

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 928051

Fluid

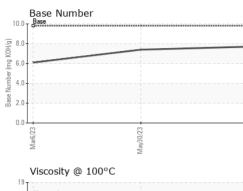
Component **Diesel Engine** 

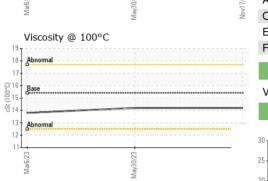
## PETRO CANADA DURON SHP 15W40 (--- GAL)

Second billion     Sample Number     Client Info     GFL011345     GFL001390     GFL0073848       Sample Date     Glient Info     177 Mer 2023     30 May 2022     00					ar2023	May2023 Nov20	LJ	
seample at the net service interval to monitor.     Sample Date     Client Info     17 Rev 2023     80 May 2023     06 Mar 2023       tomponent war rates are normal.     Onl Age     hrs     Client Info     17820     16577     16013       oritarination     revel     in information     Client Info     17820     Changed     Changed       revel     in officiation of any contamination in the its suitable for further service.     Sample Status     In allows     Current     NetSo     Changed     Ch	DIAGNOSIS	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Team price   Machine Age   hrs   Client Info   17820   16577   16018     Normanimation   Normanimation in the All   Client Info   17820   Changed	Recommendation	Sample Number		Client Info		GFL0101545	GFL0081390	GFL0073848
Outgoins wear rates are normal.   Oil Age   hrs   Client Info   116577   16018   0     ortamination   nere is no indication of any contamination in the the is suitable for further service.   Oil Changed   Client Info   Changed   Cha	Resample at the next service interval to monitor.	Sample Date		Client Info		17 Nov 2023	30 May 2023	06 Mar 2023
Outsimination there is in indication of any contamination in the . Old Changed Sample Status Client Info Changed NORBAL Changed NEG <thchanged NEG Changed NEG <thchanged< td=""><td>Vear</td><td>Machine Age</td><td>hrs</td><td>Client Info</td><td></td><th>17820</th><td>16577</td><td>16018</td></thchanged<></thchanged 	Vear	Machine Age	hrs	Client Info		17820	16577	16018
ontaination there is no indication of any containination in the sample Status Client Info Changed Changed Changed Changed   Sample Status I NORMAL NORMAL NORMAL NORMAL NORMAL   I contraining in the oil. The condition of the Is is suitable for further service. Intel condition of the Glycol WC Method >3.0 <1.0	Il component wear rates are normal.	Oil Age	hrs	Client Info		16577	16018	0
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       uil condition     ne SN result indicates that there is suitable     CONTAMINATION     method     Iuni/base     current     history1     history1       Fuel     WC Method     >3.0     <1.0		Oil Changed		Client Info		Changed	Changed	Changed
Util Candition the BA result indicates that there is suitable kallinky remaining in the oil. The condition of the is suitable for further service.     Fuel Water     WO Method Wo Method     3.0     <1.0     <1.0     <1.0     <1.0       Water     WO Method     >0.2     NEG     NEG     NEG     NEG       Using the for further service.     WC ARM ETALS     maintod     Unitbase     Current     Nieday     Nieday       Vior     Physica     WC Method     >0.2     NEG     NEG     NEG       Vior     Physica     WC Method     Sol     <1	here is no indication of any contamination in the	-				-		
Pelo     W0 Method     >3.0.     <1.0.		CONTAMINAT	ION	method	limit/base	current	history1	history2
Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     >0.2     NEG     NEG     NEG       Water     glycol     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     >0.2     NEG     NEG     NEG     NEG       Ion     ppm     ASTM058im     >2.0     <1		Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Gigod     WC Mathod     NEG     NEG     NEG       is suitable for further service.     WC MAR METALS     method     limitbase     current     history1     history2       Iron     ppm     ASTM DSISm     >20     1     -1     -1       Nickel     ppm     ASTM DSISm     >20     -1     -1     -1       Nickel     ppm     ASTM DSISm     >2     0     0     0       Silver     ppm     ASTM DSISm     >2     -1     -1     -1       Copper     ppm     ASTM DSISm     >2     -1     0     -1       Copper     ppm     ASTM DSISm     >20     4     4     6       Lead     ppm     ASTM DSISm     >300     1     -1     1       Tin     ppm     ASTM DSISm     >300     1     -1     0     0       Cadmium     ppm     ASTM DSISm     0     0     2     2       Boron     ppm     ASTM DSISm     0     0     1								
