

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



## Machine Id 10592

Component Diesel Engine

Fluid

## PETRO CANADA DURON SHP 15W40 (32 QTS)

## 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.

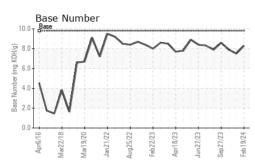
### Fluid Condition

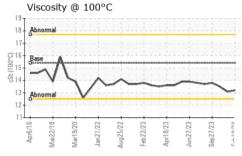
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method imit/base current history1 history1   Sample Number Client Info GFL0068893 GFL006895 GFL00895 GFL00895 <td< th=""><th>QTS)</th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	QTS)						
Sample Number Client Info GFL0068893 GFL00772 S115   Oil Charged WC Method >0.0 <t< th=""><th></th><th>MATION</th><th>method</th><th>8 Mar2020 Jan2022 Aug2</th><th>Current</th><th>historv1</th><th>history2</th></t<>		MATION	method	8 Mar2020 Jan2022 Aug2	Current	historv1	history2
Sample Date Client Info 19 Feb 2024 29 Jan 2024 27 Oct 202   Machine Age hrs Client Info 21825 21722 21158   Oil Age hrs Client Info 103 564 345   Oil Changed Client Info Not Changd Changed NORMAL							GFL0097219
Machine Age hrs Client Info 21825 21722 21158   Di Age hrs Client Info 103 564 345   Di Age hrs Client Info Not Changed Changed Changed   Sample Status Client Info Not Changed NorRMAL NorRMAL NorRMAL   CONTAMINATION method imit/base current history1 history1   Fuel WC Method >0.2 NEG NEG NEG   Water WC Method No 75 5 11 8   Vickel ppm ASTM 05185m >75 5 11 8   Chromium ppm ASTM 05185m >2 0 0 0   Filanium ppm ASTM 05185m >2 0 0 0   Silver ppm ASTM 05185m >2 0 0 0   Copper ppm ASTM 05185m >2 0 0 0							27 Oct 2023
Dil Age hrs Client Info 103 564 345   Dil Changed Client Info Not Changed Changed Changed   Sample Status Nor MAL NORMAL NORMAL NORMAL   CONTAMINATION method Imit/base current history1 history1   Fuel WC Method >3.0 <1.0		hrs					
Dil Changed Sample Status Client Info Not Changed NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method limit/base current history1 history1 history1   Fuel WC Method >0.2 NEG NEG NEG NEG   WEAR METALS method limit/base current history1 history1   Foronium ppm ASTM D5185m >75 5 11 8   Silver ppm ASTM D5185m >2 0 0 0   Sopper ppm ASTM D5185m >15 2 3 2   Cadmium ppm ASTM D5185m >100 <1	•						
Sample Status NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method limit/base current history1 history1   Fuel WC Method >3.0 <1.0	-		Client Info		Not Changd	Changed	Changed
Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0   Nater WC Method >0.2 NEG NEG NEG   Blycol WC Method NEG NEG NEG NEG   WEAR METALS method Imit/base current history1 history1   ron ppm ASTM D5185m >5 <1	Sample Status				NORMAL	NORMAL	
Water WC Method >0.2 NEG <t< td=""><td>CONTAMINAT</td><td>ION</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></t<>	CONTAMINAT	ION	method	limit/base	current	history1	history2
Bilycol WC Method NEG NEG NEG   WEAR METALS method limit/base current history1 history1   ron ppm ASTM D5185m >5 <1	uel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history1   ron ppm ASTM D5185m >75 5 11 8   Chromium ppm ASTM D5185m >5 <1	Vater		WC Method	>0.2	NEG	NEG	NEG
ron ppm ASTM D5185m >75 5 11 8   Dromium ppm ASTM D5185m >5 <1	Glycol		WC Method		NEG	NEG	NEG
Dromium ppm ASTM D5185m >5 <1 <1 <1   Nickel ppm ASTM D5185m >4 0 0 0   Fitanium ppm ASTM D5185m >2 0 0 0   Silver ppm ASTM D5185m >2 0 0 0   Numinum ppm ASTM D5185m >25 0 <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 0 0 0   Fitanium ppm ASTM D5185m >2 0 0 0   Silver ppm ASTM D5185m >2 0 0 0   Numinum ppm ASTM D5185m >15 2 3 2   e.ead ppm ASTM D5185m >25 0 <1	ron	ppm	ASTM D5185m	>75	5	11	8
Titanium ppm ASTM D5185m >2 0 0 0   Silver ppm ASTM D5185m >2 0 0 0   Numinum ppm ASTM D5185m >15 2 3 2   ead ppm ASTM D5185m >100 <1	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0   Numinum ppm ASTM D5185m >15 2 3 2   Lead ppm ASTM D5185m >25 0 <1	lickel	ppm	ASTM D5185m	>4	0	0	0
Numinum ppm ASTM D5185m >15 2 3 2   Lead ppm ASTM D5185m >25 0 <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
ead ppm ASTM D5185m >25 0 <1 0   Copper ppm ASTM D5185m >100 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Dopper ppm ASTM D5185m >100 <1 <1 <1 <1   Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>15	2	3	2
Im ppm ASTM D5185m >4 <1 <1 0   Vanadium ppm ASTM D5185m 0 0 0 0   Cadmium ppm ASTM D5185m 0 0 0 0   ADDITIVES method limit/base current history1 history   Boron ppm ASTM D5185m 0 5 2 6   Barium ppm ASTM D5185m 0 0 0 0   Aolybdenum ppm ASTM D5185m 0 56 55 56   Maganese ppm ASTM D5185m 0 <1	ead	ppm	ASTM D5185m	>25	0	<1	0
Paradium ppm ASTM D5185m O 0 0 0   CADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 5 2 6   Barium ppm ASTM D5185m 0 0 0 0   Aolybdenum ppm ASTM D5185m 0 0 0 0   Maganese ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>100	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0   ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 5 2 6   Barium ppm ASTM D5185m 0 0 0 0   Adolybdenum ppm ASTM D5185m 0 56 55 56   Aanganese ppm ASTM D5185m 0 <1	īn	ppm	ASTM D5185m	>4	<1	<1	0
ADDITIVES method limit/base current history1 history1   Boron ppm ASTM D5185m 0 5 2 6   Barium ppm ASTM D5185m 0 0 0 0   Adolybdenum ppm ASTM D5185m 60 56 55 56   Magnesie ppm ASTM D5185m 0 <1	/anadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 5 2 6   Barium ppm ASTM D5185m 0 0 0 0 0   Malybdenum ppm ASTM D5185m 0 56 55 56   Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0   Molybdenum ppm ASTM D5185m 60 56 55 56   Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Aolybdenum ppm ASTM D5185m 60 56 55 56   Manganese ppm ASTM D5185m 0 <1 <1 0   Magnesium ppm ASTM D5185m 0 <1 <1 0   Calcium ppm ASTM D5185m 1010 935 905 789   Calcium ppm ASTM D5185m 1070 968 957 1033   Phosphorus ppm ASTM D5185m 1070 968 957 1033   Phosphorus ppm ASTM D5185m 1270 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history1   Silicon ppm ASTM D5185m >20 3 6 3   Sodium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	0	5	2	6
