

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **1121M** 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

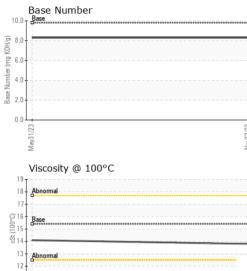
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI		method	limit/base	current	history1	history2
Sample Number		Client Info	innibacco	GFL0089100	GFL0069892	
Sample Date		Client Info		22 Nov 2023	GFL0069892 31 May 2023	
Machine Age	hrs	Client Info		11110	9779	
Oil Age	hrs	Client Info		11110	600	
Oil Changed	1110	Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	16	42	
Chromium	ppm	ASTM D5185m	>20	1	5	
Nickel	ppm	ASTM D5185m	>2	0	0	
Titanium	ppm	ASTM D5185m	>2	<1	0	
Silver	ppm	ASTM D5185m	>2	0	0	
Aluminum	ppm	ASTM D5185m	>30	2	19	
Lead	ppm	ASTM D5185m	>30	0	0	
Copper	ppm	ASTM D5185m	>30	1	6	
Tin	ppm	ASTM D5185m	>15	0	<1	
Vanadium	ppm	ASTM D5185m		<1	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1 2	history2
	ppm ppm					
Boron		ASTM D5185m	0	<1	2	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1 0	2 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 61	2 0 57	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 61 <1	2 0 57 1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 0 61 <1 1040	2 0 57 1 938	
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	<1 0 61 <1 1040 1147	2 0 57 1 938 1095	
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	<1 0 61 <1 1040 1147 1021	2 0 57 1 938 1095 993	
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	<1 0 61 <1 1040 1147 1021 1401	2 0 57 1 938 1095 993 1239	
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	<1 0 61 <1 1040 1147 1021 1401 3191	2 0 57 1 938 1095 993 1239 3568	
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	<1 0 61 <1 1040 1147 1021 1401 3191 current	2 0 57 1 938 1095 993 1239 3568 history1	
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 limit/base	<1 0 61 <1 1040 1147 1021 1401 3191 current 5	2 0 57 1 938 1095 993 1239 3568 history1 12	 history2
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	<1 0 61 <1 1040 1147 1021 1401 3191 current 5 4	2 0 57 1 938 1095 993 1239 3568 history1 12 6	 history2
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 60 0 1010 1070 1150 1270 2060 limit/base >30	<1 0 61 <1 1040 1147 1021 1401 3191 <u>current</u> 5 4 4 <1	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >30 >20	<1 0 61 <1 1040 1147 1021 1401 3191 current 5 4 <1 <	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14 14 history1	 history2 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 >30 limit/base >20	<1 0 61 <1 1040 1147 1021 1401 3191 <i>current</i> 5 4 <1 <i>current</i> 0.7	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14 14 history1 0.4	 history2 history2 history2
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 imit/base >30 220 imit/base >3 >20	<1 0 61 <1 1040 1147 1021 1401 3191 <u>current</u> 5 4 <1 <u>current</u> 0.7 8.7	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14 12 6 14 14 0.4 6.5	 history2 history2 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 >30 20 Imit/base >3 >20	<1 0 61 <1 1040 1147 1021 1401 3191 <i>current</i> 5 4 <1 <i>current</i> 0.7 8.7 20.7	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14 12 6 14 14 0.4 6.5 19.5	 history2 history2 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 2060 2060 2060 200 200 200 200 20	<1 0 61 <1 1040 1147 1021 1401 3191 <u>current</u> 5 4 <1 <u>current</u> 0.7 8.7 20.7	2 0 57 1 938 1095 993 1239 3568 history1 12 6 14 12 6 14 14 0.4 6.5 19.5 19.5 history1	 history2 history2 history2 history2



11 May31/23

OIL ANALYSIS REPORT



	VISUAL			method				history
_	White Metal		scalar	*Visual	NONE	NONE	history1 NONE	
	Yellow Metal			*Visual	NONE	NONE	NONE	
	Precipitate			*Visual	NONE	NONE	NONE	
	Silt			*Visual	NONE	NONE	NONE	
	Debris			*Visual	NONE	NONE	NONE	
	Sand/Dirt			*Visual	NONE	NONE	NONE	
3								
C7/77A 0A	Appearance			*Visual	NORML	NORML	NORML	
1	Odor			*Visual	NORML	NORML	NORML	
	Emulsified W	later		*Visual	>0.2	NEG	NEG	
	Free Water			*Visual		NEG	NEG	
	FLUID P			method	limit/base	current	history1	history
	Visc @ 100°		cSt	ASTM D445	15.4	13.8	14.1	
	GRAPHS							
	Ferrous All	oys						
	40 iron							
	35 - nicke							
	30-							
E	25 -							
dd	25							
	1							
	15							
	10-							
	5							
	0							
	May31/23				23			
	23				2			
	a				Jov22/			
					Nov22/23			
	Non-ferrou	ıs Metal	s		Nov22			
	Non-ferrou		S		Nov22/			
	Non-ferrou		s		Nov22/			
	Non-ferrou		s		Nov22			
	Non-ferrou		s		Nov22/			
E	Non-ferrou		s		Nov22/			
DDM	Non-ferrou		s		Nov22/			
maa	Non-ferrou		s		Nov22/			
DDM	Non-ferrou		s		Nov22			
E	Non-ferrou		s		Vov22			
	Non-ferrou		S		Nov22			
шаа	Non-ferrou		S					
Шd	Non-ferrou		S					
Шdd	Non-ferrou ¹⁰	er			Nov22/23			
Шdd	Non-ferrou ¹⁰	er				Base Number	r	
Шdd	Non-ferrou ¹⁰	er				Base Number	r	
	Non-ferrou ¹⁰	er			Nov2223		r	
Шdd	Non-ferrou ¹⁰	er			Nov22223	Base	r	
	Non-ferrou 10 10 10 10 10 10 10 10 10 10	er			Nov22223	Base	r	
	Non-ferrou 10 10 10 10 10 10 10 10 10 10	er			Nov22223	Base	r	
	Non-ferrou 10 10 10 10 10 10 10 10 10 10	er			Nov22223	Base	r	
	Non-ferrou 10 10 10 10 10 10 10 10 10 10	er			Nov22223	Base	r	
	Non-ferrou log compared to the second secon	er			0.0 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Base	r	
	Non-ferrou 10 10 10 10 10 10 10 10 10 10	er			0.01 Nov22223	Base	r	
	Non-ferrou load	er			10.0 (0,110,0 0,110,0 0,110,0 0,10,0 0,0 0,0 0	Base	r	
	Non-ferrou load compared to the second seco	er			0.01 Base Mumber (mg KOH(s) Base Mumber (mg K	Base	r	
	Non-ferrou load compared to the second seco	er			0.01 Base Mumber (mg KOH(s) Base Mumber (mg K	Base	r	
	Non-ferrou load	er			10.0 (0,110,0 0,110,0 0,110,0 0,10,0 0,0 0,0 0	Base	r	
	Non-ferrou	er			10.0 Base Number (ng) (Nov22/2) Base Number (ng) (Nov22/2) Base Number (ng) (Nov22/2) Base Nov22/2) Control (Nov22/2) Base Nov22/2) Base Nov22	Base EZUI E ^{he} W		
	Non-ferrou Non-ferrou lead Lead Viscosity (Viscosity (laboremal labo	0 100°C	501 Madiso		10.0 (0)HOX Bu) angun ECZCZONN (0)HOX BU) angun (0)HOX BU)	Base EZUI E ^{he} W	r vironmental - 415	
	Non-ferrou Non-ferrou Io Io Io Io Io Io Io Io Io Io	0 100°C	501 Madiso Received	: 24	10.0 (0)НОХ ВО 2.0 (0)НОХ ВО 2.0 (0)НОХ ВО 2.0 (0) (0)НОХ ВО 2.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0	Base EZUI E ^{he} W	vironmental - 415	6200 Elmrid
cSt (100°C)	Non-ferrou Non-ferrou Io Io Io Io Io Io Io Io Io Io	0 100°C	501 Madiso Received Diagnose	:24 I d :26 I	10.0 (0)HOX Bu) angun ECZCZONN (0)HOX BU) angun (0)HOX BU)	Base EZUI E ^{he} W	vironmental - 415	6200 Elmrid ling Heights,
(3+ (100-C)	Non-ferrou Non-fe	0 100°C	501 Madiso Received	:24 I d :26 I	10.0 (0)НОХ ВО 2.0 (0)НОХ ВО 2.0 (0)НОХ ВО 2.0 (0) (0)НОХ ВО 2.0 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0	Base EZUI E ^{he} W	vironmental - 415	5 - Michigan E 6200 Elmrid ling Heights, US 483
(3+ (100-C)	Non-ferrou Non-ferrou Io Io Io Io Io Io Io Io Io Io	0 100°C	501 Madiso Received Diagnose	:24 I d :26 I	EZZZZVOW (0)HOX BU) JAGU (0)HOX BU) JA	Base EZUI E ^{he} W	vironmental - 415 Ster	6200 Elmrid ling Heights,
G 🛃	Non-ferrou Non-ferrou Ione Isological Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Ione Isological Non-ferrou Non-ferrou Ione Isological Non-ferrou Ione Isological Ione Isological	0 100°C	501 Madiso Received Diagnosei	: 24 d : 26 cian : Wes	EZZZZNAW (0)HOX Dul 300 (0)HOX DUL 300 (0)H	Base EZUI E ^{he} W	vironmental - 415 Ster Conta	6200 Elmrid ling Heights US 48 ct: Frank Wo
cSt (100°C)	Non-ferrou Non-fe	0 100°C	501 Madiso Received Diagnose	:24 I d :26 I	EZZZZVOW (0)HOX BU) JAGU (0)HOX BU) JA	Base EZUI E ^{he} W	vironmental - 415	6200 Elmri ling Heights
	Non-ferrou Non-fe	USA - 5 0 100°C	501 Madiso Received Diagnosei Diagnostii	: 24 d : 26 cian : Wes	10.0 (0)HOy Dul Jaquing area (0)HOy Dul Jaquing area (1)HOY Dul Jaquing area (Base EZUI E ^{he} W	vironmental - 415 Ster Conta fwol	6200 Elmri ling Heights US 48



Certificate L2367 To discuss this s * - Denotes test Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: GFL415 [WUSCAR] 06016137 (Generated: 11/26/2023 14:59:47) Rev: 1

Submitted By: Frank Wolak