Iron   ppm   ASTM D5185m   >12.0   18   2.0   2.9     Chromium   ppm   ASTM D5185m   >2.0   <1	, ,							
Chromium   ppm   ASTM DS185m   >20   <1		WEAR METAL	.S	method	limit/base	current	history1	history2
Chromium     ppm     ASTM DS185m     >20     <1     <1     <1       Nickel     ppm     ASTM DS185m     >2     <1		Iron	maa	ASTM D5185m	>120	18	20	29
Nickel     ppm     ASTM D5185m     >-5     <1     <1     <1       Titanium     ppm     ASTM D5185m     >-2     0     0     0       Silver     ppm     ASTM D5185m     >-20     0     0     0       Aluminum     ppm     ASTM D5185m     >-20     4     4     6       Lead     ppm     ASTM D5185m     >-20     1     0     -11       Copper     ppm     ASTM D5185m     >-30     1     -1     1       Tin     ppm     ASTM D5185m     >-15     <1								
Titanium   ppm   ASTM D5185m   >2   <1   0   0     Silver   ppm   ASTM D5185m   >20   4   4   6   6     Aluminum   ppm   ASTM D5185m   >20   4   4   6   6     Lead   ppm   ASTM D5185m   >40   -1   0   <1								
Silver   ppm   ASTM 05160m   >20   0   0   0     Aluminum   ppm   ASTM 05160m   >200   4   4   6     Lead   ppm   ASTM 05160m   >200   4   4   6     Copper   ppm   ASTM 05160m   >330   1   -<1   0     Copper   ppm   ASTM 05160m   >15   <1   <1   <1     Tin   ppm   ASTM 05160m   <1   <1   <1   <1     Cadmium   ppm   ASTM 05160m   <1   0   0   0     Cadmium   ppm   ASTM 05160m   0   9   0   0   0     Barrum   ppm   ASTM 05160m   0   9   0   0   0     Magnesium   ppm   ASTM 05160m   0   <1   <1   <1<   <1<     Magnesium   ppm   ASTM 05160m   0   <10   913   981   818     Colatium   ppm   ASTM 05160m   1010   913   981   818     Calcium   ppm								
Aluminum     ppm     ASTM D5185m     >20     4     4     6       Lead     ppm     ASTM D5185m     >40     <1								
Lead   ppm   ASTM D5185m   >4-0   <1								
Copper     ppm     ASTM D5185m     >330     1     <1     1       Tin     ppm     ASTM D5185m     >15     <1								
Tin   ppm   ASTM D5185m   >15   <1								
Vanadium     ppm     ASTM D5185m     0     0     0       Cadmium     ppm     ASTM D5185m     <1								
Cadmium   ppm   ASTM D5185m   <1   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   2   2     Barium   ppm   ASTM D5185m   0   9   0   0     Molybdenum   ppm   ASTM D5185m   0   63   59   54     Magnesee   ppm   ASTM D5185m   0   <1					>10			
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     2     2       Barium     ppm     ASTM D5185m     0     9     0     0       Molybdenum     ppm     ASTM D5185m     60     63     59     54       Manganese     ppm     ASTM D5185m     0     <1								
Boron   ppm   ASTM D5185m   0   0   2   2     Barium   ppm   ASTM D5185m   0   9   0   0     Molybdenum   ppm   ASTM D5185m   60   63   59   54     Manganese   ppm   ASTM D5185m   0   -1   <1			ppm					
Barium     ppm     ASTM D5185m     0     9     0     0       Molybdenum     ppm     ASTM D5185m     60     63     59     54       Manganese     ppm     ASTM D5185m     0     <1     <1     <1       Magnesium     ppm     ASTM D5185m     1010     913     981     818       Calcium     ppm     ASTM D5185m     1070     1092     1045     983       Phosphorus     ppm     ASTM D5185m     1070     1092     1045     983       Phosphorus     ppm     ASTM D5185m     1270     1201     1262     1122       Sulfur     ppm     ASTM D5185m     2060     2600     3258     2431       CONTAMINANTS     method     imit/base     current     history1     history2       Sulfur     ppm     ASTM D5185m     206     3     3     4       Potassium     ppm     ASTM D5185m     >20     3     <1     3       INFRA-RED     method     imit/base		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum   ppm   ASTM D5185m   60   63   59   54     Manganese   ppm   ASTM D5185m   0   <1		Boron	ppm	ASTM D5185m	0	0	2	2
Manganesse   ppm   ASTM D5185m   0   <1   <1   <1     Magnesium   ppm   ASTM D5185m   1010   913   981   818     Calcium   ppm   ASTM D5185m   1070   1092   1045   983     Phosphorus   ppm   ASTM D5185m   1070   1092   1045   983     Phosphorus   ppm   ASTM D5185m   1270   1201   1262   1122     Sulfur   ppm   ASTM D5185m   2060   26600   3258   2431     CONTAMINANT   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >20   3   <1		Barium	ppm	ASTM D5185m	0	9	0	0
