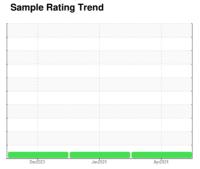


# **OIL ANALYSIS REPORT**



(BC16426) 7834M Diesel Engine

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





## **DIAGNOSIS**

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

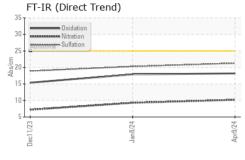
### **Fluid Condition**

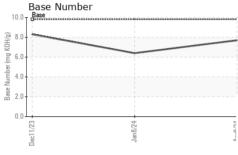
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

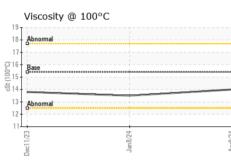
Sample Number	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         5901         5394         5222           Oil Age         hrs         Client Info         5394         0         0           Oil Changed         Client Info         Not Changd         Changed         Changed           Sample Status         WC Method         NoRMAL         NORMAL         NORMAL           CONTAMINATION           method         Ilmit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG         NEG           Glycol         WC Method         Imitifuses         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         pm         ASTM D5185m         >80         21         16         12           WEAR METALS         method         limit/base         current         history1         history2           Wear Method         ppm         ASTM D5185m         >5         <1         <1         0         0 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0117665</th> <th>GFL0108727</th> <th>GFL0105656</th>	Sample Number		Client Info		GFL0117665	GFL0108727	GFL0105656
Oil Age         hrs         Client Info         5394         0         0           Oil Changed Sample Status         Client Info         Not Changed NoRMAL         Changed Changed Changed NORMAL         NORMAL NORMAL         NORMAL NORMAL           CONTAMINATION         method         limit/base         current         history2           Euel         WC Method         >5         <1.0	Sample Date		Client Info		09 Apr 2024	08 Jan 2024	11 Dec 2023
Client Info   Not Changed   Changed   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		5901	5394	5222
Client Info   Not Changed   Changed   NORMAL   NORMAL   NORMAL	Oil Age	hrs	Client Info		5394	0	0
NORMAL   NORMAL   NORMAL	-		Client Info		Not Changd	Changed	Changed
Fuel	-					_	
Water Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         21         16         12           Chromium         ppm         ASTM D5185m         >5         <1	CONTAMINATIO	NC	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >5         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>80	21	16	12
Nickel	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Titanium         ppm         ASTM D5185m         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         4         3         1           Lead         ppm         ASTM D5185m         >30         <1         0         0           Copper         ppm         ASTM D5185m         >150         4         2         <1         0           Vanadium         ppm         ASTM D5185m         >5         <1         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0<	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Aluminum	Silver	ppm	ASTM D5185m	>3	0	0	0
Lead         ppm         ASTM D5185m         >30         <1			ASTM D5185m	>30	4	3	1
Copper         ppm         ASTM D5185m         >150         4         2         <1			ASTM D5185m	>30	<1	0	0
Tin         ppm         ASTM D5185m         >5         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         58         56         53           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         979         915         990           Calcium         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010 </td <th></th> <td></td> <td>ASTM D5185m</td> <td>&gt;150</td> <th>4</th> <td>2</td> <td>&lt;1</td>			ASTM D5185m	>150	4	2	<1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         56         53           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         979         915         990           Calcium         ppm         ASTM D5185m         1070         1095         1037         1060           Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         >20         4         4 <t< td=""><th></th><td></td><td></td><td></td><th>&lt;1</th><td>&lt;1</td><td></td></t<>					<1	<1	
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         3         1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         979         915         990           Calcium         ppm         ASTM D5185m         1070         1095         1037         1060           Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         2			ASTM D5185m		0	0	0
Boron			ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         56         53           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         979         915         990           Calcium         ppm         ASTM D5185m         1070         1095         1037         1060           Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         58         56         53           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	2	3	1
Manganese         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         979         915         990           Calcium         ppm         ASTM D5185m         1070         1095         1037         1060           Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1	Molybdenum	ppm	ASTM D5185m	60	58	56	53
Calcium         ppm         ASTM D5185m         1070         1095         1037         1060           Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/:nm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/:1mm	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus         ppm         ASTM D5185m         1150         1089         1046         1041           Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION         met	Magnesium	ppm	ASTM D5185m	1010	979	915	990
Zinc         ppm         ASTM D5185m         1270         1341         1274         1231           Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *AST	Calcium	ppm	ASTM D5185m	1070	1095	1037	1060
Sulfur         ppm         ASTM D5185m         2060         3460         2834         3010           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         <1           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	Phosphorus	ppm	ASTM D5185m	1150	1089	1046	1041
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         6         5         2           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	Zinc	ppm	ASTM D5185m	1270	1341	1274	1231
Silicon         ppm         ASTM D5185m         >20         4         4         4           Sodium         ppm         ASTM D5185m         6         5         2           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	Sulfur	ppm	ASTM D5185m	2060	3460	2834	3010
Sodium         ppm         ASTM D5185m         6         5         2           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	CONTAMINANT	S	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         3         <1	Silicon	ppm	ASTM D5185m	>20	4	4	4
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	Sodium	ppm	ASTM D5185m		6	5	2
Soot %         %         *ASTM D7844 >3         1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624 >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         21.3         20.3         18.9           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         18.2         17.9         15.4	Potassium	ppm	ASTM D5185m	>20	2	3	<1
Nitration         Abs/cm         *ASTM D7624         >20         10.2         9.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.3         20.3         18.9           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.2         17.9         15.4	Soot %	%	*ASTM D7844	>3	1	0.3	0.2
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     18.2     17.9     15.4	Nitration	Abs/cm	*ASTM D7624	>20	10.2	9.3	7.2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.2</b> 17.9 15.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.3	20.3	18.9
	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
<b>Base Number (BN)</b> mg KOH/g   ASTM D2896   9.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.2	17.9	15.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.7	6.4	8.3



# **OIL ANALYSIS REPORT**



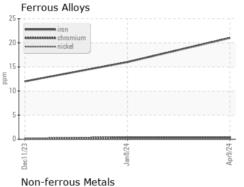


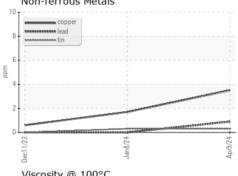


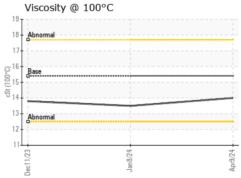
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

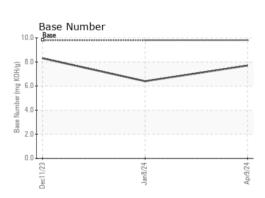
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.5	13.8

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06146480 Unique Number : 10976558

: GFL0117665 Test Package : FLEET

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Apr 2024 **Tested** : 12 Apr 2024 Diagnosed

: 12 Apr 2024 - Wes Davis

GFL Environmental - 415 - Michigan East 6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com

\* - 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) T: (586)825-9514