

OIL ANALYSIS REPORT

Sample Rating Trend





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

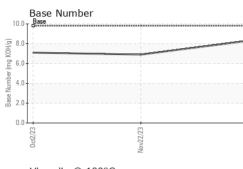
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

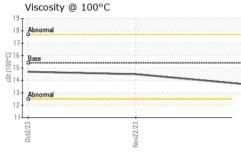
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103589	GFL0097814	GFL0085298
Sample Date		Client Info		21 Dec 2023	22 Nov 2023	02 Oct 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		600	580	612
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINAT	ION	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 METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	6	70	61
Chromium	ppm	ASTM D5185m	>5	<1	4	4
Nickel	ppm	ASTM D5185m	>2	0	2	1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>30	3	7	9
Lead	ppm	ASTM D5185m	>30	0	<1	<1
Copper	ppm	ASTM D5185m	>150	34	4	8
Tin	ppm	ASTM D5185m	>5	<1	1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 5	history2 5
	ppm ppm					
Boron		ASTM D5185m	0	2	5	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 9	5 0	5 12 54 1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 9 60	5 0 57	5 12 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 9 60 0	5 0 57 1	5 12 54 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 9 60 0 930 1047 1034	5 0 57 1 938 1126 939	5 12 54 1 927 1058 956
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	2 9 60 0 930 1047 1034 1189	5 0 57 1 938 1126 939 1188	5 12 54 1 927 1058 956 1182
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	0 0 60 0 1010 1070 1150	2 9 60 0 930 1047 1034	5 0 57 1 938 1126 939	5 12 54 1 927 1058 956
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	0 0 60 0 1010 1070 1150 1270	2 9 60 0 930 1047 1034 1189 3182 current	5 0 57 1 938 1126 939 1188 2839 history1	5 12 54 1 927 1058 956 1182 2787 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 00 00 1010 1070 1150 1270 2060	2 9 60 0 930 1047 1034 1189 3182 current 3	5 0 57 1 938 1126 939 1188 2839 history1 ▲ 22	5 12 54 1 927 1058 956 1182 2787 history2 18
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	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	2 9 60 0 930 1047 1034 1189 3182 current 3 0	5 0 57 1 938 1126 939 1188 2839 1188 2839 history1 ▲ 22 2	5 12 54 1 927 1058 956 1182 2787 history2 18 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060 kimit/base	2 9 60 0 930 1047 1034 1189 3182 current 3	5 0 57 1 938 1126 939 1188 2839 history1 ▲ 22	5 12 54 1 927 1058 956 1182 2787 history2 18
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 Imit/base >20 S	2 9 60 0 930 1047 1034 1189 3182 current 3 0 2 current	5 0 57 1 938 1126 939 1188 2839 history1 22 2 4 4	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 7 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 2060 220 20 20 20	2 9 60 0 930 1047 1034 1189 3182 <u>current</u> 3 0 2 <u>current</u> 0.2	5 0 57 1 938 1126 939 1188 2839 history1 ▲ 22 2 2 4 4 history1 1.1	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	2 9 60 0 930 1047 1034 1189 3182 <i>current</i> 3 0 2 <i>current</i> 0.2 5.8	5 0 577 1 938 1126 939 1188 2839 history1 ▲ 22 2 2 4 history1 1.1 1.1 1.2.1	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 history2 1 history2 1 1 11.0
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 >20	2 9 60 0 930 1047 1034 1189 3182 <u>current</u> 3 0 2 <u>current</u> 0.2	5 0 57 1 938 1126 939 1188 2839 history1 ▲ 22 2 2 4 4 history1 1.1	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 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> >20 <i>limit/base</i> >3 >20	2 9 60 0 930 1047 1034 1189 3182 <i>current</i> 3 0 2 <i>current</i> 0.2 5.8	5 0 577 1 938 1126 939 1188 2839 history1 ▲ 22 2 2 4 history1 1.1 1.1 1.2.1	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 history2 1 history2 1 1 11.0
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 >20	2 9 60 0 930 1047 1034 1189 3182 <u>current</u> 3 0 2 2 <u>current</u> 0.2 5.8 18.6	5 0 57 1 938 1126 939 1188 2839 history1 ▲ 22 2 2 4 bistory1 1.1 1.2.1 26.0	5 12 54 1 927 1058 956 1182 2787 history2 18 6 7 history2 1 history2 1 1 11.0 24.1



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
2/23	1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Nov22/23	Dec21/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.7	14.5	14.7
		GRAPHS						
	1	Ferrous Alloys						
		⁷⁰	\neg					
2/23		60 - chromium						
Nav22/23		50 - nickel						
	_	40						
	mqq	30 -						
		20						
		10		```				

		23	/23 -		123			
		0ct2/23	Vov22/23		Dec21/23			
		Non-ferrous Meta	-					
		³⁵ T						
		30 - copper						
		25						
		20						
	hpm	15-						
	udd	15-		/				
	udd	15						
	udd	10-5-	_/					
	udd	10 5 0			23			
	udd	10-5-	0/22/23		ec21/23			
	udd	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Nov22/23		Dec21/23			
	udd	Viscosity @ 100°C			Dec 2017	Base Number		
	udd	Viscosity @ 100°C			10.0			
	udd	Viscosity @ 100°C			10.0			
	udd	Viscosity @ 100°C			10.0	- Base		
	udd	Viscosity @ 100°C			10.0	Base		
	cst (100°C)	Viscosity @ 100°C			10.0	Base		
	eSt (100-C)	Viscosity @ 100°C			0.0 8.0 HOX Du 9.0 Per	Base		
	cst (100*2)	Viscosity @ 100°C			(0,0) (0,0)	Base		
	cst (100*2)	Viscosity @ 100°C			(0,HO) Bull Jack 4.0 988 2.0 0.0	Base	573	
	cst (100*2)	Viscosity @ 100°C			(0,0) (0,0)	Base	Nov2223	
	cst (100°C)	Viscosity @ 100°C	Nov22223		10.0 8.0 0.6.0 0.0 8 9 9 9 9 9 9 9 0.0 0 0 0 0 0 0 0 0 0 0 0	E2772200		
	(2-001) 350 pratory	Viscosity @ 100°C	501 Madis		10.0 (0)HOX Dul Ja (0)HOX DUL	E2772200	onmental - 958 - Tri	County HC Mort
Sam	oratory ple No.	Viscosity @ 100°C	501 Madia Recieved	d : 26 l	10.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(E2772200	onmental - 958 - Tri	County HC Mort V. Jefferson S
Samı Lab I	oratory ple No. Number	Viscosity @ 100°C	501 Madia Recieved Diagnose	d :26 l ed :27 l	10.0 (0)HOX Dul Ja (0)HOX DUL	E2772200	onmental - 958 - Tri	County HC Mort V. Jefferson S Morton,
Samı Lab I Uniqu	aratory ple No. Number ie Number	Viscosity @ 100°C	501 Madia Recieved	d :26 l ed :27 l	10.0 (0)(10,000) (0)(10,000 (0)(10,000) (0)(10,000 (0)(10,000) (0)(10,00)	E2772200	onmental - 958 - Tri 1090 V Cont	County HC Mort V. Jefferson S Morton, US 6155 act: Bryan Lin
Samı Lab I Uniqu ertificate 12367 Test o discuss this samp	eratory ple No. Number ne Number Package de report, cc	Viscosity @ 100°C	501 Madia Recieved Diagnost Diagnost	d : 26 ed : 27 tician : Wes	10.0 (), (), (), (), (), (), (), (), (), (),	E2772200	onmental - 958 - Tri 1090 V Cont	V. Jefferson Morton, US 615