

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### PETRO CANADA DURON SHP 15W40 (33 GAL)

DIAGNOSIS	
Recommendation	

Resample at the next service interval to monitor.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

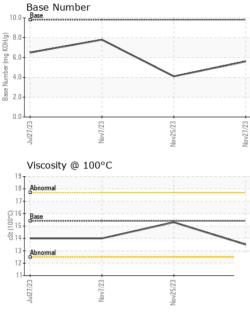
#### Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2						
Sample Number		Client Info		GFL0059318	GFL0059275	GFL0059163						
Sample Date		Client Info		27 Nov 2023	25 Nov 2023	07 Nov 2023						
Machine Age	hrs	Client Info		9517	14310	135175						
Oil Age	hrs	Client Info		0	14310	135175						
Oil Changed		Client Info		N/A	Not Changd	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 METALS method limit/base current history1 history2												
Iron	ppm	ASTM D5185m	>75	10	66	16						
Chromium	ppm	ASTM D5185m	>5	<1	3	<1						
Nickel	ppm	ASTM D5185m	>4	5	<1	<1						
Titanium	ppm	ASTM D5185m	>2	<1	<1	0						
Silver	ppm	ASTM D5185m	>2	0	0	<1						
Aluminum	ppm	ASTM D5185m	>15	2	6	2						
Lead	ppm	ASTM D5185m	>25	<1	0	<1						
Copper	ppm	ASTM D5185m	>100	4	3	<1						
Tin	ppm	ASTM D5185m	>4	<1	<1	<1						
Vanadium	ppm	ASTM D5185m		0	<1	0						
Cadmium	ppm	ASTM D5185m		0	0	0						
	pp			0	0	0						
ADDITIVES	66	method	limit/base	-	history1	history2						
	ppm	method	limit/base	-		-						
ADDITIVES		method		current	history1	history2						
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 71	history1 2	history2 <1						
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 71 0	history1 2 <1	history2 <1 6						
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 71 0 52	history1 2 <1 58	history2 <1 6 64						
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current     71     0     52     <1	history1 2 <1 58 <1	history2 <1 6 64 0						
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 71 0 52 <1 541	history1 2 <1 58 <1 877	history2 <1 6 64 0 918						
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 71 0 52 <1 541 1737	history1 2 <1 58 <1 877 1038	history2 <1 6 64 0 918 1121						
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 71 0 52 <1 541 1737 1071	history1     2     <1     58     <1     877     1038     934	history2 <1 6 64 0 918 1121 1012						
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 71 0 52 <1 541 1737 1071 1218	history1   2   <1   58   <1   877   1038   934   1139	history2 <1 6 64 0 918 1121 1012 1221						
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 71 0 52 <1 541 1737 1071 1218 3437	history1   2   <1   58   <1   877   1038   934   1139   2312	<1   6   64   0   918   1121   1012   1221   3159						
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 71 0 52 <1 541 1737 1071 1218 3437 Current	history1   2   <1   58   <1   877   1038   934   1139   2312   history1	<1   6   64   0   918   1121   1012   1221   3159   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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current     71     0     52     <1     541     1737     1071     1218     3437     current     7	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13	<1   6   64   0   918   1121   1012   1221   3159   history2   5						
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7						
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11   <1	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7   2						
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 ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1     current	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11   <1   history1	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7   2   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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1     current     1	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11   <1   history1   13   11   <1   history1   1.3	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7   2   history2   0.3						
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 D7844     *ASTM D7624     *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1     current     1     10.0	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11   <1   history1   13   11   <1   history1   1.3   1.3   1.3   1.3   1.3   1.3   1.3   1.3   1.3	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7   2   history2   0.3   8.8						
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 D7844     *ASTM D7624     *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 <b>imit/base</b> >6 >20 20	current     71     0     52     <1     541     1737     1071     1218     3437     current     7     0     1     current     1     10.0     22.4	history1   2   <1   58   <1   877   1038   934   1139   2312   history1   13   11   <1   history1   1.3   1.1   <1   history1   1.3   1.2   j.2   30.2	<1   6   64   0   918   1121   1012   1221   3159   history2   5   7   2   history2   0.3   8.8   20.2						



# **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			
Nov25/23	Color Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
Nov	Odor	scalar	*Visual	NORML	NORML	NORML	NORML			
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG			
	Free Water	scalar	*Visual		NEG	NEG	NEG			
	FLUID PROP	ERTIES	method	limit/base	current	history1	history2			
	Visc @ 100°C	cSt	ASTM D445	15.4	13.5	15.3	14.0			
	GRAPHS									
· · · · · · · · · · · · · · · · · · ·	Ferrous Alloys									
Nov25/23 -	60 - iron									
Novi	50 - nickel	/	$\langle \rangle$							
	E 40	/								
	₽0 30	/								
	20	/								
	10-									
		and and an end of the second second	AAAAAA TILLA POOR AND ALLONG							
	Jul27/23 Nov7/23		Nov25/23	Nov27/23						
	Jul		Nov2	Nov2						
	Non-ferrous Met	als								
	10 copper									
	8 - lead									
	6									
	ä. 4									
	2									
	0			BREAK AND						
	Jul27/23 Nov7/23		4ov25/23	v27/23						
	,		Nov	Nov						
	Viscosity @ 100°	°C		10.0	Base Number					
	18 - Abnormal				0					
	17-			(B)H		$\mathbf{\mathbf{i}}$				
	Base			9 2 6.0						
	Contraction 16 Base		$\frown$	0,0 6,0 888 Winnber (Jung KOH(0) 888 Winnber (Jung KOH(0) 800 - 2,0						
				4.0						
	13 Abnormal			2.0 ·						
	12-									
	114		23	-0.0	53	- 23	2			
	Jul27/23 Nov7/23		Nav25/23	Nov27/23	Jul27/23	Nov//23				
ISO/ICC (7025		: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0059318 <b>Received</b> : 07 Dec 2023 : 06027369 <b>Diagnosed</b> : 11 Dec 2023					GFL Environmental - 410 - Michigan We 39000 Van Born F Wayne, N			

Submitted By: Belal Dgheish Page 2 of 2