

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



#### Area (BD56715) {UNASSIGNED} Machine Id 914050

Component
1 Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 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

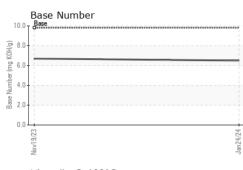
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

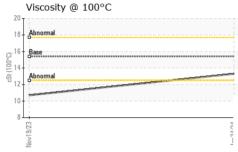
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0106689	GFL0097677	
Sample Date		Client Info		24 Jan 2024	19 Nov 2023	
Machine Age	hrs	Client Info		1570	951	
Oil Age	hrs	Client Info		619	620	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ABNORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.4	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	23	52	
Chromium	ppm	ASTM D5185m	>20	<1	1	
Nickel	ppm	ASTM D5185m	>5	2	2	
Titanium	ppm	ASTM D5185m	>2	0	0	
Silver	ppm	ASTM D5185m	>2	<1	0	
Aluminum	ppm	ASTM D5185m	>20	2	4	
Lead	ppm	ASTM D5185m	>40	1	2	
Copper	ppm	ASTM D5185m	>330	62	194	
Tin	ppm	ASTM D5185m	>15	1	3	
Vanadium	ppm	ASTM D5185m		<1	<1	
<b>a</b>						
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES	ppm	ASTM D5185m method	limit/base	-	0 history1	history2
	ppm ppm		limit/base	-	-	
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 4	history1 86	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 4 0	history1 86 <1	history2 
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 65	history1 86 <1 108	history2  
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 4 0 65 1	history1 86 <1 108 4	history2   
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 4 0 65 1 940	history1 86 <1 108 4 740	history2   
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	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	Current 4 0 65 1 940 1113	history1 86 <1 108 4 740 1407	history2
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 4 0 65 1 940 1113 995	history1 86 <1 108 4 740 1407 741	history2
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 4 0 65 1 940 1113 995 1248	history1 86 <1 108 4 740 1407 741 880	history2
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 4 0 65 1 940 1113 995 1248 2681	history1 86 <1 108 4 740 1407 741 880 2097	history2
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 4 0 65 1 940 11113 995 1248 2681 current	history1 86 <1 108 4 740 1407 741 880 2097 history1	history2 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 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 4 0 65 1 940 1113 995 1248 2681 current 8	history1         86         <1         108         4         740         1407         741         880         2097         history1         54	history2 history2
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 Limit/base >25	Current           4           0           65           1           940           1113           995           1248           2681           current           8           4           4	history1 86 <1 108 4 740 1407 741 880 2097 history1 ▲ 54 4	history2
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           4           0           65           1           940           1113           995           1248           2681           current           8           4           4	history1 86 <1 108 4 740 1407 741 880 2097 history1 ▲ 54 4 5	history2 history2 history2
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           4           0           65           1           940           1113           995           1248           2681           current           8           4           4           Current	history1         86         <1         108         4         740         1407         741         880         2097         history1         54         4         5         history1	history2 history2 history2 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 limit/base >25 >20 limit/base	current           4           0           65           1           940           1113           995           1248           2681           current           8           4           0           0.4	history1         86         <1         108         4         740         1407         741         880         2097         history1         54         4         5         history1         0.5	history2 history2 history2 history2 history2
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	current           4           0           65           1           940           1113           995           1248           2681           current           8           4           0           0.4           9.1	history1         86         <1         108         4         740         1407         741         880         2097         history1         54         4         5         history1         0.5         11.0	history2   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 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           4           0           65           1           940           1113           995           1248           2681           current           8           4           0.4           9.1           20.7	history1         86         <1         108         4         740         1407         741         880         2097         history1         54         4         55         history1         0.5         11.0         23.9	history2   history2            history2



