

# **OIL ANALYSIS REPORT**

Sample Rating Trend



**428045-402448** Component

Diesel Engine

Machine Id

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

## DIAGNOSIS Recommendation

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

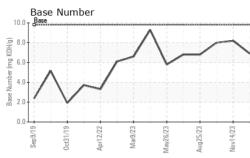
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

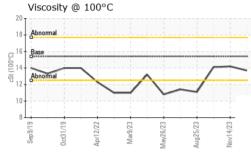
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103965	GFL0100501	GFL0093316
Sample Date		Client Info		30 Jan 2024	14 Nov 2023	27 Oct 2023
Machine Age	hrs	Client Info		18653	18073	17945
Oil Age	hrs	Client Info		18653	18073	17945
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.6
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	6	9	11
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	2	1
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	<1	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	<1
	PP			Ū	0	
ADDITIVES	66	method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	-		
		method		current	history1	history2
Boron	ppm	method ASTM D5185m	0	current	history1 2	history2 3
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current <1 0	history1 2 0	history2 3 4
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 0 56	history1 2 0 59	history2 3 4 60
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<pre>current &lt;1 0 56 &lt;1</pre>	history1 2 0 59 <1	history2 3 4 60 <1
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	<pre>current &lt;1 0 56 &lt;1 913</pre>	history1 2 0 59 <1 964	history2 3 4 60 <1 853
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	<pre>current &lt;1 0 56 &lt;1 913 972</pre>	history1 2 0 59 <1 964 1113	history2 3 4 60 <1 853 1086 914 1144
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           <1           0           56           <1           913           972           998	history1           2           0           59           <1           964           1113           1046	history2 3 4 60 <1 853 1086 914
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           <1           0           56           <1           913           972           998           1197	history1           2           0           59           <1           964           1113           1046           1273	history2 3 4 60 <1 853 1086 914 1144
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           <1           0           56           <1           913           972           998           1197           2928	history1         2         0         59         <1         964         1113         1046         1273         3093	history2 3 4 60 <1 853 1086 914 1144 2922
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 0 1010 1070 1150 1270 2060	current <1 0 56 <1 913 972 998 1197 2928 current	history1         2         0         59         <1         964         1113         1046         1273         3093         history1	history2 3 4 60 <1 853 1086 914 1144 2922 history2
Boron Barium Molybdenum Manganese Magnesium 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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	current           <1           0           56           <1           913           972           998           1197           2928           current           6	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10
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>	current           <1           0           56           <1           913           972           998           1197           2928           current           6           4	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0
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         <1         0         56         <1         913         972         998         1197         2928         current         6         4         2	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0         2
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         <1         0         56         <1         913         972         998         1197         2928         current         6         4         2         current	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3         <1         history1	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0         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 ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	current         <1         0         56         <1         913         972         998         1197         2928         current         6         4         2         current         0.3	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3         <1         history1         0         0.2	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0         2         history2         0.2
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 2060 225 >25 >20 imit/base >20	current         <1         0         56         <1         913         972         998         1197         2928         current         6         4         2         current         0.3         8.8	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3         <1         history1         0         0.2         7.5	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0         2         history2         0.2         7.3
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 225 20 225 20 <b>imit/base</b> >20 <b>imit/base</b> >20	current         <1         0         56         <1         913         972         998         1197         2928         current         6         4         2         current         0.3         8.8         18.9	history1         2         0         59         <1         964         1113         1046         1273         3093         history1         6         3         <1         0.2         7.5         18.7	history2         3         4         60         <1         853         1086         914         1144         2922         history2         10         0         2         history2         0.2         7.3         18.7



