

OIL ANALYSIS REPORT

{UNASSIGNED} 512014

Component **Diesel Engine** Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

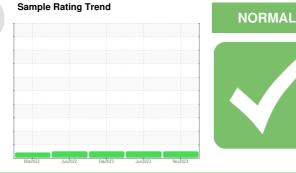
All component wear rates are normal.

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 INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0099625	GFL0030393	GFL0030377
Sample Date		Client Info		14 Nov 2023	05 Jun 2023	08 Feb 2023
Machine Age	hrs	Client Info		3756	3013	2419
Oil Age	hrs	Client Info		615	613	582
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ON	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 METALS	\$	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	23	23	60
Chromium	ppm	ASTM D5185m	>20	1	1	2
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	4	19
Lead	ppm	ASTM D5185m	>40	1	1	3
Copper	ppm	ASTM D5185m	>330	2	1	5
Tin	ppm	ASTM D5185m	>15	<1	1	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Gadinian	ppin	AO INI DOTODITI		U	0	0
ADDITIVES	ppin	method	limit/base	current	history1	history2
	ppm		limit/base	-		-
ADDITIVES		method ASTM D5185m		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 4	history1 8	history2 4
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 4 0	history1 8 0	history2 4 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 64	history1 8 0 68	history2 4 0 63
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 4 0 64 <1	history1 8 0 68 <1	history2 4 0 63 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	current 4 0 64 <1 971	history1 8 0 68 <1 960	history2 4 0 63 1 903
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	current 4 0 64 <1 971 1104	history1 8 0 68 <1 960 1136	history2 4 0 63 1 903 1183
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	Current 4 0 64 <1 971 1104 962	history1 8 0 68 <1 960 1136 1037	history2 4 0 63 1 903 1183 1009
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 0 1010 1070 1150 1270	current 4 0 64 <1 971 1104 962 1267	history1 8 0 68 <1 960 1136 1037 1303	history2 4 0 63 1 903 1183 1009 1274
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	Current 4 0 64 <1 971 1104 962 1267 2750	history1 8 0 68 <1 960 1136 1037 1303 3487	history2 4 0 63 1 903 1183 1009 1274 2591
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 4 0 64 <1 971 1104 962 1267 2750 Current	history1 8 0 68 <1 960 1136 1037 1303 3487 history1	history2 4 0 63 1 903 1183 1009 1274 2591 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus 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	current 4 0 64 <1 971 1104 962 1267 2750 current 5	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12
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 0 1010 1070 1150 1270 2060 limit/base	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2 13	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1 10	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 12 51
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 2060 225 >25 >20 Limit/base >20	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2 13	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1 10 history1	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 51 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN 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 2060 225 >25 >20 Limit/base >20	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2 13 current 0.9	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1 10 history1 0.7	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 151 history2 1.1
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >22 20	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2 13 current 0.9 10.8	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1 10 history1 0.7 9.6	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 151 history2 1.1 12.4
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 2060 225 20 225 20 20 320 32 20 33 20	current 4 0 64 <1 971 1104 962 1267 2750 current 5 2 13 current 0.9 10.8 22.2	history1 8 0 68 <1 960 1136 1037 1303 3487 history1 5 <1 10 history1 0.7 9.6 21.5	history2 4 0 63 1 903 1183 1009 1274 2591 history2 12 151 history2 1.1 12.4 25.7



