

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 429082

## 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

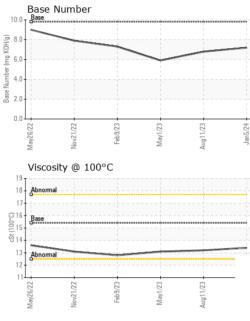
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	VATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0106096	GFL0082045	GFL0082011	
Sample Date		Client Info		05 Jan 2024	11 Aug 2023		
Machine Age	hrs	Client Info		12520	11543	01 Way 2023	
Oil Age	hrs	Client Info		600	600	600	
Oil Changed	1115	Client Info		Changed	Changed	Changed	
-		Client Into		NORMAL	NORMAL	NORMAL	
Sample Status				NORMAL	NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>5	<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	>100	6	7	7	
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1	
Nickel	ppm		>4	0	<1	<1	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m	>3	0	0	0	
Aluminum	ppm	ASTM D5185m	>20	2	3	1	
Lead	ppm	ASTM D5185m	>40	0	2	1	
Copper	ppm	ASTM D5185m	>330	<1	2	2	
Tin	ppm	ASTM D5185m	>15	0	<1	0	
Vanadium	ppm	ASTM D5185m		0	0	0	
0.1.1							
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2	
ADDITIVES		method		current	history1	history2	
	ppm	method ASTM D5185m	limit/base 0 0	-	-	-	
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 3	history1 6	history2 11 0	
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0	current 3 0	history1 6 0	history2 11	
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 3 0 61 0	history1 6 0 64	history2 11 0 63	
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 3 0 61	history1 6 0 64 <1	history2 11 0 63 <1	
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	current 3 0 61 0 951	history1 6 0 64 <1 876	history2 11 0 63 <1 897	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	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           0           61           0           951           1068	history1 6 0 64 <1 876 1113	history2 11 0 63 <1 897 1126	
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 0 61 0 951 1068 1014	history1 6 0 64 <1 876 1113 975	history2 11 0 63 <1 897 1126 979	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           3           0           61           0           951           1068           1014           1213	history1 6 0 64 <1 876 1113 975 1167	history2 11 0 63 <1 897 1126 979 1233	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 0 61 0 951 1068 1014 1213 3074	history1 6 0 64 <1 876 1113 975 1167 2611	history2 11 0 63 <1 897 1126 979 1233 3428	
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	0 0 60 1010 1070 1150 1270 2060	current           3           0           61           0           951           1068           1014           1213           3074           current	history1 6 0 64 <1 876 1113 975 1167 2611 history1	history2 11 0 63 <1 897 1126 979 1233 3428 history2	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current           3           0           61           0           951           1068           1014           1213           3074           current           4	history1           6           0           64           <1           876           1113           975           1167           2611           history1           4	history2           11           0           63           <1           897           1126           979           1233           3428           history2           5	
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4	history1           6           0           64           <1           876           1113           975           1167           2611           history1           4           2	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1	
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           4           4           4           5	history1         6         0         64         <1         876         1113         975         1167         2611         history1         4         2         2         history1	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         1	
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 2060 225 >20 20	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           4           0           0.3	history1           6           0           64           <1           876           1113           975           1167           2611           history1           4           2           history1           0.3	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         1         history2	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium 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 2060 225 >25 >20 <b>limit/base</b> >3	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           4           4           4           5	history1         6         0         64         <1         876         1113         975         1167         2611         history1         4         2         2         history1	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         1         history2         0         0.3	
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 2060 225 20 225 20 <b>imit/base</b> >3 >20 >30	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           0           0.3           8.2           19.4	history1         6         0         64         <1         876         1113         975         1167         2611         history1         4         2         history1         0.3         8.0         19.3	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         history2         0.3         7.7         17.8	
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 ppm	method         ASTM D5185m         ASTM D7844         *ASTM D7624         *ASTM D7415	0 0 0 1010 1070 1150 2260 2060 225 220 220 1000 225 220 220 20 23 20 20 20 20 20 20 20 20 20 20 20 20 20	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           4           0.3           8.2           19.4           current	history1           6           0           64           <1           876           1113           975           1167           2611           history1           4           2           history1           0.3           8.0           19.3           history1	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         history2         0.3         7.7         17.8         history2	
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 2060 225 20 225 20 <b>imit/base</b> >3 >20 >30	current           3           0           61           0           951           1068           1014           1213           3074           current           4           4           0           0.3           8.2           19.4	history1         6         0         64         <1         876         1113         975         1167         2611         history1         4         2         history1         0.3         8.0         19.3	history2         11         0         63         <1         897         1126         979         1233         3428         history2         5         1         history2         0.3         7.7         17.8	



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VISUAL



Certificate L2367	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0106096 : 06055738 : 10821687 : FLEET	Diagnosed         : 10 Jan 2024           10821687         Diagnostician         : Wes Davis				GFL Environmental - 152 - Jacksonville 7580 PHILIPS HWY Jacksonville, FL US 32256 Contact: GRANVILLE CARROLL gcarroll@gflenv.com			
		Co-106 Base 14 13 14 13 12 11 12 11 12 12 12 12 12 12	reb9/23	Aug11/23	0.0 6.0 (0)HOX 6.0 Base ynumper (und KOHK) 9002 900 900 900 900 900 900 900 900 90		Feb9/23 May1/23	Aug11/23		
		Viscosity @ 100°	C		10.0 (6)/HOX					
		2 2	May1/23	Aug11/23	Jan5/24					
		6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4								
		Non-ferrous Meta	als							
		May26/22	Heb 9/23 May 1/23	Aug11/23	Jan 5/24					
Feb9/23 +	Aug11/23	Ferrous Alloys								
		Visc @ 100°C GRAPHS	cSt	ASTM D445	15.4	13.4	13.2	13.1		
		FLUID PROPE		method	limit/base	current	history1	history2		
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG		
Feb9/23 May1/23	Aug11/23 Jan5/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
23	/23	Sand/Dirt Appearance	scalar scalar	*Visual *Visual	NONE NORML	NONE NORML	NONE NORML	NONE NORML		
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE			
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE			
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE		

Submitted By: WITH iNDIANA GFL - Chris Smith