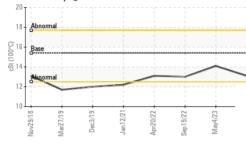
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093238	GFL0074173	GFL0054376
Sample Date		Client Info		14 Sep 2023	04 May 2023	19 Sep 2022
Machine Age	hrs	Client Info		22647	22010	332648
Oil Age	hrs	Client Info		22647	22010	332648
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	22	22	1 26
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	<1	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	1	1	5
Lead	ppm	ASTM D5185m	>40	<1	<1	2
Copper	ppm	ASTM D5185m	>330	3	3	25
Tin	ppm	ASTM D5185m	>15	<1	<1	1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	biotoryd	history2
ADDITIVES		method	iiiiii/base	current	history1	nistoryz
Boron	ppm	ASTM D5185m	0	2	<1	2
	ppm ppm		0			
Boron		ASTM D5185m	0	2	<1	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	<1 2	2 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 61	<1 2 63	2 2 55
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 61 <1	<1 2 63 <1	2 2 55 2
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 0 61 <1 1032	<1 2 63 <1 990	2 2 55 2 767
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 0 61 <1 1032 1120	<1 2 63 <1 990 1135	2 2 55 2 767 966
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 0 61 <1 1032 1120 997	<1 2 63 <1 990 1135 1062	2 2 55 2 767 966 814
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 0 61 <1 1032 1120 997 1270	<1 2 63 <1 990 1135 1062 1272	2 2 55 2 767 966 814 1049
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 1010 1070 1150 1270 2060	2 0 61 <1 1032 1120 997 1270 3352	<1 2 63 <1 990 1135 1062 1272 2923	2 2 55 2 767 966 814 1049 2327
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	2 0 61 <1 1032 1120 997 1270 3352 current	<1 2 63 <1 990 1135 1062 1272 2923 history1	2 2 55 2 767 966 814 1049 2327 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 limit/base >25	2 0 61 <1 1032 1120 997 1270 3352 current 6	<1 2 63 <1 990 1135 1062 1272 2923 history1 6	2 2 55 2 767 966 814 1049 2327 history2 6
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	0 0 60 1010 1070 1150 1270 2060 limit/base >25	2 0 61 <1 1032 1120 997 1270 3352 current 6 4	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4	2 2 55 2 767 966 814 1049 2327 history2 6 21
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 <i>limit/base</i> >25	2 0 61 <1 1032 1120 997 1270 3352 current 6 4 3	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1	2 2 55 2 767 966 814 1049 2327 history2 6 21 4
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 0 61 <1 1032 1120 997 1270 3352 current 6 4 3 3	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1 history1	2 2 55 2 767 966 814 1049 2327 history2 6 21 4 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 >25 >20 limit/base	2 0 61 <1 1032 1120 997 1270 3352 <u>current</u> 6 4 3 <u>current</u> 0.5	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1 Nistory1 0.3	2 2 55 2 767 966 814 1049 2327 history2 6 21 4 history2 1
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> >4 >20	2 0 61 <1 1032 1120 997 1270 3352 <i>current</i> 6 4 3 <i>current</i> 0.5 9.1	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1 Nistory1 0.3 6.6	2 2 55 2 767 966 814 1049 2327 history2 6 21 4 history2 1 history2 1
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 >4 >20	2 0 61 <1 1032 1120 997 1270 3352 <u>current</u> 6 4 3 <u>current</u> 0.5 9.1 19.5	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1 0.3 6.6 19.0	2 2 55 2 767 966 814 1049 2327 history2 6 21 4 history2 1 1 11.3 23.3
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 2260 2060 225 220 220 1000 225 20 220 20 20 20 20 20 20 20 20 20 20 20	2 0 61 <1 1032 1120 997 1270 3352 <i>current</i> 6 4 3 <i>current</i> 0.5 9.1 19.5 <i>current</i>	<1 2 63 <1 990 1135 1062 1272 2923 history1 6 4 1 0.3 6.6 19.0 history1	2 2 55 2 767 966 814 1049 2327 history2 6 21 4 4 history2 1 1.1.3 23.3 history2



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	history1	history2	
\wedge	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
$\langle \rangle$	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	
Sep19/22 - May4/23 - Sep14/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Sep1 May	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	13.1	14.1	13.0	
	GRAPHS							
	Ferrous Alloys							
Sep 19/22 -	120 - iron		٨					
Sep1 May	100 - nickel							
E	80-		/ \					
	£ 60 -	/	/					
	40-]						
	20	/	L					
	0							
	Nov29/18 Mar27/19 Dec3/19	Jan 12/21 Apr20/22	Sep19/22 May4/23	Sep14/23				
			Sep	Sel				
	Non-ferrous Meta	ls						
	copper		Λ					
	20 - tin		/ \					
	15		/					
	E d							
	10-							
	5 -	/						
			And the owner of the owner owne					
	Nov29/18	Jan 1 2/2 1 4 Apr 2 0/2 2 -	Sep19/22 - May4/23 -	Sep14/23 -				
	Nov2 Mar2 Dec	Jan 12/2 Apr20/22	Sep19/22 May4/23	Sep 1				
	Viscosity @ 100°	C			Base Number			
	19 18 - Abnormal			10.0	Base			
	17	·		<u> </u>			\wedge	
	Base			KOH/¢				
	0 15			E 6.0		/		
				- 4.0		\sim		
	13 Abnormal			ase N				
	11			°° 2.0				
	10	2	3 2	0.0		2	3 3	
	Nov29/18 Mar27/19 Dec3/19	Jan 1 2/2 1 Apr 2 0/2 2	Sep 19/22 May4/23	Sep 14/23	Nov29/18 Mar27/19 Dec3/19	Jan 12/21 Apr20/22	Sep 1 9/22 May4/23 Sep 1 4/23	
					~ ~			
Laboratory	: WearCheck USA -	501 Madia Received				onmental - 865 - Ea		
Sample No. Lab Number	: GFL0093238 : 05957410	Diagnos		Sep 2023 Sep 2023	12	213 East Mount	Houston Road Houston, TX	
Unique Number	: 10658623	Diagnost		s Davis			US 77050	
Test Package	: FLEET	-					t: Saul Castillo	
	contact Customer Serv					saul.castil	lo@gflenv.com т·	

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

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