

## **OIL ANALYSIS REPORT**

Sample Rating Trend







WL0266

#### 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

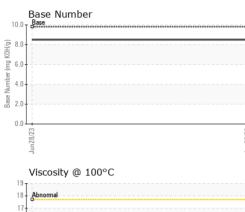
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0055942		
Sample Date		Client Info		28 Jun 2023		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method	20	NEG		
WEAR METAL	S	method	limit/base	current	history 1	history 2
			>100	7		
Iron Chromium	ppm	ASTM D5185m ASTM D5185m	>100	0		
Nickel	ppm	ASTM D5185m	>20	0		
	ppm	ASTM D5185m	>4	0		
Titanium	ppm		. 0			
Silver	ppm	ASTM D5185m	>3	0		
Aluminum	ppm	ASTM D5185m	>20	<1		
Lead	ppm	ASTM D5185m	>40	<1		
Copper	ppm	ASTM D5185m	>330	<1		
Tin Vanadium	ppm	ASTM D5185m	>15	<1		
	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
						le te te un co
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	limit/base	current 19	history 1	nistory 2
	ppm ppm					
Boron		ASTM D5185m	0	19		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	19 2		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	19 2 52		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	19 2 52 <1		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	19 2 52 <1 764		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	19 2 52 <1 764 1185	  	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	19 2 52 <1 764 1185 988	   	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	19 2 52 <1 764 1185 988 1132	    	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	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	19 2 52 <1 764 1185 988 1132 3225		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	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	19 2 52 <1 764 1185 988 1132 3225 current		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	19 2 52 <1 764 1185 988 1132 3225 current 3	     history 1	    history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	19 2 52 <1 764 1185 988 1132 3225 current 3 0	      history 1 	     history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2	     history 1  	     history 2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2 2	     history 1   history 1	    history 2   history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2 2 current 0.1	     history 1   history 1	    history 2  history 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2 current 0.1 7.6	      history 1   history 1  	     history 2  history 2  history 2
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	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2 current 0.1 7.6 18.3 current	      history 1  history 1  history 1	      history 2  history 2  history 2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >20 <b>imit/base</b> >3 >20	19 2 52 <1 764 1185 988 1132 3225 current 3 0 2 current 0.1 7.6 18.3	      history 1   history 1  history 1 	history 2



# **OIL ANALYSIS REPORT**

VISUAL



	VISUAL		method	iimit/base	current	riistory i	riistory 2
	White Metal	scalar	*Visual	NONE	NONE		
	Yellow Metal		*Visual	NONE	NONE		
	Precipitate		*Visual	NONE	NONE		
	Silt		*Visual	NONE	NONE		
	Debris		*Visual	NONE	NONE		
	_ Sand/Dirt		*Visual	NONE	NONE		
- 23			*Visual	NORML	NORML		
Jun 28/23	Odor		*Visual	NORML	NORML		
ر– بر	Emulsified Water		*Visual	>0.2	NEG		
				>0.2			
	Free Water		*Visual		NEG		
	FLUID PROPE		method	limit/base	current	history 1	history 2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.3		
	GRAPHS						
	Ferrous Alloys						
<u> </u>	10 iron ]						
	8 - neessaa chromium						
	6						
	4						
	2-						
	0						
	Jun28/23			Jun28/23			
	Juní			Junž			
	Non-ferrous Meta	als					
	10 copper j						
	8						
	essesses tin						
	6						
	u dd						
	2						
	0						
	Jun 28/23			Jun28/23			
	Viscosity @ 100°	С		-			
	<sup>19</sup>	-		10.0 T	Base Number		
	18 - Abnormal				0		
	17			.0 € 8.0			
	O <sup>16</sup> Base			KOH			
	C-0015 53 14			(0,100 (0,100 (0,100 (0,100 (0,100) (0			
	ਲੋਂ <sub>14</sub>			4.0			
	13 - Abnormal			ase			
	12			°° 2.0-			
	11			0.0			
	Jun28/23				Jun28/23		
	Jun			Juni	Jun		
				rv NC 27513			
Laboratory	: WearCheck USA -					4044 1/11/2 2	
Sample No.	: GFL0055942	Received	: 03 .	Jul 2023		1241 KING SET	
Sample No. Lab Number	: GFL0055942 : <mark>05888753</mark>	Received Diagnose	:03. d:05.	Jul 2023 Jul 2023		1241 KING SET	ALPENA,
Sample No. Lab Number Unique Number	: GFL0055942 : 05888753 r : 10539236	Received	:03. d:05.	Jul 2023			ALPENA, US 497
Sample No. Lab Number	: GFL0055942 : 05888753 r : 10539236 e : FLEET	Received Diagnose Diagnostic	:03. d :05. cian :Wes	Jul 2023 Jul 2023 s Davis		Contact: I	TLEMENT F ALPENA, I US 497 DYLAN TOLA an@gflenv.co

Submitted By: GFL463 and GFL641 - DYLAN TOLAN