# **OIL ANALYSIS REPORT**

VISUAL





	0000r -	VISUAL		method			history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
		Precipitate	scalar	*Visual	NONE	NONE	NONE	
		Silt		*Visual	NONE	NONE	NONE	
		Debris	scalar	*Visual	NONE	NONE	NONE	
		Sand/Dirt		*Visual	NONE	NONE	NONE	
	2	Appearance	scalar	*Visual	NORML	NORML	NORML	
		Odor	scalar	*Visual	NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	
		FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.3	<b>1</b> 0.7	
		GRAPHS						
		Ferrous Alloys						
	60							
	50							
	1 40	nickel						
	Ed 30	)						
	20	) <mark>-</mark>						
	10							
	10							
	0			****				
		Nov19/23			Jan 24/24			
					Jai			
	200	Non-ferrous Meta	ils					
	200	copper ]						
		beel assessesses						
	150							
	E							
	튭 100	)+						
					/			
	50	)+						
	0	u ≣			24			
		Nov19/23			Jan 24/24			
					10			
		—	-					
	19	– Viscosity @ 100°	С			Base Number		
	19	Viscosity @ 100°	с			Base Number		
	19 18 17	Viscosity @ 100°	С		10.0	Base		
	18	Viscosity @ 100°	С		10.0	Base		
	18 17 16	Viscosity @ 100°	c		10.0	Base		
	18 17 16 (2) 15 00 14	Viscosity @ 100°	c		10.0	Base		
	18 17 16 (215 10 14 33 33	Viscosity @ 100°	C		10.0	Base		
	18 17 16 (2) 15 00 14	Viscosity @ 100° Abnormal Base Abnormal	с		0.0 8.0 (0)(10) 988 (ymmy see	Base		
	18 17 16 (015 14 3 13 12	Viscosity @ 100°	с		10.0	Base		
	18 17 16 (-)15 00)14 73 13 12 12	Viscosity @ 100°	c		10.0 (0)HOX Bun Jaquing 4.0 2.0 0.0			
	18 17 16 (-)15 00)14 73 13 12 12	Viscosity @ 100°	с		10.0 (0)HOX Bun Jaquing 4.0 2.0 0.0			
	18 17 16 (-)15 00)14 73 13 12 12	Viscosity @ 100°	с		10.0 (0)HOX DUU Ja UU Jaquung 4.0 2.0	Base		
) Labor	18 17 16 015 0014 33 13 12 11 10 9	Viscosity @ 100°		son Ave. Ca	10.0 (0,H0) 8.0 (0,H0) 6.0 (0,H0) 9888 9888 Winniper 4.0 (0,0 (0,0) (0,0	Base EZ6 I NORN	vironmental - 40	
	18 17 16 215 2014 37 13 12 11 10 9 9	Viscosity @ 100°	501 Madis		10.0 (0,HO) 8.0 (0,HO) 980 (0,HO)	Base EZ6 I NORN	vironmental - 40	
Labora Sampi Lab Nu	18 17 16 15 15 10 14 3 13 12 11 10 9 9 8 10 9 9 9 8 10 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Viscosity @ 100°	501 Madis Recieved	:06	10.0 (0,H0) 8.0 (0,H0) 4.0 (0,H0) 4.0 (0,H0) 4.0 (0,H0) 4.0 (0,0)	Base EZ6 I NORN	7	400 Napier F
Sampl Lab Nu	atory : e No. : umber :	Viscosity @ 100° Abnormal Base Abnormal Control of the second sec	501 Madis	l : 06 l ed : 06 l	10.0 (0)HO3 Bull Jaquing 4.0 (0)HO3 Bull Jaquing 4.0 (0,HO3 Bull Jaquing 4.0 (0,0) (	Base EZ6 I NORN	7	)5 - Arbor Hil
Sampl Lab Nu Unique	atory : e No. : Jumber : Atokage :	Viscosity @ 100° Abnormal Base Abnormal Abnormal Abnormal Base Abnormal Abnormal Abnormal Base Abnormal Abnormal Base Abnormal Abnormal Base Abnormal	501 Madis Recieved Diagnose Diagnose	l : 06 l ed : 06 l ician : We	10.0 (0)HOV but be 6.0 10,HOV	Base EZ6 I NORN	7 NC Contact: Ar	400 Napier F RTHVILLE, I

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

F: