

# **OIL ANALYSIS REPORT**

Sample Rating Trend



213006 Component Diesel Engine Fluid

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

SAMPLE INFORMATION method

### DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

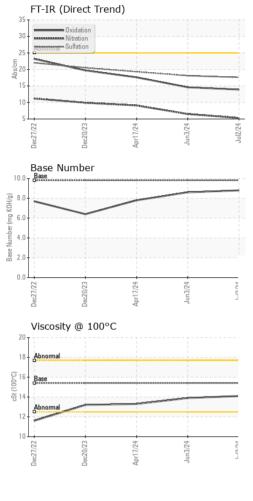
### Fluid Condition

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

Commente Nivershorr						
Sample Number		Client Info		GFL0123828 02 Jul 2024	GFL0123832	GFL0112996
Sample Date	la va	Client Info Client Info			03 Jun 2024	17 Apr 2024
Machine Age	hrs			2806	2720 2720	2501 2501
Oil Age	hrs	Client Info Client Info		86 Changed		
Oil Changed		Client Info		Changed NORMAL	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	7	9	21
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	4
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	2	<1	2
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
Boron	ppm	Method ASTM D5185m	limit/base	current 5	history1 <1	history2 <1
	ppm ppm		0			
Boron		ASTM D5185m	0	5	<1	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	5 0	<1 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 0 57	<1 0 55	<1 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 0 57 0	<1 0 55 <1	<1 0 61 <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	5 0 57 0 907	<1 0 55 <1 908	<1 0 61 <1 1011
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	5 0 57 0 907 1083	<1 0 55 <1 908 997	<1 0 61 <1 1011 1119
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	5 0 57 0 907 1083 1084	<1 0 55 <1 908 997 989	<1 0 61 <1 1011 1119 1082
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	5 0 57 0 907 1083 1084 1285	<1 0 55 <1 908 997 989 1205	<1 0 61 <1 1011 1119 1082 1302
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	5 0 57 0 907 1083 1084 1285 3762	<1 0 55 <1 908 997 989 1205 3326	<1 0 61 <1 1011 1119 1082 1302 3318
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	5 0 57 0 907 1083 1084 1285 3762 current	<1 0 55 <1 908 997 989 1205 3326 history1	<1 0 61 <1 1011 1119 1082 1302 3318 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>	5 0 57 0 907 1083 1084 1285 3762 current 2	<1 0 55 <1 908 997 989 1205 3326 history1 2	<1 0 61 <1 1011 1119 1082 1302 3318 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 ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	5 0 57 0 907 1083 1084 1285 3762 <u>current</u> 2 1	<1 0 55 <1 908 997 989 1205 3326 history1 2 2 <1	<1 0 61 <1 1011 1119 1082 1302 3318 history2 5 <1
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 <b>limit/base</b> >25 >20	5 0 57 0 907 1083 1084 1285 3762 current 2 1 5	<1 0 55 <1 908 997 989 1205 3326 history1 2 2 <1 <1	<1 0 61 <1 1011 1119 1082 1302 3318 history2 5 <1 4
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	5 0 57 0 907 1083 1084 1285 3762 current 2 1 5 5	<1 0 55 <1 908 997 989 1205 3326 history1 2 <1 <1 <1 history1	<1 0 61 <1 1011 1119 1082 1302 3318 <b>history2</b> 5 <1 4 <b>history2</b>
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	5 0 57 0 907 1083 1084 1285 3762 current 2 1 5 current 0.1	<1 0 55 <1 908 997 989 1205 3326 history1 2 2 <1 <1 <1 history1 0.1	<1 0 61 <1 1011 1119 1082 1302 3318 history2 5 <1 4 history2 0.2
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 >25 >20 imit/base >20	5 0 57 0 907 1083 1084 1285 3762 <i>current</i> 2 1 5 <i>current</i> 0.1 5.3	<1 0 55 <1 908 997 989 1205 3326 history1 2 <1 <1 <1 history1 0.1 6.5	<1 0 61 <1 1011 1119 1082 1302 3318 history2 5 <1 4 history2 0.2 9.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	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 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	5 0 57 0 907 1083 1084 1285 3762 current 2 1 5 current 0.1 5.3 17.6 current	<1 0 55 <1 908 997 989 1205 3326 history1 2 <1 <1 <1 0.1 6.5 18.1	<1 0 61 <1 1011 1119 1082 1302 3318 history2 5 <1 4 history2 0.2 9.1 19.3 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 225 220 220 220 220 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	5 0 57 0 907 1083 1084 1285 3762 <u>current</u> 2 1 5 <u>current</u> 0.1 5.3 17.6	<1 0 55 <1 908 997 989 1205 3326 history1 2 <1 <1 <1 history1 0.1 6.5 18.1 history1	<1 0 61 <1 1011 1119 1082 1302 3318 <b>history2</b> 5 <1 4 <b>history2</b> 0.2 9.1 19.3



