

# **PROBLEM SUMMARY**

Sample Rating Trend

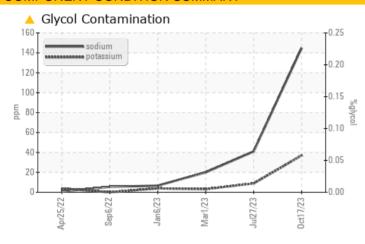
GLYCOL

Machine Id **828040** 

Component **Diesel Engine** 

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

# **COMPONENT CONDITION SUMMARY**



# RECOMMENDATION

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS									
Sample Status				ABNORMAL	NORMAL	NORMAL			
Sodium	ppm	ASTM D5185m		<b>145</b>	41	20			
Potassium	ppm	ASTM D5185m	>20	<b>A</b> 37	9	3			

Customer Id: GFL660 Sample No.: GFL0085572 Lab Number: 05986103 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 jhester@wearcheckusa.com

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

## **RECOMMENDED ACTIONS**

Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.
Resample			?	We recommend an early resample to monitor this condition.
Check Glycol Access			?	We advise that you check for the source of the coolant leak.

# HISTORICAL DIAGNOSIS

# 27 Jul 2023 Diag: Wes Davis





Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



## 01 Mar 2023 Diag: Wes Davis

#### NORMAL



Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



#### 06 Jan 2023 Diag: Wes Davis

#### NORMAL

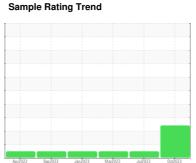


Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





# **OIL ANALYSIS REPORT**



**GLYCOL** 



Machine Id 828040

Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- G

# **DIAGNOSIS**

#### Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

## Wear

All component wear rates are normal.

#### Contamination

Sodium and/or potassium levels are high.

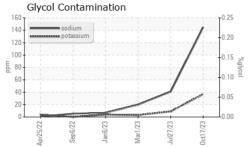
## Fluid Condition

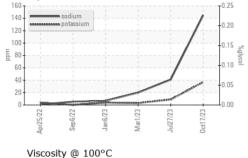
The BN result indicates that there is suitable alkalinity remaining in the oil.

GAL)		Apr2022	Sep 2022 Jan 2023	Mar2023 Jul2023	0ct2023	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0085572	GFL0060484	GFL0060469
Sample Date		Client Info		17 Oct 2023	27 Jul 2023	01 Mar 2023
Machine Age	hrs	Client Info		11821	7765	10783
Oil Age	hrs	Client Info		600	600	0
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	27	15	11
Chromium	ppm	ASTM D5185m	>4	1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>25	2	0	1
Lead	ppm	ASTM D5185m	>45	6	<1	<1
Copper	ppm	ASTM D5185m	>85	3	4	<1
Tin	ppm	ASTM D5185m	>4	1	0	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium				-		
				()	Ω	()
	ppm	ASTM D5185m	limit/bass	0	0 biotom 1	0 history 0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 4	history1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 4 0	history1 2 0	history2 7 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 69	history1 2 0 63	history2 7 0 55
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m	0 0 60	current 4 0 69 <1	history1 2 0 63 <1	history2 7 0 55
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method  ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 4 0 69 <1 1008	history1  2  0 63 <1 965	history2  7  0  55  1  824
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  4  0  69  <1  1008  1131	history1  2  0 63 <1 965 1086	history2  7  0  55  1  824  1112
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150	current  4  0  69  <1  1008  1131  1135	history1  2  0 63 <1 965 1086 1023	history2  7  0  55  1  824  1112  903
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current  4  0  69  <1  1008  1131  1135  1425	history1  2  0 63 <1 965 1086 1023 1247	history2  7  0  55  1  824  1112  903  1130
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150	current  4  0  69  <1  1008  1131  1135	history1  2  0 63 <1 965 1086 1023	history2  7  0  55  1  824  1112  903
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current  4  0  69  <1  1008  1131  1135  1425	history1  2  0 63 <1 965 1086 1023 1247	history2  7  0  55  1  824  1112  903  1130
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  4  0  69  <1 1008  1131  1135  1425  3038	history1  2  0 63 <1 965 1086 1023 1247 3606 history1 8	history2  7  0  55  1  824  1112  903  1130  2906  history2  10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  4  0  69  <1 1008 1131 1135 1425 3038  current  13  ▲ 145	history1  2  0 63 <1 965 1086 1023 1247 3606 history1	history2  7  0  55  1  824  1112  903  1130  2906  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	0 0 60 0 1010 1070 1150 1270 2060	current  4  0  69  <1 1008 1131 1135 1425 3038  current 13	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3
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 Iimit/base >30	current  4  0  69  <1 1008 1131 1135 1425 3038  current  13  ▲ 145	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20
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 Iimit/base >30	current  4  0  69  <1 1008 1131 1135 1425 3038  current  13  ▲ 145  ▲ 37	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m *ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	current  4  0  69  <1 1008 1131 1135 1425 3038  current  13  ▲ 145  ▲ 37  NEG	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41 9 NEG	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3  NEG
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m *ASTM D2982 *Method	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20	current  4 0 69 <1 1008 1131 1135 1425 3038  current  13  ▲ 145  ▲ 37 NEG  current	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41 9 NEG history1	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3  NEG  history2
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur  CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m *ASTM D7844	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20	current  4 0 69 <1 1008 1131 1135 1425 3038 current 13 ▲ 145 ▲ 37 NEG current 0.6	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41 9 NEG history1 0.4	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3  NEG  history2  0.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm	method  ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20	current  4  0  69  <1 1008 1131 1135 1425 3038  current  13  ▲ 145  ▲ 37  NEG  current  0.6  10.8	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41 9 NEG history1  0.4 8.4	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3  NEG  history2  0.4  8.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	method  ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 limit/base >30 >20 limit/base >3 >20 >3	current  4 0 69 <1 1008 1131 1135 1425 3038 current 13 ▲ 145 ▲ 37 NEG current 0.6 10.8 23.0	history1  2  0 63 <1 965 1086 1023 1247 3606 history1  8 41 9 NEG history1 0.4 8.4 20.2	history2  7  0  55  1  824  1112  903  1130  2906  history2  10  20  3  NEG  history2  0.4  8.2  19.9



