

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status				ATTENTION	ABNORMAL			
Visc @ 100°C	cSt	ASTM D445	15.4	<u> </u>	12.8			

Customer Id: GFL405 Sample No.: GFL0072953 Lab Number: 05885405 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 <u>don.b505@comcast.net</u>

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

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.			

HISTORICAL DIAGNOSIS



19 Dec 2022 Diag: Jonathan Hester

Oil and filter change at the time of sampling has been noted. 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 level is low. The condition of the oil is acceptable for the time in service.





Report Id: GFL405 [WUSCAR] 05885405 (Generated: 06/30/2023 14:29:12) Rev: 1



OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 423024 Fluid

Component **Diesel Engine**

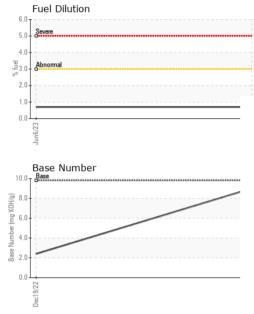
PETRO CANADA DURON SHP 15W40 (--- QTS)

and filter change at the ine of sampling has monitor. Sample State Client Info 10 Pec 2022 10 Pec	DIAGNOSIS	SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
and filter change at the inext service interval monitor. Simple Date Client Info 06.300.22 19 Dec 2022 1 ar Component wear rates are normal. Simple State Client Info 513 600 bit component wear rates are normal. Interval Client Info Simple State Client Info Changed Cinanged bit component wear rates are normal. Interval Interval Interval NEG NEG bit component wear rates are normal. ComTAMINATION method Interval Attreption NEG bit content is play is lower than normal. The BN readi Silver Pm ASTM0515m >120 4 36 bit content is solution alkalinity remaining in pm ASTM0515m >120 4 3 bit content in the cis solution alkalinity remaining in pm ASTM0515m >120 4 bit content in the cis solution alkalinity remaining in pm ASTM0515m >120 4 bit content in the cis solution alkalinity remaining in pm ASTM0515m	Recommendation	Sample Number		Client Info		GFL0072953	GFL0060657	
monitor. modil arge mis Claim Info S13 600	I and filter change at the time of sampling has	Sample Date		Client Info		06 Jun 2023	19 Dec 2022	
of if arg Did P_{0} Did	en noted. Resample at the next service interval	Machine Age	hrs	Client Info		22894	22381	
Component wear rates are normal. Namped Status ATTENTON ATRINOT ATRINOT ARNORIAL ··· Is content neigligible. There is no indication of contamination in the oil. Sample Status Method Methods CONTAMINATION Method Methods	monitor.	Oil Age	hrs	Client Info		513	600	
Intermination CONTAMINATION method limitbase current history 1 history 2 contamination in the oil. GOV WC Method WC Method NEG NEG soil viscosity is lower than romain. The BM result GOV MC Method Imitbase current history 1 history 2 soil viscosity is lower than romain. The BM result Imitbase current history 1 history 2 soil viscosity is lower than romain. The BM result Imitbase current history 1 history 2 soil viscosity is lower than romain. The BM result Imitbase current history 1 history 2 soil viscosity is lower than romain. The BM result ppm ASTIU Distion >2 1 Nickel ppm ASTIU Distion >2 0 Stiver ppm ASTIU Distion >2 0 Autaminum ppm ASTIU Distion >1 2 Copper ppm ASTIU Distion >1 0 Vanaduin ppm ASTIU Distion	ear	Oil Changed		Client Info		Changed	Changed	
al contant negligible. There is no indication of recontantination in the oil. "Pield Condition or in viscosity is lower than normal. The BN results calls that there is suitable alkalanity remaining in oil. Confirm oil type. WEAR METALS method innitbase current history 1 history 2 Iron ppm ASTM0186m >120 4 36 Tromium ppm ASTM0186m >20 < -1 1 1 Tromium ppm ASTM0186m >20 < -1 1 1 Tromium ppm ASTM0186m >20 < -1 1 1 Tromium ppm ASTM0186m >20 0 0 Tranium ppm ASTM0186m >20 0 0 Auuminum ppm ASTM0186m >20 0 0 Auuminum ppm ASTM0186m >20 0 0 Auuminum ppm ASTM0186m >10 Tromium ppm ASTM0186m >10 Auuminum ppm ASTM0186m >10 Tromium ppm ASTM0186m >10 Auuminum ppm ASTM0186m >10 Auuminum ppm ASTM0186m >10 Tromium ppm ASTM0186m >10 Tromium ppm ASTM0186m >10 Auuminum ppm ASTM0186m >10 Auuminum ppm ASTM0186m >10 Auuminum ppm ASTM0186m 10 Auuminum ppm ASTM0186m 10 Auuminum ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 10 AUUMINUM ppm ASTM0186m 10 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 10 AUUMINUM ppm ASTM0186m 0 AUUMINUM ppm ASTM0186m 0 AUUMI	l component wear rates are normal.	Sample Status				ATTENTION	ABNORMAL	
