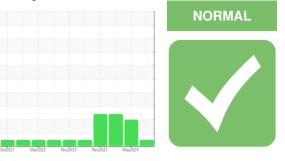


## **OIL ANALYSIS REPORT**

Sample Rating Trend



4564M Component Diesel Engine

# PETRO CANADA DURON SHP 15W40 (5 GAL)

Recommendation	

DIAGNOSIS

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Area

(BA85865)

## Wear

All component wear rates are normal.

#### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

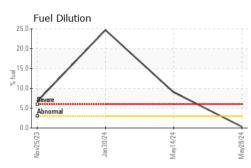
### Fluid Condition

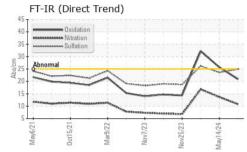
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

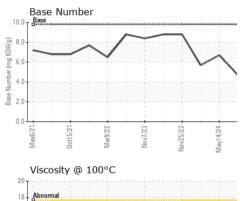
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0124775	GFL0115058	GFL0106674
Sample Date		Client Info		28 May 2024	14 May 2024	30 Jan 2024
Machine Age	hrs	Client Info		27561	22474	21889
Oil Age	hrs	Client Info		672	585	551
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	SEVERE	SEVERE
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
	0	and the set	11.0011/10.000		In the second	la la tarra O
WEAR METAL	5	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	43	45	33
Chromium	ppm	ASTM D5185m	>5	<1	3	2
Nickel	ppm	ASTM D5185m	>4	2	1	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum	ppm	ASTM D5185m	>15	3	7	4
Lead	ppm	ASTM D5185m	>25	5	2	0
Copper	ppm	ASTM D5185m	>100	1	2	1
Tin	ppm	ASTM D5185m	>4	2	1	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
188111120		method	mmbase	Guircin	mistory	motoryz
Boron	ppm	ASTM D5185m	0	2	0	<1
	ppm ppm				· · · · · · · · · · · · · · · · · · ·	
Boron		ASTM D5185m	0	2	0	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 <1	0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 <1 64	0 0 56	<1 0 44
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 <1 64 1	0 0 56 <1	<1 0 44 <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	2 <1 64 1 998	0 0 56 <1 882	<1 0 44 <1 639
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	2 <1 64 1 998 1151	0 0 56 <1 882 974	<1 0 44 <1 639 741
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 <1 64 1 998 1151 1113	0 0 56 <1 882 974 821	<1 0 44 <1 639 741 692
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 <1 64 1 998 1151 1113 1406	0 0 56 <1 882 974 821 1153	<1 0 44 <1 639 741 692 801
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	2 <1 64 1 998 1151 1113 1406 3190	0 0 56 <1 882 974 821 1153 2830	<1 0 44 <1 639 741 692 801 1984
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 0 1010 1070 1150 1270 2060	2 <1 64 1 998 1151 1113 1406 3190 current	0 0 56 <1 882 974 821 1153 2830 history1	<1 0 44 <1 639 741 692 801 1984 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 <1 64 1 998 1151 1113 1406 3190 current 6	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6	<1 0 44 <1 639 741 692 801 1984 history2 9
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 1010 1070 1150 1270 2060 kimit/base >25	2 <1 64 1 998 1151 1113 1406 3190 current 6 8	0 0 56 <1 882 974 821 1153 2830 history1 11 15	<1 0 44 <1 639 741 692 801 1984 history2 9 61
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	2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6	<1 0 44 <1 639 741 692 801 1984 <b>history2</b> 9 61 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 >20	2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 0.3	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 6 9.0	<1 0 44 <1 639 741 692 801 1984 history2 9 61 2 2 24.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 >20 >20 >3.0 imit/base >6	2 <1 64 1 998 1151 1113 1406 3190 current 6 8 5 0.3 Current	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 < ▲ 9.0 history1	<1 0 44 <1 639 741 692 801 1984 <b>history2</b> 9 61 2 9 61 2 2 ▲ 24.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 <i>limit/base</i> >25 >20 >3.0	2 <1 64 1 998 1151 1113 1406 3190 <i>current</i> 6 8 5 0.3 <i>current</i> 1.4	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 6 ▲ 9.0 history1 0.9	<1 0 44 <1 639 741 692 801 1984 history2 9 61 2 9 61 2 2 2 4 24.7 history2 1.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 <b>method</b> *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 >3.0 imit/base >20 imit/base	2 <1 64 1 998 1151 1113 1406 3190 <i>current</i> 6 8 5 0.3 <i>current</i> 1.4 10.8	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 9.0 • 9.0 • history1 0.9 13.7	<1 0 44 <1 639 741 692 801 1984 history2 9 61 2 2 24.7 history2 1.4 1.4 16.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel 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 >25 >20 >20 >3.0 <b>limit/base</b> >6 >20 >20 >3.0	2 <1 64 1 998 1151 1113 1406 3190 Current 6 8 5 0.3 Current 1.4 10.8 24.9 Current	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 3 9.0 history1 0.9 13.7 23.6 history1	<1 0 44 <1 639 741 692 801 1984 <p>bistory2 9 61 2 9 61 2 4.7  history2 1.4 16.8 26.2</p>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 >3.0 <b>imit/base</b> >6 >20 >3.0	2 <1 64 1 998 1151 1113 1406 3190 <b>current</b> 6 8 5 0.3 <b>current</b> 1.4 10.8 24.9	0 0 56 <1 882 974 821 1153 2830 history1 11 15 6 3 9.0 history1 0.9 13.7 23.6	<1 0 44 <1 639 741 692 801 1984 <p>history2 9 61 2 24.7 history2 1.4 16.8 26.2</p>

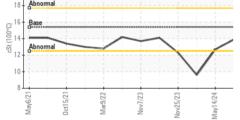


# **OIL ANALYSIS REPORT**



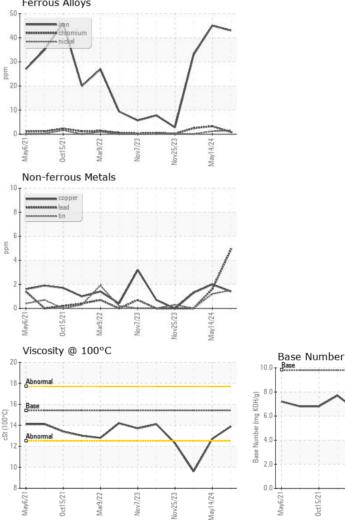


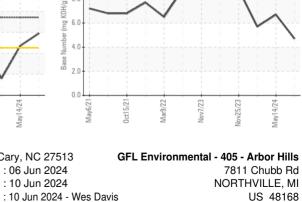




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	15.4	13.9	12.7	<b>9</b> .6
GRAPHS						

Ferrous Alloys





Certificate 12367

Unique Number : 11063326 Diagnosed Test Package : FLEET ( Additional Tests: PercentFuel ) To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

: GFL0124775

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Tested

: 06 Jun 2024

: 10 Jun 2024

Report Id: GFL405 [WUSCAR] 06201203 (Generated: 06/10/2024 08:32:57) Rev: 1

Laboratory

Sample No.

Lab Number : 06201203

Submitted By: John Nahal Page 2 of 2

ahopkins@gflenv.com

T:

F:

Contact: Anthony Hopkins