Magnesium   ppm   ASTM D5185m   1010   913   981   818     Calcium   ppm   ASTM D5185m   1070   1092   1045   983     Phosphorus   ppm   ASTM D5185m   1150   980   978   885     Zinc   ppm   ASTM D5185m   1270   1201   1262   1122     Sulfur   ppm   ASTM D5185m   2060   2600   3258   2431     CONTAMINANTS   method   imit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >20   6   6   7     Sodium   ppm   ASTM D5185m   >20   3   3   4     Potassium   ppm   ASTM D5185m   >20   3   <1		Molybdenum	ppm	ASTM D5185m	60	63	59	54
Calcium   ppm   ASTM D5185m   1070   1092   1045   983     Phosphorus   ppm   ASTM D5185m   1150   980   978   885     Zinc   ppm   ASTM D5185m   1270   1201   1262   1122     Sulfur   ppm   ASTM D5185m   2060   2600   3258   2431     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   6   6   7     Sodium   ppm   ASTM D5185m   >20   3   3   4     Potassium   ppm   ASTM D5185m   >20   3   <1		Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus   ppm   ASTM D5185m   1150   980   978   885     Zinc   ppm   ASTM D5185m   1270   1201   1262   1122     Sulfur   ppm   ASTM D5185m   2060   2600   3258   2431     CONTAMINANTS   method   imit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   6   6   7     Sodium   ppm   ASTM D5185m   >25   6   6   7     Sodium   ppm   ASTM D5185m   >20   3   4     Potassium   ppm   ASTM D5185m   >20   3   4     INFRA-RED   method   limit/base   current   history1   history2     Soot %   %   *ASTM D7844   >4   1.3   1.6   2     Nitration   Abs/cm   *ASTM D7624   >20   8.8   8.9   10.5     Sulfation   Abs/cm   *ASTM D7414   >25   15.8   15.7   16.4		Magnesium	ppm	ASTM D5185m	1010	913	981	818
Zinc   ppm   ASTM D5185m   1270   1201   1262   1122     Sulfur   ppm   ASTM D5185m   2060   2600   3258   2431     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   6   6   7     Sodium   ppm   ASTM D5185m   >25   6   6   7     Sodium   ppm   ASTM D5185m   >20   3   3   4     Potassium   ppm   ASTM D5185m   >20   3   <1		Calcium	ppm	ASTM D5185m	1070	1092	1045	983
SulfurppmASTM D5185m2060260032582431CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25667SodiumppmASTM D5185m>20334PotassiumppmASTM D5185m>203<1		Phosphorus	ppm	ASTM D5185m	1150	980	978	885
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>25667SodiumppmASTM D5185m20334PotassiumppmASTM D5185m>203<1		Zinc	ppm	ASTM D5185m	1270	1201	1262	1122
SiliconppmASTM D5185m>25667SodiumppmASTM D5185m334PotassiumppmASTM D5185m>203<1		Sulfur	ppm	ASTM D5185m	2060	2600	3258	2431
SodiumppmASTM D5185m334PotassiumppmASTM D5185m>203<1		CONTAMINAN	ITS	method	limit/base	current	history1	history2
PotassiumppmASTM D5185m>203<13INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>41.31.62NitrationAbs/cm*ASTM D7624>208.88.910.5SulfationAbs/1mm*ASTM D7415>3021.222.423.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1mm*ASTM D7414>2515.815.716.4		Silicon	ppm	ASTM D5185m	>25	6	6	7
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>41.31.62NitrationAbs/cm*ASTM D7624>208.88.910.5SulfationAbs/1mm*ASTM D7415>3021.222.423.7FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.815.716.4		Sodium	ppm	ASTM D5185m		3	3	4
Soot %     %     *ASTM D7844     >4     1.3     1.6     2       Nitration     Abs/cm     *ASTM D7624     >20     8.8     8.9     10.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     22.4     23.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.8     15.7     16.4		Potassium	ppm	ASTM D5185m	>20	3	<1	3
Nitration     Abs/cm     *ASTM D7624     >20     8.8     8.9     10.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     21.2     22.4     23.7       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.8     15.7     16.4		INFRA-RED		method	limit/base	current	history1	history2
SulfationAbs/.1mm*ASTM D7415>3021.222.423.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.815.716.4		Soot %	%	*ASTM D7844	>4	1.3	1.6	2
SulfationAbs/.1mm*ASTM D7415>3021.222.423.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.815.716.4		Nitration	Abs/cm	*ASTM D7624	>20	8.8	8.9	10.5
Oxidation     Abs/.1mm     *ASTM D7414     >25     15.8     15.7     16.4		Sulfation	Abs/.1mm	*ASTM D7415	>30		22.4	23.7
		FLUID DEGRA	DATION	method	limit/base	current	history1	history2
		Oxidation	Abs/1mm	*ASTM D7414	>25	15.8	15.7	16.4
						7.7	7.4	6.1



