

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **711045** Component **Diesel Engine** Fluid

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

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.

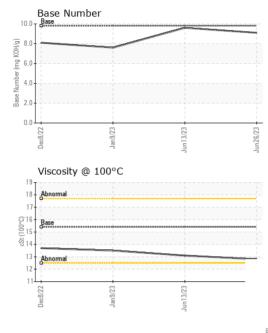
Fluid Condition

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

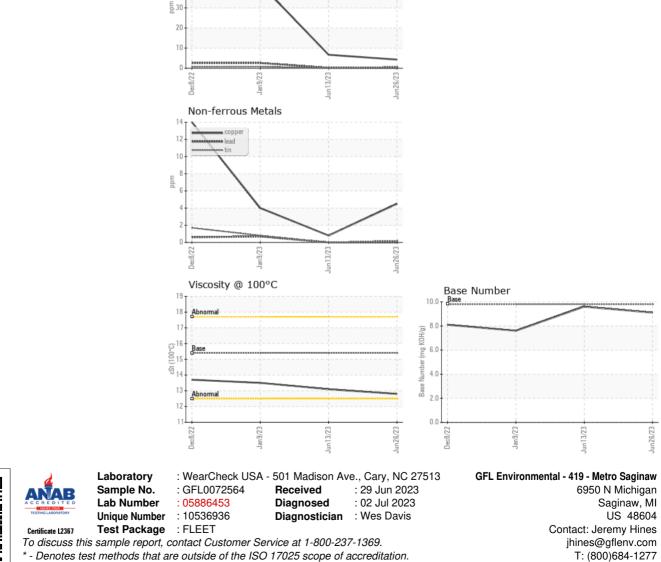
SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2	
Sample Number		Client Info		GFL0072564	GFL0072517	GFL0048298	
Sample Date		Client Info		26 Jun 2023	13 Jun 2023	09 Jan 2023	
Machine Age	hrs	Client Info		4372	3280	3280	
Oil Age	hrs	Client Info		600	3280	3280	
Oil Changed		Client Info		Changed	N/A	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history 1	history 2	
Fuel		WC Method	>5	<1.0	<1.0	<1.0	
Glycol		WC Method	20	NEG	NEG	NEG	
						history 2	
Iron	ppm	ASTM D5185m		4	7	42	
Chromium	ppm	ASTM D5185m	>5	<1	<1	3	
Nickel	ppm	ASTM D5185m	>2	<1	0	<1	
Titanium	ppm	ASTM D5185m	0	0	0	0	
Silver	ppm	ASTM D5185m	>3	0	0	<1	
Aluminum	ppm	ASTM D5185m		2	<1	3	
Lead	ppm	ASTM D5185m	>30	0	0	<1	
Copper	ppm	ASTM D5185m		4	<1	4	
Tin	ppm	ASTM D5185m	>5	<1	0	<1	
Vanadium	ppm	ASTM D5185m		<1	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history 1	history 2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 7	history 1 18	history 2 6	
	ppm ppm						
Boron		ASTM D5185m	0	7	18	6	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	7 0	18 0	6 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	7 0 58	18 0 52	6 0 62	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	7 0 58 <1	18 0 52 <1	6 0 62 <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	7 0 58 <1 946	18 0 52 <1 844	6 0 62 <1 923	
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	7 0 58 <1 946 1067	18 0 52 <1 844 1264	6 0 62 <1 923 1121	
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	7 0 58 <1 946 1067 1042	18 0 52 <1 844 1264 949	6 0 62 <1 923 1121 999	
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	7 0 58 <1 946 1067 1042 1275	18 0 52 <1 844 1264 949 1171	6 0 62 <1 923 1121 999 1251	
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 1010 1070 1150 1270 2060	7 0 58 <1 946 1067 1042 1275 3895	18 0 52 <1 844 1264 949 1171 3508	6 0 62 <1 923 1121 999 1251 3474	
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	7 0 58 <1 946 1067 1042 1275 3895	18 0 52 <1 844 1264 949 1171 3508 history 1	6 0 62 <1 923 1121 999 1251 3474 history 2	
Boron 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 method	0 0 60 1010 1070 1150 1270 2060	7 0 58 <1 946 1067 1042 1275 3895 current 3	18 0 52 <1 844 1264 949 1171 3508 history 1 5	6 0 62 <1 923 1121 999 1251 3474 history 2 5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 kimit/base >20	7 0 58 <1 946 1067 1042 1275 3895 <u>current</u> 3 2	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20	7 0 58 <1 946 1067 1042 1275 3895 <u>current</u> 3 2 1	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 2 <1	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 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 2060 200 200 200 200 200 200	7 0 58 <1 946 1067 1042 1275 3895 current 3 2 1 1 current	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 <1 5 2 <1 history 1 0.2	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 4 4 history 2 0.6	
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	7 0 58 <1 946 1067 1042 1275 3895 current 3 2 1 2 1 current 0.2	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 <1 history 1	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 4 4 history 2	
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 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	7 0 58 <1 946 1067 1042 1275 3895 <u>current</u> 3 2 1 2 1 <u>current</u> 0.2 6.7	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 <1 5 2 <1 history 1 0.2 5.5 19.3	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 4 4 history 2 0.6 10.3 20.1	
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 2060 200 200 200 200 200 200	7 0 58 <1 946 1067 1042 1275 3895 <i>current</i> 3 2 1 <i>current</i> 0.2 6.7 17.8	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 <1 5 2 <1 history 1 0.2 5.5 19.3 history 1	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 4 4 history 2 0.6 10.3 20.1 history 2	
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 imit/base >20 imit/base >3 >20 >3	7 0 58 <1 946 1067 1042 1275 3895 <u>current</u> 3 2 1 2 1 <u>current</u> 0.2 6.7 17.8	18 0 52 <1 844 1264 949 1171 3508 history 1 5 2 <1 5 2 <1 history 1 0.2 5.5 19.3	6 0 62 <1 923 1121 999 1251 3474 history 2 5 2 4 history 2 0.6 10.3 20.1	



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White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 <td colspa<<="" th=""><th></th><th></th><th></th><th>11 1.0</th><th></th><th></th><th></th></td>	<th></th> <th></th> <th></th> <th>11 1.0</th> <th></th> <th></th> <th></th>				11 1.0			
Yellow Metal scalar *Visual NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE 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 Odor scalar *Visual NORML NORML NORML NORML Odor scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS	VISUAL		method	limit/base	current	history 1	history 2	
Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE 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 Odor 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 >0.2 NEG NEG NEG Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys Second Second Second <t< td=""><td>White Metal</td><td>scalar</td><td>*Visual</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE</td></t<>	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG FullD PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys Second Second Second Second Second	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Debris scalar *Visual NONE NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG FullD PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys secure and secure an	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
Sand/Dirt scalar *Visual NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG File water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG Full D PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys Sector Alloys Sector Alloys Sector Alloys Sector Alloys Sector Alloys	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
Appearance scalar *Visual NORML NOR NOR Normality of the	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG NEG FLUID PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys Source Source Source Source Source	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Emulsified Water scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG NEG FLUID PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys Graphic State S	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Free Water scalar *Visual NEG NEG FLUID PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys 60 Ferrous Alloys Ferrous Alloys	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
FLUID PROPERTIES method limit/base current history 1 history 2 Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys 60 1000000000000000000000000000000000000	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
Visc @ 100°C cSt ASTM D445 15.4 12.8 13.1 13.5 GRAPHS Ferrous Alloys	Free Water	scalar	*Visual		NEG	NEG	NEG	
GRAPHS Ferrous Alloys	FLUID PROPEI	RTIES	method	limit/base	current	history 1	history 2	
Ferrous Alloys	Visc @ 100°C	cSt	ASTM D445	15.4	12.8	13.1	13.5	
60 T	GRAPHS							
	'							
	iron							
50								
40	40							



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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Submitted By: Colton Kitts

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