

OIL ANALYSIS REPORT

Sample Rating Trend

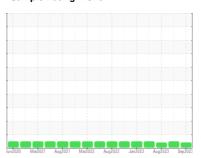
VISCOSITY



Machine Id
728002
Component

Diesel Engine

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





DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as PETRO CANADA DURON SHP 15W40, however, a fluid match indicates that this fluid is SAE 30 Diesel Engine Oil. Please confirm the oil type and grade on your next sample.

Wear

All component wear rates are normal.

Contamination

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

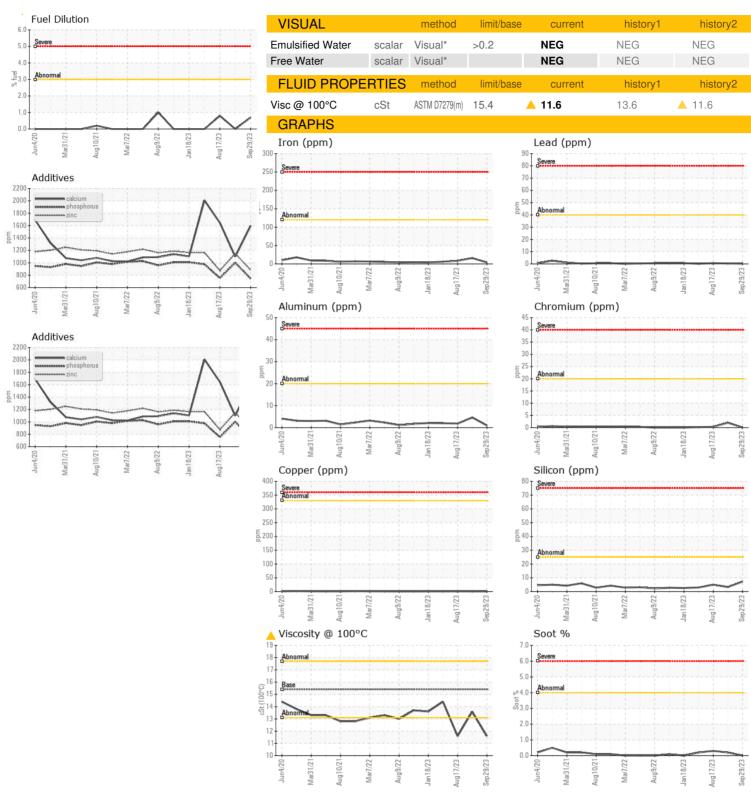
Fluid Condition

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The condition of the oil is acceptable for the time in service.