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o ol viscosity is lower than normal. The BM result icates that there is suitable aikalinity remaining in oil. Confirm oil type. NUCARI MICTALCS Titlenot Titlenot <td< td=""><td>-</td><td>Glycol</td><td></td><td>WC Method</td><td></td><td>NEG</td><td>NEG</td><td></td></td<>	-	Glycol		WC Method		NEG	NEG	
icades icade icade <t< td=""><td></td><td>WEAR METAL</td><td>.S</td><td>method</td><td>limit/base</td><td>current</td><td>history 1</td><td>history 2</td></t<>		WEAR METAL	.S	method	limit/base	current	history 1	history 2
oil. Confirm oil type. Chromium ppm ASTM D5186m >20 1 1 Nickel ppm ASTM D5186m >2 Silver ppm ASTM D5186m >2 0 0 Aluminum ppm ASTM D5186m >20 0 0 Copper ppm ASTM D5186m >300 Qanadium ppm ASTM D5186m >300 0 Qanadium ppm ASTM D5185m >10 0 0 Qanadium ppm ASTM D5185m 0 10 0 ADDITIVES rethod Imit/base current history 1 history 2 Barium ppm ASTM D5185m 0 12 5 Manganese ppm ASTM D5185m 100 12 5 Mangasium ppm ASTM D5185m 107 1830 160 </td <td></td> <td>Iron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>120</td> <td>4</td> <td>36</td> <td></td>		Iron	ppm	ASTM D5185m	>120	4	36	
Titanium ppm ASTM D5165m >2 <1 <1 < Silver ppm ASTM D5165m >20 0 0 Aluminum ppm ASTM D5185m >20 0 6 Lead ppm ASTM D5185m >40 <1	e oil. Confirm oil type.	Chromium		ASTM D5185m	>20	<1	1	
Silver ppm ASTM D51658 >22 0 0 Aluminum ppm ASTM D51658 >20 0 6 Lead ppm ASTM D51658 >20 10 6 Copper ppm ASTM D51658 >330 -1 3 Tin ppm ASTM D51658 >15 <1 2 Cadmium ppm ASTM D51658 >15 <1 0 ADDITIVES method limit/bas current history 1 history 2 Barium ppm ASTM D51658 0 175 4 Molybdenum pm ASTM D51658 0 110 12 59 Magnessum pm ASTM D51658 100 175 4 Suffur pm ASTM D51658 0 170 1930 000 Magnesium pm ASTM D51658 1010 175 4 Suffur pm		Nickel	ppm	ASTM D5185m	>5	<1	2	
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Aluminum ppm ASTM D5185m >20 0 6 Lead ppm ASTM D5185m >40 <1		Silver					0	
Lead ppm ASTM D5186m >4-0 <1		Aluminum				0	6	
Tin ppm ASTM D5185m >15 <1 2 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m <1 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 175 4 Barium ppm ASTM D5185m 0 -1 0 Molybdenum ppm ASTM D5185m 0 -1 7.1 -1 Manganese ppm ASTM D5185m 0.0 112 5.9 Manganese ppm ASTM D5185m 10.0 17.9 818 Calcium ppm ASTM D5185m 10.70 1930 10600 Sulfur ppm ASTM D5185m 1070 1930 10601 Sulfur ppm ASTM D5185m 20.0 4127 23.3 Sodium ppm		Lead	ppm	ASTM D5185m	>40	<1	<1	
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CadmiumppmASTM D5185m10ADDITIVESmethodlimit/basecurrenthistory 1history 2BoronppmASTM D5185m01754BariumppmASTM D5185m00110MolybdenumppmASTM D5185m601259 <th< td=""><td></td><td>Tin</td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><td><1</td><td>2</td><td></td></th<>		Tin	ppm	ASTM D5185m	>15	<1	2	
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Barium ppm ASTM D5185m 0 <1		ADDITIVES		method	limit/base	current	history 1	history 2
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Calcium ppm ASTM D5185m 1070 1930 1060 Phosphorus ppm ASTM D5185m 1150 990 901 Zinc ppm ASTM D5185m 1270 1195 1150 Sulfur ppm ASTM D5185m 2060 4127 2335 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 8 Sodium ppm ASTM D5185m >20 8 Sodium ppm ASTM D5185m >20 8 Potassium ppm ASTM D5185m >20 8 Fuel % ASTM D5185m >20 8 Sodium ppm ASTM D5185m >20 8 Fuel % ASTM D5185m >20 8 Sodium ppm ASTM D5185m >20 0.7 -1.0.0 <		-	ppm	ASTM D5185m	1010	179	818	
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SulfurppmASTM D5185m206041272335CONTAMINANTSmethodlimit/basecurrenthistory 1history 2SiliconppmASTM D5185m>2598SodiumppmASTM D5185m>2033PotassiumppmASTM D5185m>2082Fuel%ASTM D5185m>2082INFRA-REDmethodlimit/basecurrenthistory 1history 2Soot %%*ASTM D7844>40.10.7NitrationAbs/cm*ASTM D7624>20.05.717.7SulfationAbs/lim*ASTM D7415>3020.029.9FLUID DEGRAD TIONmethodlimit/basecurrenthistory 1history 2OxidationAbs/lim*ASTM D7414>2515.832.9		Phosphorus	ppm	ASTM D5185m	1150	990	901	
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Sodium ppm ASTM D5185m 3 33 Potassium ppm ASTM D5185m >20 8 2 Fuel % ASTM D3524 >3.0 0.7 <1.0 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >4 0.1 0.7 Nitration Abs/cm *ASTM D7624 >20 5.7 17.7 Sulfation Abs/limm *ASTM D7814 >30 20.0 29.9 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/limm *ASTM D7414 >25 15.8 32.9		CONTAMINAN	ITS	method	limit/base	current	history 1	history 2
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FLUID DEGRADATIONmethodlimit/basecurrenthistory 1history 2OxidationAbs/.1mm*ASTM D7414>2515.832.9								
Oxidation Abs/.1mm *ASTM D7414 >25 15.8 32.9		FLUID DEGRA		method	limit/base		history 1	history 2
						15.8 9.0	32.9 2 .4	



