

# **OIL ANALYSIS REPORT**

Sample Rating Trend



## WESTERN STAR 38 Component

Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- 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 condition of the oil is acceptable for the time in service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0073153		
Sample Date		Client Info		20 Apr 2023		
Machine Age	kms	Client Info		568247		
Oil Age	kms	Client Info		71376		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>200	27		
Chromium	ppm	ASTM D5185(m)	>20	1		
Nickel	ppm	ASTM D5185(m)	>2	0		
Titanium	ppm	ASTM D5185(m)	>2	<1		
Silver	ppm	ASTM D5185(m)	>2	0		
Aluminum	ppm	ASTM D5185(m)	>30	10		
Lead	ppm	ASTM D5185(m)	>30	<1		
Copper	ppm	ASTM D5185(m)	>30	14		
Tin	ppm	ASTM D5185(m)	>15	<1		
Antimony	ppm	ASTM D5185(m)		0		
Vanadium	ppm	ASTM D5185(m)		0		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method			history1	history2
ADDITIVE5		method	innibadoo	ourront	Thotory	
Boron	ppm	ASTM D5185(m)	2	5		
Boron Barium	ppm ppm		2 0	5 0		
Boron Barium Molybdenum		ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50	5 0 64		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0	5 0 64 <1		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950	5 0 64 <1 779		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050	5 0 64 <1 779 1605		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995	5 0 64 <1 779 1605 1108	   	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180	5 0 64 <1 779 1605 1108 1315		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 0 950 1050 995	5 0 64 <1 779 1605 1108 1315 2321		 
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180	5 0 64 <1 779 1605 1108 1315		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180	5 0 64 <1 779 1605 1108 1315 2321		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600	5 0 64 <1 779 1605 1108 1315 2321 <1		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600	5 0 64 <1 779 1605 1108 1315 2321 <1 <1	      history1	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4 9	      history1 	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600 <b>limit/base</b> >30	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4	      history1	      history2 
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600 <b>limit/base</b> >30	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4 9	      history1	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol	ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >30	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4 9 0.0	      history1   	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600 imit/base >30 20 imit/base >20	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4 9 0.0 current	      history1    history1	      history2    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm	ASTM D5185(m) ASTM D5185(m)	2 0 50 950 1050 995 1180 2600 imit/base >30 20 imit/base >20	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 9 0.0 current 0.6	      history1     history1	      history2    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7844* ASTM D7844* ASTM D7624*	2 0 50 950 1050 995 1180 2600 imit/base >30 imit/base imit/base >3 imit/base	5 0 64 <1 779 1605 1108 1315 2321 <1 current 4 4 9 0.0 current 0.6 12.2	       history1    history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7842* ASTM D7844* ASTM D7624*	2 0 50 0 950 1050 995 1180 2600 <b>binit/base</b> >30 >20 <b>binit/base</b> >3 >20 <b>binit/base</b> >3 >20	5 0 64 <1 779 1605 1108 1315 2321 <1 <i>current</i> 4 4 9 0.0 <i>current</i> 0.6 12.2 25.3		      history2    history2  history2



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