

OIL ANALYSIS REPORT





NORMAL

729012-1259

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 INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0084733	GFL0083951	GFL0078736
Sample Date		Client Info		19 Jun 2023	13 Jun 2023	23 Mar 2023
Machine Age	hrs	Client Info		145679	11153	10602
Oil Age	hrs	Client Info		0	585	600
Oil Changed		Client Info		Not Changd	Changed	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	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>80	8	34	28
Chromium	ppm	ASTM D5185m	>ou >5	0	2	20
Nickel	ppm		>2	0	<1	0
Titanium	ppm	ASTM D5185m ASTM D5185m	>C	0	<1	0
Silver	ppm		2	0	<1	0
	ppm	ASTM D5185m ASTM D5185m	>3	1		2
Aluminum	ppm		>30		<1 2	
Lead	ppm	ASTM D5185m	>30	<1 4	2	0
Copper	ppm	ASTM D5185m	>150		_	
Tin	ppm	ASTM D5185m	>5	0	<1	<1 0
Vanadium	ppm	ASTM D5185m		0	<1	
Cadmium	ppm	ASTM D5185m		0	<1	0
						le le tre un o
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	current 33	history1 6	nistory2 1
	ppm ppm				6 <1	
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	33	6	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	33 7	6 <1 62 <1	1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	33 7 44	6 <1 62	1 0 49 <1 893
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	33 7 44 2	6 <1 62 <1	1 0 49 <1 893 1063
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	33 7 44 2 823	6 <1 62 <1 959	1 0 49 <1 893
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	33 7 44 2 823 1204	6 <1 62 <1 959 1157	1 0 49 <1 893 1063
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	33 7 44 2 823 1204 725	6 <1 62 <1 959 1157 1004	1 0 49 <1 893 1063 853
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	33 7 44 2 823 1204 725 898	6 <1 62 <1 959 1157 1004 1288	1 0 49 <1 893 1063 853 1256
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	33 7 44 2 823 1204 725 898 2819	6 <1 62 <1 959 1157 1004 1288 3252	1 0 49 <1 893 1063 853 1256 2638
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	33 7 44 2 823 1204 725 898 2819 current	6 <1 62 <1 959 1157 1004 1288 3252 history1	1 0 49 <1 893 1063 853 1256 2638 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 kimit/base >20	33 7 44 2 823 1204 725 898 2819 current 10	6 <1 62 <1 959 1157 1004 1288 3252 history1 6	1 0 49 <1 893 1063 853 1256 2638 history2 5
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 kimit/base >20	33 7 44 2 823 1204 725 898 2819 current 10 2	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9	1 0 49 <1 893 1063 853 1256 2638 history2 5 5
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 imit/base >20 imit/base	33 7 44 2 823 1204 725 898 2819 current 10 2 2 <1	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5
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 2060 2060 220 20 20 20 20	33 7 44 2 823 1204 725 898 2819 current 10 2 <1 current	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2 2 history1	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20	33 7 44 2 823 1204 725 898 2819 <i>current</i> 10 2 <1 <i>current</i> 0.1	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2 2 history1 0.5	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5 5 5 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> >20 <i>limit/base</i> >20	33 7 44 2 823 1204 725 898 2819 <i>current</i> 10 2 <1 2 <1 <i>current</i> 0.1 8.0	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2 2 history1 0.5 11.6	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5 5 history2 0.4 11.3
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	33 7 44 2 823 1204 725 898 2819 current 10 2 2 <1 current 0.1 8.0 20.8 current	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2 history1 0.5 11.6 22.5 history1	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5 history2 0.4 11.3 21.6 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3	33 7 44 2 823 1204 725 898 2819 <i>current</i> 10 2 <1 2 <1 <i>current</i> 0.1 8.0 20.8	6 <1 62 <1 959 1157 1004 1288 3252 history1 6 9 2 2 history1 0.5 11.6 22.5	1 0 49 <1 893 1063 853 1256 2638 history2 5 5 5 5 5 5 5 5 5 <i>history2</i> 0.4 11.3 21.6



Aug26/21.

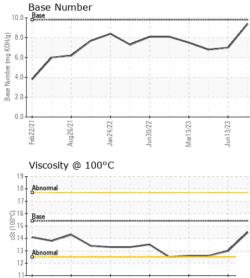
lan24/22

Jun30/22

Feb22/21

OIL ANALYSIS REPORT

VISUAL



	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
23 -		scalar	*Visual	NORML	NORML	NORML	NORML
Mar13/23 Jun13/23	Appearance						
M JL	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	14.5	13.0	12.6
	GRAPHS						
	Ferrous Alloys						
	70 iron						
Mar13/23 Jun13/23	60 - chromium						
Jun Ma	50		·····				
	e 40						
	튭 30		/	1			
	20		-	1			
	10	\sim		1			
			Participation of the second se				
	21-0	/22	/23	3			
	Feb22/21 Aug26/21 Jan24/22	Jun30/22	Mar13/23	C I UN			
	Non-ferrous Meta		2 -	2			
	copper						
	8 - management lead						
	6-						
	Edd						
	4			/			
				/			
	2	\sim	-1				
	0	AND DESCRIPTION OF TAXABLE PARTY.		1			
	Feb22/21 Aug26/21 Jan24/22	Jun30/22	Mar13/23	C7/C			
	Febź Augź Jan2	Jun3	Marl				
	Viscosity @ 100°C	:			Base Number		
	¹⁹			10.			
	18 - Abnormal		+				
	17			(B/H		\sim	
	Solo Base		· · · · · · · · · · · · · · · · · · ·	(B) (Mumber (mg KOH/g)	0		
	Base 115 3 14			ber (n			
	^{°3} 14			1 mn 4.	0		
	13 Abnormal			ase 2.1	0		
	12		+	L.			
		2		. 0.1		2	
	Feb22/21 Aug26/21 Jan24/22	Jun30/22	Mar13/23	7/6	Feb22/21 Aug26/21	Jan 24/22 Jun 30/22	Mar13/23 Jun13/23
	Jar Au	Jur	W	5	Au Au	Jur	Ma
Laboratory	· WoorChook USA	501 Madi	con Ava Ca	NC 0751		ronmontal 600 T-	avoreo City Houling
Laboratory Sample No.	: WearCheck USA - 5 : GFL0084733	Received		ry, NC 2751; Jun 2023	o GFL ENVI		averse City Hauling 160 Hughes Dr
Lab Number		Diagnos		Jun 2023			averse City, MI
Unique Number		Diagnost		s Davis			US 49686
Test Package		0	-			Contact: G	ARY BREWER
	contact Customer Serv	ice at 1-8	00-237-1369	2			

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: TECHNICIAN ACCOUNT