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	history 1	history 2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
-	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Jun6/23	Appearance	scalar	*Visual	NORML	NORML	NORML	
7	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	
	FLUID PROPE	RTIES	method	limit/base	current	history 1	history 2
-	Visc @ 100°C	cSt	ASTM D445	15.4	12.2	12.8	
	GRAPHS						
	Ferrous Alloys						
	iron						
	30 - nickel						
	25						
	§ 20						
	15						
	10						
	5-						
				23			
	Dec19/22			Jun6/23			
	□ Non-ferrous Meta	c					
		5					
	copper						
	8 - tin						
	6-						
	2-						
	0						
	Dec19/22 -			Jun6/23 -			
	Dec1			Jun			
	A Viscosity @ 100°C	2			Base Number		
	19			10.			
	18 Abnormal			- 8.			
				(b)HOX (b) Base Number (b)HOX (b) 8		_	
	3 16 Base			B 6.)		
1 10	3 14 -			aquin 4.			
	13			ase N			
	12			° 2.)		
	11			0.			
	Dec19/22			Jun6/23	Dec19/22		Jun6/23
	Dec			ηr	Dec		٦n
Laboratory	: WearCheck USA - 5	501 Madi	son Ave., Ca	ry, NC 2751	3 GFL Er	vironmental - 40)5 - Arbor Hills
Sample No.	: GFL0072953	Received	d : 28 .	Jun 2023		7	400 Napier Rd
Lab Number		Diagnos		Jun 2023		NO	RTHVILLE, MI
Unique Number Test Package	: 10535888 : FLEET (Additional	Diagnost		Baldridge		Conto	US 48168 ct: John Nahal
rest rackage						Conta	

Test Package Certificate L2367 tFuer : FLE Additional lests: To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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)

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