## **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
0/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
May30/23 Nov17/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.2	13.8
	GRAPHS						
	Ferrous Alloys						
23	30 iron						
May30/23	25- nickel	<hr/>					
2	20-						
	튭 15 -						
	10-						
	5						
	3/23	0/23 -		1/23			
	Mar6/23	May30/23		Nov17/23			
	Non-ferrous Meta						
	<sup>10</sup> T						
	copper						
	and the second s						
	6.						
	mdd						
	T						
	2-						
			and the other designs in the state of the later	all of the local data in the l			
	Mar6/23	ay30/23		1/23			
	Mar6	May30		Nov17			
	Viscosity @ 100°	С			Base Number		
	18 - Abnormal			10.0	Base		
	17-				+		
	C <sup>16</sup> Base			HO 10 6.0			
	00000000000000000000000000000000000000			10.0			
	<sup>4</sup> 3 <sub>14</sub>			4.0			
	13 - Abnormal			(B/HOX Burner) 100 (B/HOX Burner			
	12			2.0			
	11	23		0.0		23	
	Mar6/23	May30/23		Nov17/23	Mar6/23	May30/23	
Laboratory Sample No. Lab Number Unique Number	: WearCheck USA - : GFL0101545 : 06013607 r : 10752751		d :21   ed :21	ry, NC 27513 Nov 2023 Nov 2023 s Davis	GFL Envi	ronmental - 415	<b>- Michigan Ea</b> 6200 Elmridg ling Heights, N US 4831
ificate L2367 Test Package	: FLEET	-				Contact: C	Cos 4631 Cullen Monnet
discuss this sample report,							-
Denotes test methods that a ements of conformity to spec					JCGM 106:2012)		T F

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