# **OIL ANALYSIS REPORT**

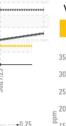




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FI LIID PROPE	RITEC	method	limit/hasa	current	hietory1	hietory2

FLUID PROPE	ERTIES	method	limit/base	current	history1	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.0	13.0

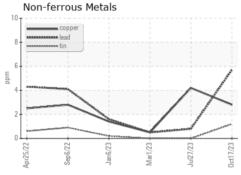
# 18 () 16 () 15 15 14 13 12 Jul27/23

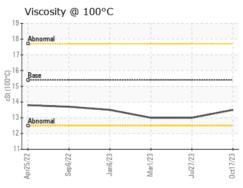


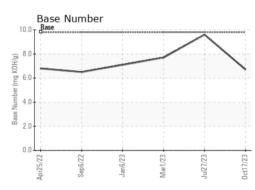
**GRAPHS** 

Ferro	us Alloy	s			
30-	iron	1			
25 -	nickel				/
20- Ed 15					
13			\_		
10					
0	************	***************			*********
Apr25/22	Sep6/22	Jan6/23	Mar1/23	Jul27/23	Oct17/23
A			~	7	Ö

160 -	Glycol	Contar	ninatio	n			- <b>-</b> 0.25
140		sodium opotassium	1			1	_
120 -	-	w potassium	J			/	-0.20
100						/	0.15
H 80-					/		-
60 -					/		0.10
40 -						-0.0	-0.05
20 -				-	N. Sanda	A MARKETON .	- 0.05
0	-	III TON POST AND ADDRESS OF THE PARTY OF THE	anniversity of the same	*******	adante's a		0.00
	5/22	Sep 6/22	6/23	1/23	7/23	7/23	
	Apr25/2	Sep	Jan6/	Mari	Jul	Octi	











Laboratory Sample No. Lab Number

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Unique Number : 10708765

: GFL0085572 : 05986103

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Received Diagnosed Test Package : FLEET ( Additional Tests: Glycol )

: 23 Oct 2023 : 25 Oct 2023 Diagnostician : Jonathan Hester

2410 Mayflower Drive Lynchburg, VA US 24501 Contact: Delbert Beasley dbeasley@countyrecycling.net T: (434)665-5998

GFL Environmental - 660 - Lynchburg Hauling

\* - 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)

F: Submitted By: ? MOB2FLEET