

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id **423079** 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.

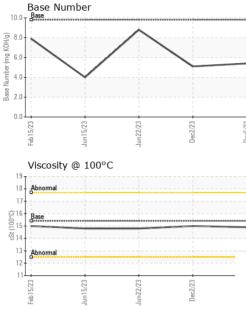
#### Fluid Condition

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		GFL0092013	GFL0092033	GFL0084593
Sample Date		Client Info		05 Dec 2023	02 Dec 2023	22 Jun 2023
Machine Age	hrs	Client Info		19993	144593	144593
Oil Age	hrs	Client Info		600	18840	0
Oil Changed		Client Info		Changed	Not Changd	Not Changd
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	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	18	12	6
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	2	1	1
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	5	5	4
Tin	ppm	ASTM D5185m	>5	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
O a share's see						
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base	-	-	
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 9	history1 9	history2 37
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 9 0	history1 9 2	history2 37 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 9 0 56	history1 9 2 52	history2 37 0 48
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 9 0 56 0	history1 9 2 52 0	history2 37 0 48 <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           9           0           56           0           603           1601           728	history1 9 2 52 0 544	history2 37 0 48 <1 590
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           9           0           56           0           603           1601	history1 9 2 52 0 544 1509	history2 37 0 48 <1 590 1572
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           9           0           56           0           603           1601           728	history1 9 2 52 0 544 1509 686	history2 37 0 48 <1 590 1572 764
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current           9           0           56           0           603           1601           728           1035	history1 9 2 52 0 544 1509 686 928	history2 37 0 48 <1 590 1572 764 946
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	O           56           0           603           1601           728           1035           2333	history1 9 2 52 0 544 1509 686 928 2409	history2 37 0 48 <1 590 1572 764 946 2904
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           9           0           56           0           603           1601           728           1035           2333           current	history1 9 2 52 0 544 1509 686 928 2409 history1	history2         37         0         48         <1         590         1572         764         946         2904         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 1010 1070 1150 1270 2060	current           9           0           56           0           603           1601           728           1035           2333           current           5	history1           9           2           52           0           544           1509           686           928           2409           history1           4	history2         37         0         48         <1         590         1572         764         946         2904         history2         4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 kimit/base >20	current           9           0           56           0           603           1601           728           1035           2333           current           5           10	history1           9           2           52           0           544           1509           686           928           2409           history1           4           7	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >20	current           9           0           56           0           603           1601           728           1035           2333           current           5           10           2	history1           9           2           52           0           544           1509           686           928           2409           history1           4           7           2	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6         <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 220 220	current           9           0           56           0           603           1601           728           1035           2333           current           5           10           2           current	history1         9         2         52         0         544         1509         686         928         2409         history1         4         7         2         history1	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6         <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 limit/base >20 20 20	current           9           0           56           0           603           1601           728           1035           2333           current           5           10           2           current           0	history1         9         2         52         0         544         1509         686         928         2409         history1         4         7         2         history1         0	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6         <1         history2         0         0.1
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 t t t t	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	current           9           0           56           0           603           1601           728           1035           2333           current           5           10           2           current           0           11.1	history1           9           2           52           0           544           1509           686           928           2409           history1           4           7           2           history1           0           10.6	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6         <1         history2         0         1         0.1         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 2060 200 200 200 320 320 33 200 230	Current           9           0           56           0           603           1601           728           1035           2333           current           5           10           2           current           0           11.1           21.2	history1         9         2         52         0         544         1509         686         928         2409         history1         4         7         2         history1         0         10.6         21.2	history2         37         0         48         <1         590         1572         764         946         2904         history2         4         6         <1         history2         0.1         7.1         19.8



## **OIL ANALYSIS REPORT**



White Metal Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE				
	agalar			NONE	NONL	NONL				
	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				
	scalar	*Visual	NORML	NORML	NORML	NORML				
Odor	scalar	*Visual	NORML	NORML	NORML	NORML				
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG				
Free Water	scalar	*Visual		NEG	NEG	NEG				
FLUID PROPE	RTIES	method	limit/base	current	history1	history2				
Visc @ 100°C	cSt	ASTM D445	15.4	14.9	15.0	14.8				
GRAPHS										
Ferrous Alloys										
30 - iron chromium										
25 - Pickel										
E <sup>20</sup>			-							
10-	1									
		· · · · · · · · · · · · · ·								
		2/23								
Feb15 Jun15	Jun22	Dec2	Dec5							
	s									
copper										
sussession tin										
		1								
E. 20										
15										
10										
5-										
53 53	53	23	23							
Feb 15// Jun 15//	Jun22/	Dec2/	Dec5/.							
Viscosity @ 100°C Base Number										
18 - Abnormal			10.0	Dase	-					
17-			⊊ <sup>8.0</sup>		$\wedge$					
ç <sup>16</sup> Base			N RO			<hr/>				
e_15			per (m							
<sup>3</sup> 14			4.0							
13 - Abnormal			<sup>88</sup> 2 0							
12-										
Feb 15/23 +	Jun22/23	Dec2/23	0.0	Feb15/23	23	Dec2/23 +-				
	5	2/7	2	Feb 15/23 Jun 15/23	Jun22/23	Dec2/23				
	Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys Content of the second secon	Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys CST CST CST CST CST CST CST CST	Debris scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys 50 50 50 50 50 50 50 50 50 50	Debris scalar 'Visual NONE Sand/Dirt scalar 'Visual NONE Appearance scalar 'Visual NORML Odor scalar 'Visual NORML Emulsified Water scalar 'Visual >0.2 Free Water scalar 'Visual FLUID PROPERTIES method limit/base Visc @ 100°C cSt ASTM D445 15.4 GRAPHS Ferrous Alloys Terrous Metals Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C	Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Color scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG Free Water scalar *Visual >0.2 NEG More dependence of the scalar *Visual >0.2 NEG Non-ferrous Alloys Compared of the scalar *Visual *0.5 Method the scalar *0.5 Method the scalar *Visual *0.5 Method the scalar *0.5 Meth	Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NORML NORML NORML NORML Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual NORML NORML NORML Scalar *Visual NORML NORML NORML Visual NORML NORML NORML NORML NORMC (Comparison				

: 12 Dec 2023

Diagnostician : Don Baldridge



Test Package : FLEET Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Diagnosed

: 06029924

Lab Number

Unique Number : 10779715

Contact: Apolinar Zacarias

pzacariascano@gflenv.com

Houston, TX

US 77083

T:

F: