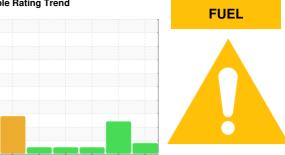


# **OIL ANALYSIS REPORT**

# Sample Rating Trend





4709M Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (5 GAL)

## **DIAGNOSIS**

### Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

All component wear rates are normal.

# Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

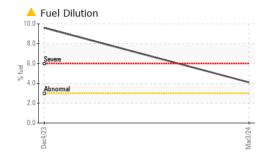
### **Fluid Condition**

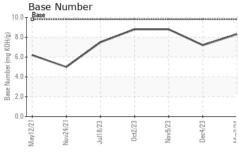
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

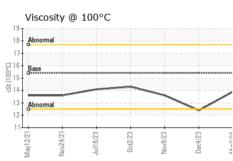
)N SHP 15W4U (				Dct2023 Nov2023 Dec2023	Mar2024	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0115017	GFL0101484	GFL0101587
Sample Date		Client Info		03 Mar 2024	04 Dec 2023	09 Nov 2023
Machine Age	hrs	Client Info		12809	12084	11918
Oil Age	hrs	Client Info		725	11918	11627
Oil Changed		Client Info		Changed	Not Changd	N/A
Sample Status				ABNORMAL	SEVERE	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	>75	15	15	4
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	3	2	2
Lead	ppm	ASTM D5185m	>25	<1	1	<1
Copper	ppm	ASTM D5185m	>100	<1	<1	<1
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
_			^	4	$\neg$	<1
Boron	ppm	ASTM D5185m	0	1	7	< 1
Barium	ppm	ASTM D5185m ASTM D5185m	0	0	2	<1
Barium						
Barium Molybdenum	ppm	ASTM D5185m	0	0	2	<1
Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 60	0 59	2 57	<1 60
Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 59 0	2 57 0	<1 60 <1
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 59 0 974	2 57 0 861	<1 60 <1 930
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 59 0 974 1075	2 57 0 861 1032	<1 60 <1 930 1101
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 59 0 974 1075 1003	2 57 0 861 1032 901	<1 60 <1 930 1101 1039
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 60 0 1010 1070 1150 1270	0 59 0 974 1075 1003	2 57 0 861 1032 901 1133	<1 60 <1 930 1101 1039 1230
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 ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 59 0 974 1075 1003 1266 3065	2 57 0 861 1032 901 1133 2918	<1 60 <1 930 1101 1039 1230 3142
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 60 0 1010 1070 1150 1270 2060	0 59 0 974 1075 1003 1266 3065	2 57 0 861 1032 901 1133 2918 history1	<1 60 <1 930 1101 1039 1230 3142 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 59 0 974 1075 1003 1266 3065 current	2 57 0 861 1032 901 1133 2918 history1	<1 60 <1 930 1101 1039 1230 3142 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 59 0 974 1075 1003 1266 3065 current 5	2 57 0 861 1032 901 1133 2918 history1 4 18	<1 60 <1 930 1101 1039 1230 3142 history2 5
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 59 0 974 1075 1003 1266 3065 current 5 4	2 57 0 861 1032 901 1133 2918 history1 4 18	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	0 59 0 974 1075 1003 1266 3065  current 5 4 3 • 4.1	2 57 0 861 1032 901 1133 2918 history1 4 18 4	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	0 59 0 974 1075 1003 1266 3065  current 5 4 3  4.1  current	2 57 0 861 1032 901 1133 2918 history1 4 18 4	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D3524	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6	0 59 0 974 1075 1003 1266 3065 current 5 4 3 ▲ 4.1	2 57 0 861 1032 901 1133 2918 history1 4 18 4 ■ 9.6 history1 0.3	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0 history2 0.1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D3524  method  *ASTM D7844  *ASTM D7624  *ASTM D76145	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	0 59 0 974 1075 1003 1266 3065	2 57 0 861 1032 901 1133 2918 history1 4 18 4 ■ 9.6 history1 0.3 11.4	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0 history2 0.1 6.8
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D3524  method  *ASTM D7844  *ASTM D7624  *ASTM D76145	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30	0 59 0 974 1075 1003 1266 3065 current 5 4 3 ▲ 4.1 current 0.2 9.6 21.2	2 57 0 861 1032 901 1133 2918 history1 4 18 4 ■ 9.6 history1 0.3 11.4 21.7	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0 history2 0.1 6.8 19.0
Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m  Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30	0 59 0 974 1075 1003 1266 3065  current 5 4 3  1.1  current 0.2 9.6 21.2  current	2 57 0 861 1032 901 1133 2918 history1 4 18 4	<1 60 <1 930 1101 1039 1230 3142 history2 5 0 3 <1.0 history2 0.1 6.8 19.0 history2



# **OIL ANALYSIS REPORT**



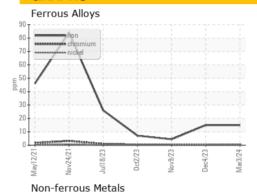


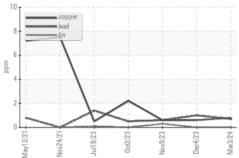


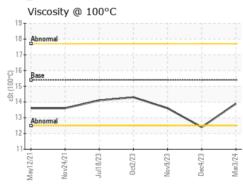
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

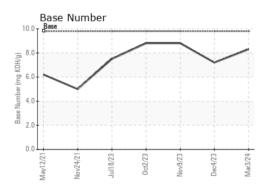
FLUID PROPERTIES		memod	IIIIII/Dase	Current	HISTORY	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	<b>▲</b> 12.4	13.6

## **GRAPHS**













Laboratory Sample No. Lab Number : 06111126 Unique Number: 10914623

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

: GFL0115017

Received **Tested** 

: 07 Mar 2024 Diagnosed

: 11 Mar 2024 : 11 Mar 2024 - Wes Davis

GFL Environmental - 405 - Arbor Hills 7400 Napier Rd

NORTHVILLE, MI US 48168 Contact: Anthony Hopkins

ahopkins@gflenv.com

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)

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F: