

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend





## Component

Diesel Engine

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

## DIAGNOSIS

#### 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 INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092536	GFL0077929	GFL0092517
Sample Date		Client Info		20 Feb 2024	05 Dec 2023	25 Aug 2023
Machine Age	hrs	Client Info		11768	11347	10750
Oil Age	hrs	Client Info		418	597	608
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method		NEG	NEG	NEG
Glycol		WC Method	20.L	NEG	NEG	NEG
WEAR METAL	<u>د</u>	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	7	7	6
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium Silver	ppm	ASTM D5185m	>2	<1	<1 0	0
	ppm	ASTM D5185m ASTM D5185m		0 2	2	0
Aluminum	ppm					
Lead	ppm	ASTM D5185m	>45 >85	0 1	<1 1	<1 <1
Copper Tin	ppm		>85 >4	1 <1	<1	<1
Vanadium	ppm ppm	ASTM D5185m	>4	<1	0	0
Cadmium						0
				~1		
	ppm	ASTM D5185m	1	<1	<1	
ADDITIVES	ppm	method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 3	history1 <1	history2 2
ADDITIVES Boron Barium		method ASTM D5185m ASTM D5185m	0	current 3 <1	history1 <1 12	history2 2 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 3 <1 58	history1 <1 12 63	history2 2 0 62
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 3 <1 58 <1	history1 <1 12 63 <1	history2 2 0 62 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 3 <1 58 <1 887	history1 <1 12 63 <1 984	history2 2 0 62 <1 1007
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current           3           <1           58           <1           887           1002	history1 <1 12 63 <1 984 1070	history2           2           0           62           <1           1007           1091
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current           3           <1           58           <1           887           1002           1021	history1           <1           12           63           <1           984           1070           994	history2           2           0           62           <1           1007           1091           1076
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           3           <1           58           <1           887           1002           1021           1176	history1         <1         12         63         <1         984         1070         994         1261	history2           2           0           62           <1           1007           1091           1076           1309
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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	Current 3 <li>&lt;1 58 </li> <li>&lt;1 887 1002 1021 1176 3217 </li>	<1         12         63         <1         984         1070         994         1261         3131	history2         2         0         62         <1         1007         1091         1076         1309         3698
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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	current           3           <1           58           <1           887           1002           1021           1176	history1         <1         12         63         <1         984         1070         994         1261         3131         history1	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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	current           3           <1           58           <1           887           1002           1021           1176           3217           current           4	<1         12         63         <1         984         1070         994         1261         3131         history1         4	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current           3           <1           58           <1           887           1002           1021           1176           3217           current           4           0	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method 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 <b>limit/base</b>	current           3           <1           58           <1           887           1002           1021           1176           3217           current           4           0           5	<1         12         63         <1         984         1070         994         1261         3131         history1         4	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current           3           <1           58           <1           887           1002           1021           1176           3217           current           4           0	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	current           3           <1           58           <1           887           1002           1021           1176           3217           current           4           0           5	history1         <1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         2
ADDITIVES 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	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	Current         3         <1         58         <1         887         1002         1021         1176         3217         current         4         0         5         current	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4         0         4         Nistory1	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         2         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	Current         3         <1         58         <1         887         1002         1021         1176         3217         current         4         0         5         current         0.2	history1         <1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4         0         4         0.2	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         history2         0         0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm t t t t	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 200 limit/base >30	Current         3         <1         58         <1         887         1002         1021         1021         1176         3217         current         4         0         5         current         0.2         7.4	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4         0         4         0.2         8.1	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         history2         0.2         7.1
ADDITIVES 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 t t t t	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 <b>imit/base</b> >3 20	3         <1         58         <1         887         1002         1021         1176         3217         current         4         0         5         current         0.2         7.4         18.7	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4         0.2         8.1         19.0         history1	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         history2         0.2         7.1         18.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7185m           ASTM D7624           *ASTM D7624           *ASTM D7415           method	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	3         <1         58         <1         887         1002         1021         1021         1176         3217         current         4         0         5         current         0.2         7.4         18.7         current	<1         12         63         <1         984         1070         994         1261         3131         history1         4         0         4         0.2         8.1         19.0	history2         2         0         62         <1         1007         1091         1076         1309         3698         history2         3         2         history2         0.2         7.1         18.5         history2



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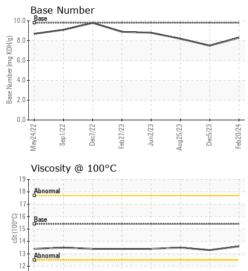
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May24/22

Sep1/22

Dec7/22

# **OIL ANALYSIS REPORT**



Dec5/23	White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C	scalar scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NONE NONE NORE NORML	NONE NONE NONE NONE NONE NORML NORML	NONE NONE NONE NONE NONE NORML NORML	
Dec5/23	Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NORML NORML	NONE NONE NONE NONE NORML	NONE NONE NONE NORML	NONE NONE NONE NORML	
Dec5/23	Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML	NONE NONE NONE NORML	NONE NONE NORML	NONE NONE NONE NORML	
Dec5/23 +	Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual	NONE NONE NORML NORML	NONE NONE NORML	NONE NORML	NONE NORE NORML	
Dec5/23 +	Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual	NONE NORML NORML	NONE NORML	NONE NORML	NONE NORML	
Dec5/23	Appearance Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar scalar	*Visual *Visual *Visual	NORML NORML	NORML	NORML	NORML	
Det5/23	Odor Emulsified Water Free Water FLUID PROPE	scalar scalar scalar	*Visual *Visual	NORML				
Pic Di	Emulsified Water Free Water FLUID PROPE	scalar scalar	*Visual		NORML	NORML	NORML	
	Free Water FLUID PROPE	scalar		>0.2			=	
	FLUID PROPE		*Visual		NEG	NEG	NEG	
		RTIES			NEG	NEG	NEG	
	Visc @ 100°C		method	limit/base	current	history1	history2	
		cSt	ASTM D445	15.4	13.6	13.3	13.5	
	GRAPHS							
	Ferrous Alloys							
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laboratory	· WearChark LIGA FO	11 Madiaa		NC 07510		vironmontal (	035 - Omro 40	
						Environmental - 935 - Omro HC 250 Alder Avenue		
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	Unique Number Test Package sample report methods that	Laboratory : WearCheck USA - 50 Sample No. : GFL0092536 Lab Number : 10900525 Test Package : FLEET sample report, contact Customer Serv methods that are outside of the ISO T	Laboratory : WearCheck USA - 501 Madiso Sample No. : GFL0092536 Recei Lab Number : 10900525 Diagr Test Package : FLEET sample report, contact Customer Service at 1-8 methods that are outside of the ISO 17025 sco	Laboratory : WearCheck USA - 501 Madison Ave., Cary Sample No. : GFL0092536 Received : 27 Lab Number : 061102295 Tested : 28 Unique Number : 10900525 Diagnosed : 28 Test Package : FLEET sample report, contact Customer Service at 1-800-237-1365 methods that are outside of the ISO 17025 scope of accred	Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No.: GFL0092536 Received : 27 Feb 2024 Unique Number : 10900525 Diagnosed : 28 Feb 2024 - W Test Package : FLEET Sample report, contact Customer Service at 1-800-237-1369. methods that are outside of the ISO 17025 scope of accreditation.	Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 2751 Sample No.: GFL0092536 Section 235 Test Package : FLEET Sample report, contact Customer Service at 1-800-237-1369. methods that are outside of the ISO 17025 scope of accreditation.	Laboratory :: WearCheck USA - 501 Madison Ave., Cary, NC 2751 Sample No.: GFL D092236 Received :: 237 Feb 2024 Unique Number :: 10900525 Diagnosed :: 28 Feb 2024 Unique Number :: 10900525 Diagnosed :: 28 Feb 2024.	

Submitted By: See also GFL935 - Tim Kieffer