# **OIL ANALYSIS REPORT**

VISUAL





					iimii/base	current	riistory i	
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$\sum$	$\sim$	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
				*Visual	NONE	NONE	NONE	NONE
3 33	33	_ Sand/Dirt	scalar					
Mar9/23 May26/23	Aug25/23 Nov14/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
2 N	Au Nc	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
	$\sim$	Visc @ 100°C	cSt	ASTM D445	15.4	13.7	14.2	14.1
$\wedge$	1	GRAPHS						
		Ferrous Alloys						
	21 E	iron						
Mar9/23 May26/23	Aug25/23 Nov14/23	120 - chromium						
N N	Au No	100						
		B0						
		B 60-			+			
		40						
		20						
		0 - V	-					
		Sep9/19 Oct31/19	Mar9/23 -	Aug25/23	Nov14/23			
		∽ ँ ∉ Non-ferrous Metal	2	Au	No			
		35 <sub>T</sub>	15					
					1			
		copper						
		30 - copper lead						
		30 - Lead 25 - tin						
		30 - Lead 25 - tin						
		30 - copper lead 25 - tin 15 - tin						
		30 - Lead 25 - tin						
		30 - copper lead 25 - tin 15 - tin						
		30 25 Eg 20 15						
		30 25 Eg 20 15	a9/23 / 56/73	25/23	14/23			
		30 25 Eg 15 10	Mar0/5/23	Aug25/23	Moort 4/123			
		Copper lead 25 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		Aug25/23		Base Number		
		Viscosity @ 100°C		Aug25/23		Base Number		
		Copper lead 25 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		Aug25/23	10.	0 - Base	Λ	
		Viscosity @ 100°C		Aug25/23	10.	0 - Base		
		Viscosity @ 100°C		Aug25/23	10.	0 - Base	$\bigwedge$	
		30 25 Edd 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 15 10 10 10 10 10 10 10 10 10 10		Aug25/23	10.	0 - Base	$\bigwedge$	
		Viscosity @ 100°C		Aug25/23	10.	0 - Base	$\bigwedge$	
		30 25 Edd 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 10 15 10 10 10 10 10 10 10 10 10 10		Aug25/23	10.	0 - Base	$\bigwedge$	
		30 25 20 10 5 6 6 10 5 6 10 5 6 10 5 6 10 10 5 6 10 10 10 10 6 10 10 10 10 10 10 10 10 10 10		Aug25/23	10.1 (6)HOX Bull) as aquuny aseg 2.1		$\bigwedge$	
		20 20 20 15 0 0 0 0 0 0 0 0 0 0 0 0 0		7	10. (0)HOX Bull segurity 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,			
		20 20 20 15 0 0 0 0 0 0 0 0 0 0 0 0 0		7	10. (0)HOX Bull segurity 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,		Mare1013 America Ame	q25/23
		30 25 Ed 15 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 10 10 10 10 10 10 10 10 10		7	10.1 (6)HOX Bull) as aquuny aseg 2.1		Ma923	Aug25/23
	Laboratory	Copper lead 25 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Mar9/23	Aug25/23	10.1 (0)Hoy Bul Jaquing asses 8.1 (0)Hoy Bul Jaquing asses 2.1 0.1	Sep9/19 0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	2	
	Laboratory Sample No.	Copper Lead Copper Lead Copper Lead Copper Lead Copper Lead Copper Lead Copper Co	Mar9/23	EZISZIBIN Son Ave., Ca	10.1 (0)Hoy Bul Jaquing asses 8.1 (0)Hoy Bul Jaquing asses 2.1 0.1	3 GFL Envir	ecception commental - 865 - E 213 East Mount	ast Mount Hauli
NAB		Copper Lead Copper Lead Copper Lead Copper Line Copper Line Copper Line Copper Co	ECOSPORE ECOSPORE 501 Madis	son Ave., Ca	10.1 (0)HOX Bull Jack (1) (0)HOX Bull Jack (1) (0)HOX Bull Jack (1) (0) (1)HOX Bull Jack (1) (1)HOX BULL Jack (1)HOX BULL	3 GFL Envir	onmental - 865 - E	<b>ast Mount Hauli</b> Houston Roa Houston, T
	Sample No.	Copper Lead 25 15 10 15 10 15 10 10 15 10 10 10 10 10 10 10 10 10 10	501 Madis Recieved	son Ave., Ca d : 02 F ed : 02 F	10.1 ()(Hoy Gu) 10.1 ()(Hoy	3 GFL Envir	onmental - 865 - E 213 East Mount	ast Mount Hauli Houston Roa Houston, T US 7705
	Sample No. Lab Number Unique Number Test Package	Copper Line Line Line Line Line Line Line Line	501 Madia Recieved Diagnost	son Ave., Ca d : 02 f ed : 02 f tician : Wes	10.1 (0)Hoy Bull Jaquer (0)Hoy Bull Jaquer (0)Hoy Bull Jaquer (0) (0)Hoy Bull Jaquer (0) (0)Hoy Bull Jaquer (0) (0)Hoy Bull Jaquer (0)Hoy Bull Jaquer (0)Ho	3 GFL Envir	eonmental - 865 - E 213 East Mount Contad	ast Mount Hauli Houston Roa Houston, 1 US 7709 ct: Saul Casti
discuss this	Sample No. Lab Number Unique Number Test Package sample report,	Copper Lead 20 20 20 20 20 20 20 20 20 20	501 Madis Recieved Diagnost Diagnost	son Ave., Ca d : 02 F ed : 02 F tician : Wes	10.1 (PHO) Put and a second s	3 GFL Envir	eonmental - 865 - E 213 East Mount Contad	a <b>st Mount Hauli</b> Houston Roa Houston, 1

Submitted By: TECHNICIAN ACCOUNT