# **PROBLEM SUMMARY**



# Sample Rating Trend VISCOSITY

Machine Id 414119

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- QTS)

# COMPONENT CONDITION SUMMARY



## RECOMMENDATION

No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS							
Sample Status				ATTENTION			
Visc @ 100°C	cSt	ASTM D445	15.4	<u> </u>			

Customer Id: GFL892 Sample No.: GFL0100385 Lab Number: 06014746 Test Package: FLEET



To manage this report scan the QR code

*To discuss the diagnosis or test data:* Jonathan Hester +1 919-379-4092 x4092 <u>jhester@wearcheckusa.com</u>

*To change component or sample information:* Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u> There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS



# **OIL ANALYSIS REPORT**



### Machine Id 414119

Component

Diesel Engine

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

### DIAGNOSIS

### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

### Wear

Metal levels are typical for a new component breaking in.

### Contamination

Fuel content negligible. Elevated aluminum (AI) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

### Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

SAMPLE INFORM		method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100385		
Sample Date		Client Info		20 Nov 2023		
Machine Age	hrs	Client Info		300		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		Not Changd		
Sample Status				ATTENTION		
		mathad	limit/base	ou we ont	biotomut	bioton/0
				current	nistory i	nistory2
Water		WC Method	>0.2	NEG		
Giycol		WC Welling		NEG		
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	24		
Chromium	ppm	ASTM D5185m	>4	<1		
Nickel	ppm	ASTM D5185m	>2	0		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>2	0		
Aluminum	ppm	ASTM D5185m	>25	47		
Lead	ppm	ASTM D5185m	>45	<1		
Copper	ppm	ASTM D5185m	>85	16		
Tin	ppm	ASTM D5185m	>4	<1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 64	history1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0	current 64 0	history1 	history2 
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	current 64 0 12	history1  	history2  
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	current 64 0 12 4	history1	history2  
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	Current 64 0 12 4 777	history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070	Current 64 0 12 4 777 1371	history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150	Current 64 0 12 4 777 1371 624	history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270	Current 64 0 12 4 777 1371 624 823	history1	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	limit/base 0 0 60 0 1010 1070 1150 1270 2060	Current 64 0 12 4 777 1371 624 823 2844	history1	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	limit/base 0 0 60 0 1010 1070 1150 1270 2060	Current 64 0 12 4 777 1371 624 823 2844 Current	history1 history1	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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	current         64         0         12         4         777         1371         624         823         2844         current         25	history1 history1	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	methodASTM D5185mASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	current           64           0           12           4           777           1371           624           823           2844           current           25           6	history1 history1	history2 history2 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	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20	current           64           0           12           4           777           1371           624           823           2844           current           25           6           111	history1 history1	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm %	method           ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20 >20	current           64           0           12           4           777           1371           624           823           2844           current           25           6           111           1.0	history1                           history1	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm	method           ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20 >5 limit/base	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0	history1                        history1   history1	history2 history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 Vimit/base >30 >5 Vimit/base >3	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3	history1                        history1            history1            history1            history1            history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >20 >5 limit/base >3 >20	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3         9.3	history1                        history1                     history1            history1                     history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7824           *ASTM D78444           *ASTM D78445	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 2060 2060 2060 2060 2060 2	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3         9.3         19.6	history1                        history1            history1            history1            history1                        history1	history2                           history2                        history2               history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 200 200 200 20 20 20 20 20 20 20 20 20	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3         9.3         19.6         current	history1                        history1            history1            history1            history1            history1            history1            history1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7415           method	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >20 >3 >20 >3 >20 >3 >20 >3 >20 >3 >20 >3 >20	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3         9.3         19.6         current	history1  history1            history1            history1            history1	history2                     history2                  history2                  history2            history2            history2            history2            history2            history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Solfur Solfur Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7415           method           *ASTM D7414	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >30 limit/base >3 >20 >30 limit/base >3 >20 >3 >20 >3 >20 >3 >2 >3 >20 >3 >2 >3 >3 >2 >3 >2 >3 >3 >3 >2 >2 >3 >3 >3 >2 >2 >3 >3 >3 >2 >2 >3 >3 >3 >2 >3 >3 >3 >3 >2 >3 >3 >3 >3 >3 >3 >2 >3 >3 >3 >3 >3 >3 >3 >3 >3 >3	current         64         0         12         4         777         1371         624         823         2844         current         25         6         111         1.0         current         0.3         9.3         19.6         current         16.0         7.2	history1                           history1            history1            history1            history1            history1            history1            history1            history1	history2



# **OIL ANALYSIS REPORT**





VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
2 Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	<b>11.3</b>		
GRAPHS						
Ferrous Alloys						
25 iron						
20 - nickel						
15						
Ed						
10-						
5						
0			~			
v20/2			v20/2			
2			No			
Non-ferrous Meta	als					
14- copper						
12 - 2000 tin						
10 -						
톱 8-						
6						
4						
2						
o L						
2/02vc			ov20/2			
Ž ▲ Viscosity @ 100%	C		Ň			
<sup>19</sup>			10.0	Base Number		
18 - Abnormal						
1/			(B/H	+		
Display Base			및 말 6.0			
80 m			ber (m			
13 Abnormal			5 4.0	+		
12			88 2 0			
11-						
10						~
v20/2			v20/2	v20/2		000
Nov			No	No		Mov
oratory : WearCheck USA - nple No. : GFL0100385 Number : 06014746 que Number : 10753890	501 Madis Received Diagnose Diagnost	son Ave., Ca d : 22 f ed : 27 f tician : Jon	ry, NC 27513 Nov 2023 Nov 2023 athan Hester	3 GFL Envir 41	<b>onmental - 892 - Pa</b> 05 East Airport I Pa	uls Valley Haulin Industrial Road auls Valley, Ol US 7307
est Package : FLEET (Additional mple report, contact Customer Serv	Tests: Fu vice at 1-8	elDilution, P 800-237-1369	ercentFuel)		Contact: tgraham2@v	: Tony Grahai vcamerica.co

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

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