

## **OIL ANALYSIS REPORT**

Sample Rating Trend





## Component

Diesel Engine

## 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.

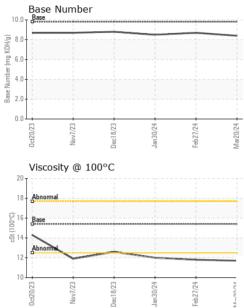
#### Fluid Condition

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		GFL0101902	GEL 0101893	GFL0101992
Sample Date		Client Info		20 Mar 2024	27 Feb 2024	30 Jan 2024
Machine Age	hrs	Client Info		20 Mai 2024 8386	8317	8236
Oil Age	hrs	Client Info		381	312	231
Oil Changed	1115	Client Info		Not Changd	Not Changd	Not Changd
U		Client Into		NORMAL	NORMAL	NORMAL
Sample Status				NORMAL	NORMAL	NORIVIAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>2.0	<1.0	<1.0	1.4
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	>100	4	1	1
Chromium	ppm	ASTM D5185m	>20	<1	0	0
Nickel	ppm		>4	0	0	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	<1	2
Lead	ppm	ASTM D5185m	>40	<1	0	1
Copper	ppm	ASTM D5185m	>330	<1	0	<1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 6	history2 6
	ppm ppm					
Boron Barium		ASTM D5185m	0	4	6	6
Boron	ppm	ASTM D5185m ASTM D5185m	0 0 60	4 0	6 0	6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 59	6 0 57	6 0 58
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 59 0	6 0 57 <1	6 0 58 <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	4 0 59 0 941	6 0 57 <1 916	6 0 58 <1 895
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	4 0 59 0 941 1130	6 0 57 <1 916 1040	6 0 58 <1 895 1015
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	4 0 59 0 941 1130 1142	6 0 57 <1 916 1040 1036	6 0 58 <1 895 1015 1076
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	4 0 59 0 941 1130 1142 1261	6 0 57 <1 916 1040 1036 1222	6 0 58 <1 895 1015 1076 1232
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 59 0 941 1130 1142 1261 3322	6 0 57 <1 916 1040 1036 1222 3045	6 0 58 <1 895 1015 1076 1232 3158
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	4 0 59 0 941 1130 1142 1261 3322 current	6 0 57 <1 916 1040 1036 1222 3045 history1	6 0 58 <1 895 1015 1076 1232 3158 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 <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	4 0 59 0 941 1130 1142 1261 3322 current 10	6 0 57 <1 916 1040 1036 1222 3045 history1 2	6 0 58 <1 895 1015 1076 1232 3158 history2 3
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 <b>limit/base</b>	4 0 59 0 941 1130 1142 1261 3322 current 10 1	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2
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 <b>limit/base</b> >25 >20	4 0 59 0 941 1130 1142 1261 3322 current 10 1 2 2 current	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2 0	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2 2 2
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 225 >25 >20 Limit/base >20	4 0 59 0 941 1130 1142 1261 3322 current 10 1 2 2 current 0.1	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2 0 history1 0	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2 2 2 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 225 >25 >20 Limit/base >20	4 0 59 0 941 1130 1142 1261 3322 current 10 1 2 2 current	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2 0 0 history1	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2 2 2 history2 0
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 2060 225 220 220 1imit/base >22 20	4 0 59 0 941 1130 1142 1261 3322 current 10 1 2 current 0.1 5.5	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2 0 history1 0 5.1	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2 2 2 history2 0 4.9
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	4 0 59 0 941 1130 1142 1261 3322 current 10 1 2 current 0.1 5.5 17.8	6 0 57 <1 916 1040 1036 1222 3045 <b>history1</b> 2 2 2 0 <b>history1</b> 0 5.1 17.6 <b>history1</b>	6 0 58 <1 895 1015 1076 1232 3158 history2 3 2 2 history2 0 4.9 17.5 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 225 20 225 20 20 320 33 20 20	4 0 59 0 941 1130 1142 1261 3322 <u>current</u> 10 1 2 2 <u>current</u> 0.1 5.5 17.8	6 0 57 <1 916 1040 1036 1222 3045 history1 2 2 2 0 history1 0 5.1 17.6	6 0 58 <1 895 1015 1076 1232 3158 <b>history2</b> 3 2 2 <b>history2</b> 0 4.9 17.5



# **OIL ANALYSIS REPORT**



			VISUAL		method				history2
			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
	Jan30/24 -	Feb27/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Jan 3	Feb27/24 Mar20/24	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	ERTIES	method	limit/base	current	history1	history2
			Visc @ 100°C	cSt	ASTM D445	15.4	11.7	11.8	12.0
			GRAPHS						
			Ferrous Alloys						
	/24 -	/24 	12						
	Jan30/24	Feb27/24	10-						
			E 8						
			d 6	+					
			4						
			2						
			0	Manual Cold Street	the state of the s				
			0ct20/23 Nov7/23	Dec18/23 Jan30/24	Feb27/24	Mar20/24			
			No Oct	Jan Jan	멸	Mar			
			Non-ferrous Met	als					
			copper						
			8 - Research lead						
			u dd						
			4						
			2 -						
				A PARTY OF THE PAR	A ROAD BOOK STREET				
			0ct20/23	)ec18/23 - an30/24 -	eb27/24 -	ar20/24 +			
			0	. ,	Feb2	Mará			
			Viscosity @ 100°	°C		10.0	Base Number		
			18 - Abnormal			10.0			
			17- 16 <b>P</b>			(B)H(			
			0 15 Base			9 E 6.0			
			(3-0015- 14-			- per			
			13 Abnorma		· · · · · · · · · · · · · · · · · · ·	0.0 0.0 0.0 8 8 8 8 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1		
			12			<u>2.0</u>	-		
			11			0.0			
			0ct20/23	Dec18/23 - Jan30/24 -	Feb27/24 -		0ct20/23	Dec18/23 - Jan30/24 -	Feb27/24 - Mar20/24 -
			Oct2 Nov	Dec18/23 Jan30/24	Feb 2	Mar20/24	Oct2 Nov	Dec1 Jan3	Feb27/24 Mar20/24
1		Laboratory	: WearCheck USA - 5	i01 Madico		NC 27513	GEL En	/ironmental - 20	4 <b>.</b> Ada Haulina
AN	Laboratory Sample No.		: GFL0101902	ved : 21 Mar 2024			Environmental - 894 - Ada Hauling 1904 North Broadway, Suite I		
CCRE	Lab Number				2 Mar 2024		Ada, Oł		
TESTING LAD	MEATORY	Unique Number Test Package					'es Davis	O a rate of the	US 74820
	- 19967	Lest Packade	THEFT		Contact: Johnny Spurloch				
Certificat			, contact Customer Sei	wice at 1-9	300-237-136	a			ck@gflenv.com

Submitted By: Johnny Spurlock

Page 2 of 2