Sample Number Client Info GFL0053578 GFL0090855 GFL0090847 Gample Date Client Info 29 Sep 2023 15 Sep 2023 17 Aug 2023 17 Aug 2023 17 Aug 2023 18 Aug 2024 1	CAMPLE INICOL		no otle e al	limit/base	01:	biotomid	histom O
Sample Date		IMA HON		ilmit/base			
Machine Age hrs	•						
Oil Age hrs Client Info N/A	•				-		_
Cilient Info	0					_	
ABNORMAL ABNORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2	-	hrs					
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info				
WEAR METALS	Sample Status				ABNORMAL	NORMAL	ABNORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185(m) >120 4 16 8 Chromium ppm ASTM DS185(m) >20 0 2 <1	CONTAMINA	ΓΙΟΝ	method	limit/base	current	history1	history2
	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185(m) >20 0 2 <1 Nickel ppm ASTM D5185(m) >5 <1	WEAR METAI	LS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>120	4	16	8
Titanium ppm ASTM D5185(m) >2 0 0 <1 Silver ppm ASTM D5185(m) >2 <1 <1 <1 Aluminum ppm ASTM D5185(m) >20 1 5 2 Lead ppm ASTM D5185(m) >330 <1 <1 <1 Copper ppm ASTM D5185(m) >330 <1 <1 <1 Tin ppm ASTM D5185(m) >0 0 <1 <1 Antimony ppm ASTM D5185(m) 0 0 0 <1 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 <1 0 0 ADDITIVES method limit/base current his	Chromium	ppm	ASTM D5185(m)	>20	0	2	<1
Silver	Nickel	ppm	ASTM D5185(m)	>5	<1	2	1
Astm. Astm. D5185(m) >20	Titanium	ppm	ASTM D5185(m)	>2	0	0	<1
Lead	Silver	ppm	ASTM D5185(m)	>2	<1	<1	<1
Lead	Aluminum		ASTM D5185(m)	>20	1	5	2
Antimony	Lead	ppm	ASTM D5185(m)	>40	<1	<1	<1
Antimony	Copper		ASTM D5185(m)	>330	<1	<1	<1
Antimony		ppm		>15	0	0	<1
Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 48 7 23 Barium ppm ASTM D5185(m) 0 <1 0 0 Molybdenum ppm ASTM D5185(m) 0 <1 0 0 Manganese ppm ASTM D5185(m) 0 42 54 41 Magnesium ppm ASTM D5185(m) 1010 539 882 510 Calcium ppm ASTM D5185(m) 1070 1597 1099 1645 Phosphorus ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308	Antimony		ASTM D5185(m)		0	0	0
Beryllium	•		, ,				0
ADDITIVES	Beryllium		, ,		0	0	0
Boron	•						0
Barium ppm ASTM D5185(m) 0 <1 0 0 Molybdenum ppm ASTM D5185(m) 60 42 54 41 Manganese ppm ASTM D5185(m) 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 60 42 54 41 Manganese ppm ASTM D5185(m) 0 0 <1 <1 Magnesium ppm ASTM D5185(m) 1010 539 882 510 Calcium ppm ASTM D5185(m) 1070 1597 1099 1645 Phosphorus ppm ASTM D5185(m) 1150 743 1003 754 Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % <t< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185(m)</td><td>0</td><td>48</td><td>7</td><td>23</td></t<>	Boron	ppm	ASTM D5185(m)	0	48	7	23
Manganese ppm ASTM D5185(m) 0 <1 <1 Magnesium ppm ASTM D5185(m) 1010 539 882 510 Calcium ppm ASTM D5185(m) 1070 1597 1099 1645 Phosphorus ppm ASTM D5185(m) 1150 743 1003 754 Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 21 <1	Barium	ppm	ASTM D5185(m)	0	<1	0	0
Magnesium ppm ASTM D5185(m) 1010 539 882 510 Calcium ppm ASTM D5185(m) 1070 1597 1099 1645 Phosphorus ppm ASTM D5185(m) 1150 743 1003 754 Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 225 7 3 5 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1 <1 Potassium ppm ASTM D5185(m) >20 0.7 <1.0 0.8 INFRA-RED method	Molybdenum		AOTH PELOT	CO			
Calcium ppm ASTM D5185(m) 1070 1597 1099 1645 Phosphorus ppm ASTM D5185(m) 1150 743 1003 754 Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 2060 2075 2308 1947 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1		ppm	ASTM D5185(m)	00	42	54	41
Phosphorus ppm ASTM D5185(m) 1150 743 1003 754 Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) 2060 2075 2308 1947 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7415* <td>-</td> <td></td> <td>. ,</td> <td></td> <td></td> <td></td> <td></td>	-		. ,				
Zinc ppm ASTM D5185(m) 1270 882 1148 875 Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)	0	0	<1	<1
Sulfur ppm ASTM D5185(m) 2060 2075 2308 1947 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base <th< td=""><td>Manganese Magnesium</td><td>ppm</td><td>ASTM D5185(m) ASTM D5185(m)</td><td>0 1010</td><td>0 539</td><td><1 882</td><td><1 510</td></th<>	Manganese Magnesium	ppm	ASTM D5185(m) ASTM D5185(m)	0 1010	0 539	<1 882	<1 510
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) >20 0 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070	0 539 1597	<1 882 1099	<1 510 1645
