

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### PETRO CANADA DURON SHP 15W40 (36 QTS)

DIAGNOSIS	
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.

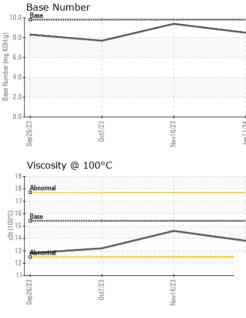
#### Fluid Condition

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		GFL0104256	GFL0059319	GFL0085001
Sample Date		Client Info		11 Jan 2024	16 Nov 2023	07 Oct 2023
Machine Age	hrs	Client Info		2528	2136	1930
Oil Age	hrs	Client Info		2528	206	1930
Oil Changed		Client Info		Changed	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	>120	4	4	8
Chromium	ppm	ASTM D5185m	>20	0	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	1	6
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	0	<1	10
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium						0
Caumum	ppm	ASTM D5185m		0	0	0
ADDITIVES	ррп	method	limit/base	0 current	0 history1	0 history2
	ppm	method	limit/base		-	-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 3	history1 0	history2 0
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 3 0	history1 0 0	history2 0 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 3 0 56	history1 0 0 55	history2 0 0 60
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 3 0 56 <1	history1 0 0 55 <1	history2 0 0 60 <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 0 56 <1 914	history1 0 0 55 <1 933	history2 0 0 60 <1 928
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 3 0 56 <1 914 954	history1 0 0 55 <1 933 1029	history2 0 0 60 <1 928 1061
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 3 0 56 <1 914 954 1076	history1 0 55 <1 933 1029 1008	history2 0 0 60 <1 928 1061 1038
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 3 0 56 <1 914 954 1076 1232	history1 0 55 <1 933 1029 1008 1203	history2           0           0           60           <1           928           1061           1038           1273
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 3 0 56 <1 914 954 1076 1232 3061	history1 0 0 55 <1 933 1029 1008 1203 3159	history2 0 0 60 <1 928 1061 1038 1273 2929
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 0 56 <1 914 954 1076 1232 3061 Current	history1 0 55 <1 933 1029 1008 1203 3159 history1	history2         0         0         60         <1         928         1061         1038         1273         2929         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	0 0 60 1010 1070 1150 1270 2060	Current           3           0           56           <1           914           954           1076           1232           3061           current           3	history1           0           0           55           <1           933           1029           1008           1203           3159           history1           4	history2           0           0           60           <1           928           1061           1038           1273           2929           history2           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium 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 Limit/base >25	Current           3           0           56           <1           914           954           1076           1232           3061           current           3           <1	history1           0           0           55           <1           933           1029           1008           1203           3159           history1           4           2	history2         0         0         60         <1         928         1061         1038         1273         2929         history2         6         1
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	Current         3         0         56         <1         914         954         1076         1232         3061         current         3         <1         2	history1         0         0         55         <1         933         1029         1008         1203         3159         history1         4         2         1	history2         0         0         60         <1         928         1061         1038         1273         2929         history2         6         1         19
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	Current 3 0 56 <1 914 954 1076 1232 3061 Current 3 <1 2 Current	history1         0         0         55         <1         933         1029         1008         1203         3159         history1         4         2         1         history1	history2         0         0         60         <1         928         1061         1038         1273         2929         history2         6         1         19         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 >25 >20 limit/base	Current         3         0         56         <1         914         954         1076         1232         3061         current         3         <1         2         current         0.2	history1         0         0         55         <1         933         1029         1008         1203         3159         history1         4         2         1         history1         0         0.1	history2         0         0         60         <1         928         1061         1038         1273         2929         history2         6         1         19         history2         0         0.3
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 ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	Current         3         0         56         <1         914         954         1076         1232         3061         current         3         <1         2         current         0.2         5.7	history1           0           0           55           <1           933           1029           1008           1203           3159           history1           4           2           1           history1           0.1           5.1	history2           0           0           60           <1           928           1061           1038           1273           2929           history2           6           1           19           history2           0           3           19           1273           3           13           6           1           19           1273           0.3           7.8
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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 255 25 20 <b>imit/base</b> >20 <b>imit/base</b> >20 30	Current         3         0         56         <1         914         954         1076         1232         3061         current         3         <1         2         current         0.2         5.7         18.3	history1         0         0         55         <1         933         1029         1008         1203         3159         history1         4         2         1         history1         0.1         5.1         18.0	history2         0         0         60         <1         928         1061         1038         1273         2929         history2         6         1         19         history2         0.3         7.8         19.4



# **OIL ANALYSIS REPORT**



VISUAL						history2
		method	limit/base	current	history1	Thistory Z
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
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	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	13.8	14.6	13.2
GRAPHS						
Ferrous Alloys						
<sup>25</sup>						
20						
essesses nickel						
_ 15						
10						
5						
5						
0						
26/23		/16/23	11/24			
Sep		Nov	Jan			
	s					
10 8 8						
copper						
8 - copper						
copper						
8 - copper						
8 - copper						
8 6 4						
8 6 4 2 0		123	124			
8 6 4 2 0		port 16/23				
8 6 4 2 0		Nov16/23	Jan 11/24			
Viscosity @ 100°C		Nov16/23	Jan11/24	Base Number	-	
Band Copper lead		Nov16/23	+67/11/mer 10.0	Base		
Viscosity @ 100°C		Nov16/23	+67/11/mer 10.0	Base		
Viscosity @ 100°C		Vov16/23	+67/11/mer 10.0	Base		
Viscosity @ 100°C		Nov16/23	+67/11/mer 10.0	Base		
Viscosity @ 100°0		Novri 6/23	+67/11/mer 10.0	Base	-	
Viscosity @ 100°C		Nov16/23	10.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0	Base		
Viscosity @ 100°C		Nov16/23	+2711 mer (0)HOX Bull Bull Search 4.0 2.0	Base		
Viscosity @ 100°0			10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Base		
Viscosity @ 100°0			10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Base		vi6/23
Viscosity @ 100°C		Nov16/23	+2711 mer (0)HOX Bull Bull Search 4.0 2.0	Base		Nev16/23
Copper lead udd udd udd udd udd udd udd u		Nov16/23	+2711neL (0)H0X gmmbar Base Number (0)H0X gmmbar Base Number (0)H0X gmmbar base S 0.0 (0)H0X gmmbar base S 0.0	Base.	0ct/2/3	
Viscosity @ 100°C	501 Madis	EEggyog son Ave., Ca	+72111uer (0)H0X Bull 34 (0)H0X Bull	Base.	vironmental - 410	0 - Michigan We
Copper lead udd udd udd udd udd udd udd u		Eligibol son Ave., Ca i : 16	+2711neL (0)H0X gmmbar Base Number (0)H0X gmmbar Base Number (0)H0X gmmbar base S 0.0 (0)H0X gmmbar base S 0.0	Base.	vironmental - 410	
	Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys	Precipitate scalar *Visual Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys Communication Communic	Precipitate scalar *Visual NONE Silt scalar *Visual NONE 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 >0.2 Free Water scalar *Visual VORML Visc @ 100°C cSt ASTM D445 15.4 GRAPHS Ferrous Alloys Ferrous Alloys	Precipitate scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG Free Water scalar *Visual NORML NEG Free Water scalar *Visual NORML NEG FLUID PROPERTIES method limit/base current Visc @ 100°C cSt ASTM D445 15.4 13.8 GRAPHS Ferrous Alloys	Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NORML NEG NEG Free Water scalar *Visual NORML NEG NEG Free Water scalar *Visual Sole NEG Free Water scalar *Visual NORML NEG NEG Free Water scalar *Visual Sole NEG Fer Scalar *Visual Sole NEG Sole NEG Free Water Scalar *Visual Sole NEG Sole NEG Fer Scalar *Visual Sole NEG Sole N



 Unique Number
 : 10832132
 Diagnostician
 : Wes Davis

 Certificate L2367
 Test Package
 : FLEET

 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)

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