

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

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

## Recommendation

Resample at the next service interval to monitor.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

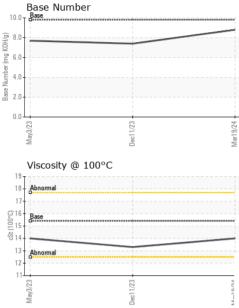
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108886	GFL0105596	GFL0069882
Sample Date		Client Info		19 Mar 2024	11 Dec 2023	03 May 2023
Machine Age	hrs	Client Info		11925	11651	10048
Oil Age	hrs	Client Info		11925	0	600
Oil Changed		Client Info		Not Changd	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
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	6	15	14
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	3
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	0	<1	0
Tin	ppm	ASTM D5185m	>15	0	0	<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 0	history2 7
	ppm ppm		0			
Boron		ASTM D5185m	0	<1	0	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	<1 0	0	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 57	0 0 53	7 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 57 0	0 0 53 0	7 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	<1 0 57 0 987	0 0 53 0 984	7 0 62 <1 975
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	<1 0 57 0 987 1095	0 0 53 0 984 1061	7 0 62 <1 975 1113
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 57 0 987 1095 1063	0 0 53 0 984 1061 1059	7 0 62 <1 975 1113 1130
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	<1 0 57 0 987 1095 1063 1319	0 0 53 0 984 1061 1059 1230	7 0 62 <1 975 1113 1130 1362
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 limit/base	<1 0 57 0 987 1095 1063 1319 3721	0 0 53 0 984 1061 1059 1230 2968	7 0 62 <1 975 1113 1130 1362 3173
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 limit/base	<1 0 57 0 987 1095 1063 1319 3721 current	0 0 53 0 984 1061 1059 1230 2968 history1	7 0 62 <1 975 1113 1130 1362 3173 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 57 0 987 1095 1063 1319 3721 current 2	0 0 53 0 984 1061 1059 1230 2968 history1 3	7 0 62 <1 975 1113 1130 1362 3173 history2 4
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 limit/base >25	<1 0 57 0 987 1095 1063 1319 3721 current 2 2 2	0 0 53 0 984 1061 1059 1230 2968 history1 3 4	7 0 62 <1 975 1113 1130 1362 3173 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	<1 0 57 0 987 1095 1063 1319 3721 current 2 2 2 0	0 0 53 0 984 1061 1059 1230 2968 history1 3 4 4	7 0 62 <1 975 1113 1130 1362 3173 history2 4 3 2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	<1 0 57 0 987 1095 1063 1319 3721 current 2 2 2 0	0 0 53 0 984 1061 1059 1230 2968 history1 3 4 <1 }	7 0 62 <1 975 1113 1130 1362 3173 history2 4 3 2 history2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i>	<1 0 57 0 987 1095 1063 1319 3721 current 2 2 2 0 0 current	0 0 53 0 984 1061 1059 1230 2968 history1 3 4 <1 3 4 <1 0.8	7 0 62 <1 975 1113 1130 1362 3173 history2 4 3 2 history2 0.3
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >20	<1 0 57 0 987 1095 1063 1319 3721 current 2 2 2 0 0 current 0.3 6.2	0 0 53 0 984 1061 1059 1230 2968 history1 3 4 <1 history1 0.8 9.7	7 0 62 <1 975 1113 1130 1362 3173 history2 4 3 2 history2 0.3 9.6
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 >25 	<1 0 57 0 987 1095 1063 1319 3721 <i>current</i> 2 2 2 0 <i>current</i> 0.3 6.2 18.3	0 0 53 0 984 1061 1059 1230 2968 history1 3 4 <1 3 4 <1 0.8 9.7 20.3	7 0 62 <1 975 1113 1130 1362 3173 <b>history2</b> 4 3 2 <b>history2</b> 0.3 9.6 18.8



# **OIL ANALYSIS REPORT**

VISUAL



White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NONE NORE	NONE NONE NONE NONE NONE NONE	NONE NONE NONE NONE NONE	NONE NONE NONE NONE NONE
Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual	NONE NONE NONE	NONE NONE NONE NONE	NONE NONE NONE	NONE NONE NONE
Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual	NONE NONE	NONE NONE NONE	NONE NONE	NONE NONE
Debris Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar scalar	*Visual *Visual *Visual	NONE NONE	NONE NONE	NONE	NONE
Sand/Dirt Appearance Odor Emulsified Water Free Water	scalar scalar scalar scalar	*Visual *Visual	NONE	NONE		
Appearance Odor Emulsified Water Free Water	scalar scalar scalar	*Visual			NONE	NONE
Odor Emulsified Water Free Water	scalar scalar		NORML			NONL
Emulsified Water Free Water	scalar	*Vieual		NORML	NORML	NORML
Free Water		visuai	NORML	NORML	NORML	NORML
		*Visual	>0.2	NEG	NEG	NEG
	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.3	14.0
GRAPHS						
Ferrous Alloys						
iron	-					
12 nickel						
10						
a 8-						
6						
4						
	Hanna Providence					
3/23	1/23 -		9/24			
May	Dec1		Mar1			
Non-ferrous Metal	s					
8 - Beanseneerse lead						
un un						
6- E						
8 4						
2						
0						
43/23	11/23		19/24			
Mar	Deci		Mari			
/ -				Base Number		
			10.0			
17-						
c16			KOH			
2 15 Base			Ē 6.0	)		
53 14						
13 Abnormal			ase N			
12 -			2.0	) <b>-</b>		
11						
ay3/23	11/23		19/24	ay3/25	11/23	
Ma	Dec		Mar	Ma	Dec	
: GFL0108886 : 06124602 : 10938753 : FLEET	Recei Teste Diagn		GFL Environmental - 415 - Michigan E 6200 Elmric Sterling Heights, avis US 483 Contact: Frank Wo fwolak@gflenv.cd			
	GRAPHS Ferrous Alloys Ferrous Alloys Ferrous Alloys Competition Non-ferrous Metals Non-ferrous Metals Non-ferrous Metals Viscosity @ 100°C Second Competition Compe	GRAPHS Ferrous Alloys Ferrous Alloys Ferrous Alloys Competitive Non-ferrous Metals Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C Second Second Se	GRAPHS Ferrous Alloys Ferrous Alloys Non-ferrous Metals Non-ferrous Metals Viscosity @ 100°C	GRAPHS Ferrous Alloys	GRAPHS Ferrous Alloys	GRAPHS Ferrous Alloys