

Machine Id **217004** Component **Diesel Engine** 

Fluid

# **PROBLEM SUMMARY**



# PETRO CANADA DURON SHP 15W40 (--- LTR)





### RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				SEVERE	NORMAL	NORMAL		
Silicon	ppm	ASTM D5185m	>25	<b>&amp;</b> 86	4	5		
Potassium	ppm	ASTM D5185m	>20	<u> </u>	3	2		

Customer Id: GFL868 Sample No.: GFL0113707 Lab Number: 06140820 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			
Resample			?			
Check Dirt Access			?			

Description

We recommend an early resample to monitor this condition.

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component.

### HISTORICAL DIAGNOSIS



### 07 Mar 2024 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.





NORMAL



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.



### 29 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.





### Report Id: GFL868 [WUSCAR] 06140820 (Generated: 04/10/2024 10:19:08) Rev: 1 Submitted By: GFL166, GFL172, GFL180, GFL867, GFL868, GFL955 - Chelsea Bryan



# **OIL ANALYSIS REPORT**

Sample Rating Trend

DIRT

Machine Id

## 217004

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

### DIAGNOSIS

### Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend an early resample to monitor this condition.

### Wear

All component wear rates are normal.

### Contamination

Sodium and/or potassium levels are high. Elemental level of silicon (Si) above normal indicating ingress of dirt/seal material. Test for glycol is negative.

### Fluid Condition

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

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0113707	GFL0113702	GFL0090441
Sample Date		Client Info		25 Mar 2024	07 Mar 2024	18 Aug 2023
Machine Age	hrs	Client Info		11588	11491	11157
Oil Age	hrs	Client Info		0	0	37736
Oil Changed		Client Info		N/A	Not Changd	Not Changd
Sample Status				SEVERE	NORMAL	NORMAL
CONTAMINAT		mothod	limit/bass	ourropt	biotory1	history?
CONTAMINAT		method	IIIIII/Dase	current	Tilstory i	nistory2
Fuel		WC Method	>2.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	32	6	9
Chromium	ppm	ASTM D5185m	>20	2	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	5
Lead	ppm	ASTM D5185m	>40	3	<1	0
Copper	ppm	ASTM D5185m	>330	25	<1	0
Tin	ppm	ASTM D5185m	>15	1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
			11		In the term of the	history O
ADDITIVES		method	limit/base	current	nistory i	nistory∠
Boron	maa	ASTM D5185m	limit/base	35	nistory i 6	nistory2 2
Boron Barium	ppm ppm	ASTM D5185m	0 0	35 0	6 0	2 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	35 0 83	6 0 65	2 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	35 0 83 1	6 0 65 0	2 0 64 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	35 0 83 1 896	6 0 65 0 873	2 0 64 <1 1038
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	Current 35 0 83 1 896 1165	6 0 65 0 873 1045	115tory2 2 0 64 <1 1038 1126
ADDITIVES 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 ASTM D5185m	0 0 60 0 1010 1070 1150	Current           35           0           83           1           896           1165           989	6 0 65 0 873 1045 987	2         0         64         <1
ADDITIVES 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	35           0           83           1           896           1165           989           1156	All story 1           6           0           65           0           873           1045           987           1163	1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	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           35           0           83           1           896           1165           989           1156           3404	Allstory I           6           0           65           0           873           1045           987           1163           2983	1       1       1038       1126       1127       1378       3952
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 MEthod	Imit/base 0 0 60 0 1010 1070 1150 1270 2060	Current           35           0           83           1           896           1165           989           1156           3404           Current	Allstory I           6           0           65           0           873           1045           987           1163           2983           history1	1       2       0       64       <1       1038       1126       1127       1378       3952       history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m 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 <b>imit/base</b> >25	35         0         83         1         896         1165         989         1156         3404         current         ▲         86	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4	1         0         64         <1         1038         1126         1127         1378         3952         history2         5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 imit/base >25	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1	1         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1
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 Imit/base >25 >20	35         0         83         1         896         1165         989         1156         3404         current         ▲ 86         23         ▲ 44	nistory1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3	1         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2
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	10000000000000000000000000000000000000	35         0         83         1         896         1165         989         1156         3404         current         ▲       86         23         ▲       44         NEG	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         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 <b>TS</b> ppm ppm ppm ppm	Method ASTM D5185m ASTM D5185m	Imit/base 0 0 60 0 1010 1070 1150 1270 2060 Imit/base >20 Imit/base	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲       44         NEG	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1	1         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG
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 D2982           method           *ASTM D2984	Imit/base 0 0 60 0 1010 1070 1150 1270 2060 Imit/base >25 >20 Imit/base >3	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2	1         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	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	IIIIII/base         0         60         0         1010         1070         1150         1270         2060         IIIII/base         >25         >20         IiIII/base         >3         >20	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2         8.0	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2         7.3	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2         6.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm %	method           ASTM D5185m           *ASTM D2982           method           *ASTM D78444           *ASTM D76244           *ASTM D7415	Imit/base         0         60         0         1010         1070         1150         1270         2060         Imit/base         >25         >20         Imit/base         >3         >20         >30	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2         8.0         19.3	All story 1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2         7.3         18.4	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2         6.9         18.1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           *ASTM D7842           *ASTM D7624           *ASTM D7624           *ASTM D7415           method	Imit/base 0 0 60 0 1010 1070 1150 1270 2060 Imit/base >25 >20 Imit/base >3 >20 Sa >30	current         35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2         8.0         19.3         current	All         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2         7.3         18.4	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2         6.9         18.1         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           *ASTM D7844           *ASTM D7415           method           *ASTM D7414	Imit/base 0 0 60 0 1010 1070 1150 1270 2060 Imit/base >20 Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary Salary	Current         35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2         8.0         19.3         current         15.8	nistory1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2         7.3         18.4	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2         6.9         18.1         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation Base Number (BN)	ррт ррт ррт ррт ррт ррт ррт ррт	method           ASTM D5185m           *ASTM D7844           *ASTM D78444           *ASTM D7414           *ASTM D74144	Imit/base         0         60         0         1010         1070         1150         1270         2060         Imit/base         >25         >20         Imit/base         >3         >20         Jimit/base         >30         Limit/base         >25         9	35         0         83         1         896         1165         989         1156         3404         current         ▲         86         23         ▲         44         NEG         0.2         8.0         19.3         current         15.8         8.1	nistory1         6         0         65         0         873         1045         987         1163         2983         history1         4         1         3         NEG         history1         0.2         7.3         18.4         history1         14.4         8.0	1         2         0         64         <1         1038         1126         1127         1378         3952         history2         5         <1         2         NEG         history2         0.2         6.9         18.1         history2         14.1         8 5

Submitted By: GFL166,GFL172,GFL180,GFL867,GFL868,GFL955 - Chelsea Bryan



# **OIL ANALYSIS REPORT**

















\* - 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)

Report Id: GFL868 [WUSCAR] 06140820 (Generated: 04/10/2024 10:19:09) Rev: 1

Certificate 12367

Submitted By: GFL166,GFL172,GFL180,GFL867,GFL868,GFL955 - Chelsea Bryan

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