# **OIL ANALYSIS REPORT**



	Dec27/22 Dec20/23	Apr17/24	Jur	٦٢	Dec	Apr	Jun
	11-	/24	Jun3/24 +			Apr17/24	Jun3/24 +
	13 Abnormal			m) umber (m	.0-		
	17 16 Base 5 15			ng KOH/g)			
	19 18 Abnormal	1	1	10	Base Number	-	
			Jur	٦L			
	0/23	7/24	13/24	12/24			
	10						
	40						
Jun3, . c11	50 - copper lead						
24 vc							
		Apr17/24 -	Jun3/24 -	Jul2/24 -			
	10						
	30-20-						
	50 E 40						
Jun3/2 <sup>4</sup>	60						
	<sup>80</sup>		1				
	GRAPHS						
	Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.9	13.3
	FLUID PROPE	RTIES	method	limit/base	current	history1	history
	Free Water	scalar	*Visual	>0.2	NEG	NEG	NEG NEG
л Г 1	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
n3/24 ul2/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Tak plantantics that the standard							NONE NONE
							NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE NONE
	# PICEnul     # PICEnul       # PICEnul     # PICEnul	Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys Non-ferrous Meta	White Metal scalar Yellow Metal scalar Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Codor scalar Emulsified Water scalar Free Water scalar Free Water scalar Free Water scalar Free Water scalar Non-ferrous Alloys Totom nickal Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C	White Metal scalar *Visual Yellow Metal scalar *Visual Precipitate scalar *Visual Silt scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Mon ferrous Alloys Visco 2 100°C cSt ASTM D445 CRAPHS Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C	White Metal scalar *Visual NONE Yellow Metal scalar *Visual NONE Sitt scalar *Visual NONE Sitt scalar *Visual NONE Sand/Dirt scalar *Visual NONE Appearance scalar *Visual NORML Odor scalar *Visual NORML Odor scalar *Visual NORML Debris scalar *Visual NORML Odor scalar *Visual NORML Emulsified Water scalar *Visual NORML Emulsified Water scalar *Visual Sol2 Free Water scalar *Visual NORML Emulsified Water scalar *Visual Sol2 Free Water scalar *Visual NORML Don-ferrous Alloys Ferrous Alloys Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C	White Metal scalar 'Visual NONE NONE Yellow Metal scalar 'Visual NONE NONE Precipitate scalar 'Visual NONE NONE Sitt scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NORML NORML Appearance scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML NORML MORML NORM	White Metal scalar 'Visual NONE NONE NONE NONE Precipitate scalar 'Visual NONE NONE NONE NONE Shard/Dirt scalar 'Visual NONE NONE NONE NONE Debris scalar 'Visual NONE NONE NONE NONE Appearance scalar 'Visual NORML NORML NORML Odor scalar 'Visual NORML NORML NORML NORML Odor scalar 'Visual NORML Norm the normal scalar 'Visual NOR the normal network of the normal scalar 'Visual NORML NORML NORML Odor scalar 'Visual NORML NORML NORML NORML Normal NORML NORML NORML NORML NORML Visco 100°C cst ASTM D445 15.4 14.1 13.9 CHAPHS Ferrous Alloys 

Submitted By: David McCall

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