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) 3 4 10 Potassium ppm ASTM D5185(m) >20 0 <1	Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150	0 539 1597 743	<1 882 1099 1003	<1 510 1645 754
Silicon ppm ASTM D5185(m) >25 7 3 5 Sodium ppm ASTM D5185(m) 3 4 10 Potassium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150 1270	0 539 1597 743 882	<1 882 1099 1003 1148	<1 510 1645 754 875
Sodium ppm ASTM D5185(m) 3 4 10 Potassium ppm ASTM D5185(m) >20 0 <1	Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150 1270	0 539 1597 743 882 2075	<1 882 1099 1003 1148 2308	<1 510 1645 754 875 1947
Sodium ppm ASTM D5185(m) 3 4 10 Potassium ppm ASTM D5185(m) >20 0 <1	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 1010 1070 1150 1270 2060	0 539 1597 743 882 2075 <1	<1 882 1099 1003 1148 2308 <1	<1 510 1645 754 875 1947 <1
Potassium ppm ASTM D5185(m) >20 0 <1 <1 Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAI	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) METHOD	0 1010 1070 1150 1270 2060	0 539 1597 743 882 2075 <1	<1 882 1099 1003 1148 2308 <1	<1 510 1645 754 875 1947 <1
Fuel % ASTM D7593* >3.0 0.7 <1.0 0.8 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAI Silicon	ppm	ASTM D5185(m) method ASTM D5185(m)	0 1010 1070 1150 1270 2060	0 539 1597 743 882 2075 <1 current	<1 882 1099 1003 1148 2308 <1 history1	<1 510 1645 754 875 1947 <1 history2
Soot % % ASTM D7844* >4 0 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150 1270 2060 limit/base >25	0 539 1597 743 882 2075 <1 current 7	<1 882 1099 1003 1148 2308 <1 history1 3 4	<1 510 1645 754 875 1947 <1 history2 5 10
Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7615* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150 1270 2060 limit/base >25	0 539 1597 743 882 2075 <1 current 7 3 0	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1	<1 510 1645 754 875 1947 <1 history2 5 10 <1
Nitration Abs/cm ASTM D7624* >20 5.7 7.5 9.8 Sulfation Abs/.1mm ASTM D7615* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAI Silicon Sodium Potassium Fuel	ppm	ASTM D5185(m) METHOD METHOD ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	0 539 1597 743 882 2075 <1 current 7 3 0 0.7	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1 <1.0	<1 510 1645 754 875 1947 <1 history2 5 10 <1 0.8
Sulfation Abs/.1mm ASTM D7415* >30 21.7 19.2 23.6 FLUID DEGRADATION method limit/base current history1 history2	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185(m) METHOD ASTM D5185(m)	0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	0 539 1597 743 882 2075 <1 current 7 3 0 0.7 current	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1 <1.0 history1	<1 510 1645 754 875 1947 <1 history2 5 10 <1 0.8 history2
	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAI Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185(m) METHOD METHOD ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D7593* METHOD ASTM D7844*	0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4	0 539 1597 743 882 2075 <1 current 7 3 0 0.7 current 0	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1 <1.0 history1 0.2	<1 510 1645 754 875 1947 <1 history2 5 10 <1 0.8 history2 0.3
	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7844* ASTM D7624*	0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20	0 539 1597 743 882 2075 <1 current 7 3 0 0.7 current 0 5.7	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1 <1.0 history1 0.2 7.5	<1 510 1645 754 875 1947 <1 history2 5 10 <1 0.8 history2 0.3 9.8
	Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D7593* METHOD ASTM D7593* METHOD ASTM D7844* ASTM D7624* ASTM D7624*	0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20 >30	0 539 1597 743 882 2075 <1 current 7 3 0 0.7 current 0 5.7 21.7	<1 882 1099 1003 1148 2308 <1 history1 3 4 <1 <1.0 history1 0.2 7.5 19.2	<1 510 1645 754 875 1947 <1 history2 5 10 <1 0.8 history2 0.3 9.8 23.6



OIL ANALYSIS REPORT





CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number

: 5655362

: GFL0053578 : 02586296

Received

: 03 Oct 2023 Diagnosed : 04 Oct 2023

Diagnostician : Kevin Marson

Test Package: MOB 1 (Additional Tests: FuelDilution, PercentFuel) To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 246 - Windsor 2700 Deziel Dr Windsor, ON CA N8W 5H8 Contact: Dave Varga dvarga@gflenv.com T: (519)944-8009