Manganese ppm ASTM D5185m 0 <1 <1 0   Magnesium ppm ASTM D5185m 1010 935 905 789   Calcium ppm ASTM D5185m 1010 935 905 789   Calcium ppm ASTM D5185m 1070 968 957 1033   Phosphorus ppm ASTM D5185m 170 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history   Solicon ppm ASTM D5185m >25 3 4 3   Sodium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	0	0	0
Agnesium ppm ASTM D5185m 1010 935 905 789   Calcium ppm ASTM D5185m 1070 968 957 1033   Phosphorus ppm ASTM D5185m 1150 1018 994 1048   Cinc ppm ASTM D5185m 1270 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history   Solicon ppm ASTM D5185m >25 3 4 3   Sodium ppm ASTM D5185m >20 3 6 3   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Sulfation Abs/cm *ASTM D7624	lolybdenum	ppm	ASTM D5185m	60	56	55	56
Description ppm ASTM D5185m 1070 968 957 1033   Phosphorus ppm ASTM D5185m 1150 1018 994 1048   Zinc ppm ASTM D5185m 1270 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history   Solicon ppm ASTM D5185m >25 3 4 3   Solicon ppm ASTM D5185m >20 3 6 3   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Soot % % *ASTM D7844 >6 0.3 9.0 8.1   Sulfation Abs/cm *ASTM D7415 <	langanese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus ppm ASTM D5185m 1150 1018 994 1048   Zinc ppm ASTM D5185m 1270 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history1   Solicon ppm ASTM D5185m >25 3 4 3   Solicon ppm ASTM D5185m >25 3 4 10   Solicon ppm ASTM D5185m >20 3 4 10   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Soot % % *ASTM D7624 >20 6.3 9.0 8.1   Sulfation Abs/cm *ASTM D7415 30 <td>lagnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>935</th> <td>905</td> <td>789</td>	lagnesium	ppm	ASTM D5185m	1010	935	905	789
Line ppm ASTM D5185m 1270 1247 1226 1123   Sulfur ppm ASTM D5185m 2060 3052 2964 2784   CONTAMINANTS method limit/base current history1 history1   Solicon ppm ASTM D5185m >25 3 4 3   Solicon ppm ASTM D5185m >25 3 4 10   Solicon ppm ASTM D5185m >20 3 6 3   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Jitration Abs/cm *ASTM D7624 >20 6.3 9.0 8.1   Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base	Calcium	ppm	ASTM D5185m	1070	968	957	1033
SulfurppmASTM D5185m2060305229642784CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>25343SodiumppmASTM D5185m>203410PotassiumppmASTM D5185m>20363INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>60.30.50.5JitrationAbs/cm*ASTM D7624>206.39.08.1SoulfationAbs/cm*ASTM D7415>3017.818.718.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	hosphorus	ppm	ASTM D5185m	1150	1018	994	
CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>25343SodiumppmASTM D5185m3410PotassiumppmASTM D5185m>20363INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>60.30.50.5Soot %%*ASTM D7624>206.39.08.1SoulfationAbs/cm*ASTM D7624>3017.818.718.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1	Zinc	ppm	ASTM D5185m	1270	1247	1226	1123
Silicon ppm ASTM D5185m >25 3 4 3   Sodium ppm ASTM D5185m 3 4 10   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Soot % % *ASTM D7844 >6 0.3 9.0 8.1   Soulfation Abs/cm *ASTM D7624 >20 6.3 9.0 8.1   Stulfation Abs/.1mm *ASTM D7415 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base current history1 history1	Sulfur	ppm	ASTM D5185m	2060	3052	2964	2784
Sodium ppm ASTM D5185m 3 4 10   Potassium ppm ASTM D5185m >20 3 6 3   INFRA-RED method limit/base current history1 history1   Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Stration Abs/cm *ASTM D7624 >20 6.3 9.0 8.1   Sulfation Abs/limm *ASTM D7415 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base current history1 history1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>20363INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>60.30.50.5NitrationAbs/cm*ASTM D7624>206.39.08.1SulfationAbs/lime*ASTM D7415>3017.818.718.7FLUID DEGRADATION methodlimit/basecurrenthistory1history1	Silicon	ppm		>25			
INFRA-REDmethodlimit/basecurrenthistory1history1Soot %%*ASTM D7844>60.30.50.5NitrationAbs/cm*ASTM D7624>206.39.08.1SulfationAbs/.1mm*ASTM D7415>3017.818.718.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1		ppm					
Soot % % *ASTM D7844 >6 0.3 0.5 0.5   Nitration Abs/cm *ASTM D7624 >20 6.3 9.0 8.1   Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base current history1 history	Potassium	ppm	ASTM D5185m	>20	3	6	3
Abs/cm *ASTM D7624 >20 6.3 9.0 8.1   Sulfation Abs/cm *ASTM D7624 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base current history1 history1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18.7 18.7   FLUID DEGRADATION method limit/base current history1 history1	Soot %			>6			
FLUID DEGRADATION method limit/base current history1 history		Abs/cm		>20		9.0	8.1
	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.8	18.7	18.7
Dxidation Abs/.1mm *ASTM D7414 >25 13.4 15.4 14.3	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
	Dxidation	Abs/.1mm	*ASTM D7414	>25	13.4		
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.3 7.5 7.9	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	7.5	7.9



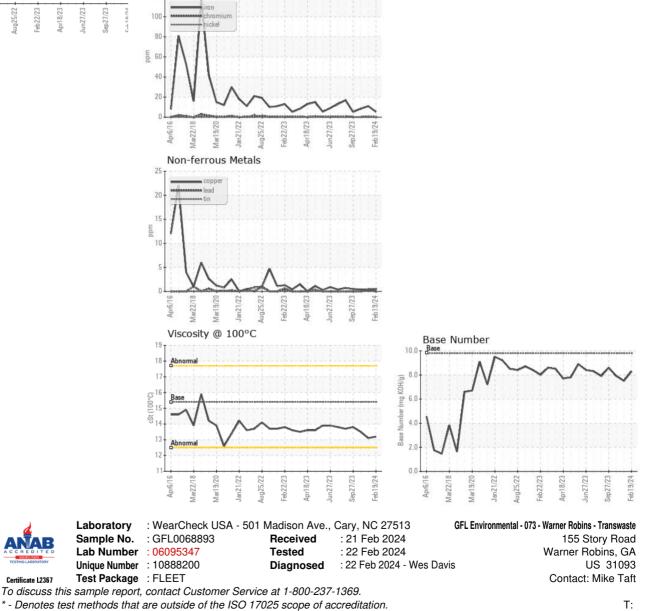
# **OIL ANALYSIS REPORT**

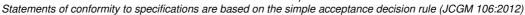




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.1	13.5
GRAPHS						

Ferrous Alloys 120





Certificate L2367