

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### 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.

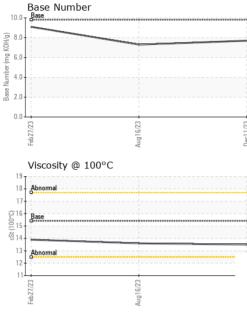
#### Fluid Condition

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	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092869	GFL0085628	GFL0076873
Sample Date		Client Info		11 Dec 2023	16 Aug 2023	27 Feb 2023
Machine Age	hrs	Client Info		14223	13780	13358
Oil Age	hrs	Client Info		443	422	0
Oil Changed		Client Info		Changed	Changed	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	>120	11	24	8
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	3	5	0
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	2
Lead	ppm	ASTM D5185m	>40	2	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	3	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm	AOTIVI DOTODITI		U	0	0
ADDITIVES	ppm	method	limit/base	-	history1	history2
	ppm	method	limit/base	-		-
ADDITIVES		method ASTM D5185m		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 2	history1 6	history2 10
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 2 0	history1 6 0	history2 10 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2 0 59	history1 6 0 61	history2 10 0 59
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 59 <1	history1 6 0 61 <1	history2 10 0 59 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	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 2 0 59 <1 917 1008 894	history1 6 0 61 <1 919 1186 1019	history2 10 0 59 <1 934 1123 1002
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 2 0 59 <1 917 1008	history1 6 0 61 <1 919 1186 1019 1234	history2 10 0 59 <1 934 1123 1002 1241
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm 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 2 0 59 <1 917 1008 894	history1 6 0 61 <1 919 1186 1019	history2 10 0 59 <1 934 1123 1002
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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 2 0 59 <1 917 1008 894 1182 2886	history1 6 0 61 <1 919 1186 1019 1234	history2 10 0 59 <1 934 1123 1002 1241
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 0 1010 1070 1150 1270 2060	Current 2 0 59 <1 917 1008 894 1182 2886	history1 6 0 61 <1 919 1186 1019 1234 3563	history2 10 0 59 <1 934 1123 1002 1241 3844
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 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 2 0 59 <1 917 1008 894 1182 2886 Current	history1 6 0 61 <1 919 1186 1019 1234 3563 history1	history2   10   0   59   <1   934   1123   1002   1241   3844   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	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 2 0 59 <1 917 1008 894 1182 2886 Current 4	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4	history2     10     0     59     <1     934     1123     1002     1241     3844     history2     4
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	Current     2     0     59     <1     917     1008     894     1182     2886     Current     4     2     4     2     5	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5
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 imit/base >20	current     2     0     59     <1     917     1008     894     1182     2886     current     4     2     <1     current     0.5	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11   0   history1   1	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5   <1   history2   4   5   <1   history2   0.5
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 >25 >20 imit/base >20	current   2   0   59   <1   917   1008   894   1182   2886   current   4   2   <1   current   4   2   <1   current	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11   0   history1	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5   <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 <b>TS</b>	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	current     2     0     59     <1     917     1008     894     1182     2886     current     4     2     <1     current     0.5	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11   0   history1   1	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5   <1   history2   4   5   <1   history2   0.5
ADDITIVES 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	method     ASTM D5185m     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	Current     2     0     59     <1     917     1008     894     1182     2886     current     4     2     <1     0.5     8.0     19.4	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11   0   history1   1   8.2	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5   <1   history2   0   6.5   6.9
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 D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >4 >20	Current     2     0     59     <1     917     1008     894     1182     2886     current     4     2     <1     0.5     8.0     19.4	history1   6   0   61   <1   919   1186   1019   1234   3563   history1   4   11   0   history1   1   8.2   19.5	history2   10   0   59   <1   934   1123   1002   1241   3844   history2   4   5   <1   history2   0.5   6.9   18.4



# **OIL ANALYSIS REPORT**



		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Aug16/23	Dec11/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Aug	Dec	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROF	PERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.6	13.9
Aug 16/23		GRAPHS Ferrous Alloys	Aug16/23 -		Dec11/23			
		0	23		23			
		Feb27/23	Aug16/23 +		Dec11/23			
					Dec11/23	Base Number		
		Viscosity @ 100			Dec11/23			
		Viscosity @ 100				Base		
	ş	Viscosity @ 100				0 Base		
		Viscosity @ 100				0 Base		
		Viscosity @ 100				0 - Base		
		Viscosity @ 100			8. 	0		
		Viscosity @ 100				0		
		Viscosity @ 100	°C		8. (b)HOX Bu) Jaquing 4. 2. 0.	0	23	
		Viscosity @ 100	°C		8. (b)HOX Bu) Jaquing 4. 2. 0.	0	16/23	
	Laboratory Sample No. Lab Number Unique Number Test Package	Viscosity @ 100	Aug16/23	d : 19 [ ed : 20 [	.6 .6. .4. .0. .1/1/12 .2. .0. .0. .0.	Base.	ironmental - 41	1 - Kingsford H 1001 E Bly Kingsford, N US 4980 ervice Manag

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

Submitted By: TECHNICIAN ACCOUNT