

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id **4587M** Component **Diesel Engine** 

### PETRO CANADA DURON SHP 15W40 (36 QTS)

## DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Fluid

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

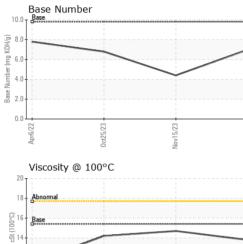
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104259	GFL0059250	GFL0059136
Sample Date		Client Info		08 Jan 2024	15 Nov 2023	25 Oct 2023
Machine Age	mls	Client Info		189043	186356	185411
Oil Age	mls	Client Info		188098	10037	185411
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	MARGINAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<b>2</b> .9	<b>3</b> .3
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	>90	28	61	36
Chromium	ppm	ASTM D5185m	>20	<1	2	2
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	11	3
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	<1	2	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<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 1	history1 5	history2 7
	ppm ppm					
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 56	5 0 61	7
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	1 0	5 0 61 <1	7 0 56 <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 56 0 916	5 0 61 <1 971	7 0 56 <1 885
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 56 0 916 1033	5 0 61 <1 971 1095	7 0 56 <1 885 1029
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	1 0 56 0 916 1033 911	5 0 61 <1 971 1095 1054	7 0 56 <1 885 1029 932
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 56 0 916 1033 911 1260	5 0 61 <1 971 1095 1054 1318	7 0 56 <1 885 1029 932 1191
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	1 0 56 0 916 1033 911 1260 2799	5 0 61 <1 971 1095 1054 1318 2646	7 0 56 <1 885 1029 932 1191 2645
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 56 0 916 1033 911 1260 2799 current	5 0 61 <1 971 1095 1054 1318 2646 history1	7 0 56 <1 885 1029 932 1191 2645 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	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	1 0 56 0 916 1033 911 1260 2799 current 4	5 0 61 <1 971 1095 1054 1318 2646 history1 13	7 0 56 <1 885 1029 932 1191 2645 history2 6
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> >25	1 0 56 0 916 1033 911 1260 2799 current 4 5	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9	7 0 56 <1 885 1029 932 1191 2645 history2 6 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	1 0 56 0 916 1033 911 1260 2799 current 4 5 2	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20	7 0 56 <1 885 1029 932 1191 2645 history2 6 6 6 3
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	1 0 56 0 916 1033 911 1260 2799 current 4 5 2 2	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1	7 0 56 <1 885 1029 932 1191 2645 <b>history2</b> 6 6 3 3 <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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	1 0 56 0 916 1033 911 1260 2799 current 4 5 2 2 current 1.1	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1 1.1	7 0 56 <1 885 1029 932 1191 2645 history2 6 6 6 3 3 history2 0.7
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1000 225 220 20 20 20 20 20 20 20 20 20 20 20	1 0 56 0 916 1033 911 1260 2799 <i>current</i> 4 5 2 2 <i>current</i> 1.1 1.1 12.1	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1 1.1 1.1	7 0 56 <1 885 1029 932 1191 2645 history2 6 6 6 6 3 3 history2 0.7 12.9
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	1 0 56 0 916 1033 911 1260 2799 current 4 5 2 2 current 1.1	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1 1.1	7 0 56 <1 885 1029 932 1191 2645 history2 6 6 6 3 3 history2 0.7
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1000 225 220 20 20 20 20 20 20 20 20 20 20 20	1 0 56 0 916 1033 911 1260 2799 <i>current</i> 4 5 2 2 <i>current</i> 1.1 1.1 12.1	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1 1.1 1.1	7 0 56 <1 885 1029 932 1191 2645 history2 6 6 6 6 3 3 history2 0.7 12.9
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <u>imit/base</u> >6 >20 20	1 0 56 0 916 1033 911 1260 2799 <u>current</u> 4 5 2 2 <u>current</u> 1.1 12.1 22.0	5 0 61 <1 971 1095 1054 1318 2646 history1 13 9 20 history1 1.1 1.1 1.5.6 29.1	7 0 56 <1 885 1029 932 1191 2645 <b>history2</b> 6 6 6 3 <b>3</b> <b>history2</b> 0.7 12.9 22.6



# **OIL ANALYSIS REPORT**

VISUAL



0ct25/23

0od25/23 Nov15/22 Jan6/24	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visualscalar*Visual		NE NONE NE NONE NE NONE NE NONE RML NORML RML NORML G NEG	NONE NONE NONE NONE NORML NORML NEG NEG
	FLUID PROP	ERTIES method	limit/base cu	urrent history1	history2
	Visc @ 100°C	cSt ASTM D445	15.4 <b>13.</b> 8	<b>B</b> 14.7	14.2
	GRAPHS Ferrous Alloys				
0625/23	Non-ferrous Meta		Jan 6/24		
	Apr6/22 0ct25/23	Nov15/23	Jan8/24		
	Viscosity @ 100°	C	Base 10.0 (6)HOX Buy Jaquer 8.0 (6)HOX Buy Jaquer 8.0 (6) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	Number	Jan 8.2.4
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, * - Denotes test methods that Statements of conformity to spe	: WearCheck USA - : GFL0104259 : 06057780 r : 10829162 : FLEET contact Customer Ser are outside of the ISO	501 Madison Ave., Ca <b>Recieved</b> : 11 <b>Diagnosed</b> : 12 <b>Diagnostician</b> : We vice at 1-800-237-136 17025 scope of accrea	ary, NC 27513 Jan 2024 Jan 2024 s Davis 9. ditation.	GFL Environmental - 410 - Michigan West 39000 Van Born Rd Wayne, MI US 48184 Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340	

Submitted By: Belal Dgheish Page 2 of 2