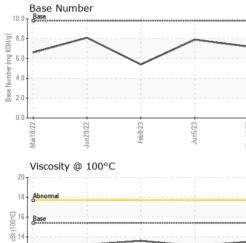
Al 12 10

Mar18/22

Jun29/22

OIL ANALYSIS REPORT

VISUAL



		VISUAL		methoa	iimit/base	current	nistory i	riistoryz
		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
Feb 8/23	Jun5/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
Feb	Jun5/23 Nov14/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.5	13.1	13.6
		GRAPHS						
		Ferrous Alloys						
Feb 8/23 -	5/23 -	60 - iron	~					
Feb	Jun5/23	50	$\langle \rangle$					
		E 30		\mathbf{i}				
		1						
		20						
		10						
			23	23	53			
		Mar18/22 Jun29/22	Feb 8/23	Jun5/23	Nov14/23			
		≥ ⊰ Non-ferrous Meta		,	2			
		45 _T	ais					
		40 - copper						
		35 tin						
		30						
		₫ ²⁵ 20						
		15						
		10						
		5-						
		0						
		Mar18/22 Jun29/22	Feb 8/23	Jun5/23	Nov14/23			
				7	No			
		Viscosity @ 100°	C			Base Number		
		19 ₁						
			1		10.0	Base		
		19 18 - Abnormal 17				Base		~~
		19 18 - Abnormal 17				Base		<u> </u>
		19 18 - Abnormal 17				Base		~~
		19 18 Abnomal 17 16 Base 15 14				Base	\checkmark	
		19 18 Abnomal 17 16 Base 315 4			(6)HOX 6.0 bHOX 6.0 ese Nmm ese	Base	\checkmark	~~
		19 18 Abnomal 17 16 Base 315 4 4 4 4 4 4 4 4 4 4 4 4 4				Base		
		Abnormal Abnormal Base Base Abnormal Abnormal Abnormal 12 14 13 12 14 13 14 13 12 14 10 10 10 10 10 10 10 10 10 10			(G/HOX Bu) Jaquing association generation ge			
		Abnormal Abnormal Base Base Abnormal Abnormal Abnormal 12 14 13 12 14 13 14 13 12 14 10 10 10 10 10 10 10 10 10 10	eb8/23	un523-	(G/HOX Bu) Jaquing association generation ge		C2/8 qia	un5/23
		19 18 Abnomal 17 16 Base 315 14 13 Abnormal 12 11	Feb8/23 -	Jun5/23	(0,HOX Bu) as for the second s	Base	Feb.823	Jun5/23
	Laboratory	19 Abnormal 17 6 16 Base 16 0 17 16 18 Constant 19 13 12 11 10 C00011 egg 10 C00011 egg 10 C00011 egg			(0, 8.0 (0, 14, 0) Base Number 2.0 0.0 EZ/FIAN	Mart 8/22 Jun 29/22		
4	Laboratory Sample No.	Abnormal Abnormal Abnormal Abnormal Colority Colori	501 Madis	son Ave., Ca	(0)HOX 00) (0)HOX 00) 100 HOX 00) 100 HOX 00 100 H	Mart 8/22 Jun 29/22	vironmental - 63	3 - Grand Hav
	Laboratory Sample No. Lab Number	19 Abnormal 17 6 16 Base 16 0 17 16 18 Constant 19 13 12 11 10 C00011 egg 10 C00011 egg 10 C00011 egg		son Ave., Ca 1 : 21 I	(0, 8.0 (0, 14, 0) Base Number 2.0 0.0 EZ/FIAN	Mart 8/22 Jun 29/22		3 - Grand Hav 1680 Peach
	Sample No. Lab Number Unique Number	Abnormal Abnormal Abnormal Abnormal Cooperations Base Cooperations	501 Madis Received	son Ave., Ca 1 : 21 ed : 22	(0)HOX BU Jaquing eeg 2.0 C0/HOX BU Jaquing eeg 2.0 C0/HOX BU Jaquing eeg 2.0 0.0 Try, NC 27513 Nov 2023	Mart 8/22 Jun 29/22	vironmental - 63	3 - Grand Hav 1680 Peach Whitehall, US 494
	Sample No. Lab Number Unique Number Test Package	Abnormal Abnormal Abnormal Abnormal Cooperations Base Cooperations	501 Madis Received Diagnose Diagnost	son Ave., Ca 1 : 21 l ed : 22 l ician : We	(0)HOX DU) Jaquing 000 (0)HOX	Mart 8/22 Jun 29/22	v ironmental - 63 Conta	3 - Grand Hav 1680 Peach Whitehall,

* - Denotes test m 5 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: Derek Kater Page 2 of 2