

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 813033

Fluid

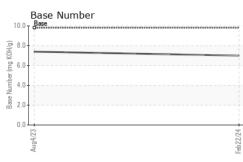
Component **Diesel Engine** 

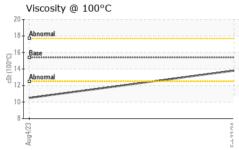
PETRO CANADA DURON SHP 15W40 (--- GAL)

n				Aug2023	Feb2024		
DIAGNOSIS	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Recommendation	Sample Number		Client Info		GFL0084795	GFL0084851	
Resample at the next service interval to monitor.	Sample Date		Client Info		22 Feb 2024	04 Aug 2023	
Wear	Machine Age	hrs	Client Info		2349	699	
All component wear rates are normal.	Oil Age	hrs	Client Info		699	200	
Contamination	Oil Changed		Client Info		Changed	Changed	
There is no indication of any contamination in the	Sample Status				NORMAL	ABNORMAL	
oil.	CONTAMINAT		method	limit/base		history1	history2
Fluid Condition	Fuel		WC Method		<1.0	0.4	
The BN result indicates that there is suitable					<1.0 NEG	NEG	
alkalinity remaining in the oil. The condition of the	Water		WC Method	>0.2			
oil is suitable for further service.	Glycol		WC Method		NEG	NEG	
	WEAR METAL	S	method	limit/base	current	history1	history2
	Iron	ppm	ASTM D5185m	>120	17	40	
	Chromium	ppm	ASTM D5185m	>20	<1	1	
	Nickel	ppm	ASTM D5185m	>5	4	10	
	Titanium	ppm	ASTM D5185m	>2	<1	<1	
	Silver	ppm	ASTM D5185m	>2	0	0	
	Aluminum	ppm	ASTM D5185m	>20	2	5	
	Lead	ppm	ASTM D5185m	>40	0	2	
	Copper	ppm	ASTM D5185m	>330	14	157	
	Tin	ppm	ASTM D5185m	>15	<1	4	
	Vanadium	ppm	ASTM D5185m		0	<1	
	Cadmium	ppm	ASTM D5185m		0	0	
	ADDITIVES		method	limit/base	current	history1	history2
	Boron	ppm	ASTM D5185m	0	2	175	
	Barium	ppm	ASTM D5185m		0	0	
	Molybdenum	ppm	ASTM D5185m		66	116	
	Manganese	ppm	ASTM D5185m		<1	5	
	Magnesium	ppm	ASTM D5185m		1006	757	
	Calcium	ppm	ASTM D5185m		1164	1546	
		PPIII	John Dorooni			1010	
	Phosphorus	nnm	ASTM D5185m			728	
	Phosphorus Zinc	ppm ppm	ASTM D5185m ASTM D5185m	1150	1131	728 947	
	Zinc	ppm	ASTM D5185m	1150 1270	1131 1316	947	
	Zinc Sulfur	ppm ppm	ASTM D5185m ASTM D5185m	1150 1270	1131 1316 3036	947 2744	
	Zinc Sulfur CONTAMINAN	ppm ppm	ASTM D5185m ASTM D5185m method	1150 1270 2060 limit/base	1131 1316 3036 current	947 2744 history1	  history2
	Zinc Sulfur CONTAMINAN Silicon	ppm ppm JTS ppm	ASTM D5185m ASTM D5185m method ASTM D5185m	1150 1270 2060 limit/base	1131 1316 3036 current 6	947 2744 history1 ▲ 109	
	Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm JTS ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	1150 1270 2060 limit/base >25	1131 1316 3036 current 6 6	947 2744 history1 ▲ 109 2	 history2 
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm JTS ppm	ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060 <b>limit/base</b> >25 >20	1131 1316 3036 current 6 6 6 3	947 2744 history1 ▲ 109 2 8	 history2  
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm VTS ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m method	1150 1270 2060 limit/base >25 >20 limit/base	1131 1316 3036 current 6 6 3 3 current	947 2744 history1 ▲ 109 2 8 history1	 history2   history2
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm NTS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	1150 1270 2060 limit/base >25 >20 limit/base >4	1131 1316 3036 current 6 6 6 3 2 current 0.6	947 2744 history1 ▲ 109 2 8 history1 0.6	 history2   history2 
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm VTS ppm ppm ppm % Abs/cm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> *ASTM D7844 *ASTM D7624	1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >4 >20	1131 1316 3036 current 6 6 6 3 current 0.6 9.1	947 2744 history1 ▲ 109 2 8 history1 0.6 10.9	 history2   history2 
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm NTS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >4 >20	1131 1316 3036 current 6 6 6 3 2 current 0.6	947 2744 history1 ▲ 109 2 8 history1 0.6	 history2   history2 
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm JTS ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624	1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >4 >20	1131 1316 3036 current 6 6 6 3 3 current 0.6 9.1 20.1	947 2744 history1 ▲ 109 2 8 history1 0.6 10.9	 history2   history2  history2
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm JTS ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624	1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b> >20 >20 >30	1131 1316 3036 current 6 6 6 3 3 current 0.6 9.1 20.1	947 2744 history1 ▲ 109 2 8 history1 0.6 10.9 23.5	 history2   history2  
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm JTS ppm ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	1150 1270 2060 <b>limit/base</b> >20 <b>limit/base</b> >20 >30 <b>limit/base</b> >25	1131 1316 3036 current 6 6 6 3 current 0.6 9.1 20.1 current	947 2744 history1 ▲ 109 2 8 history1 0.6 10.9 23.5 history1	 history2   history2   history2



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		VISUAL		method	limit/base	current	history1	history2
		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	
	Feb22/24	Appearance	scalar	*Visual	NORML	NORML	NORML	
	Feb	Odor	scalar	*Visual	NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	0.5	
		GRAPHS						
		Ferrous Alloys						
		40 <sub>T</sub>						
	~	iron						
	100	35 - chromium						
	C.4.73	30 - nickel						
		25						
		<u>ق</u> 20						
		료 <sup>20</sup>			and and a second se			
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		10						
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		0	***************	*****************				
		Aug4/23			Feb 22/24			
		Aug			Feb 2			
		Non-ferrous Met	als					
		<sup>160</sup> T						
		140 - copper						
		120 tin						
		100						
		<u>۾</u> 80-						
		톱 80- 60-						
		<u>۾</u> 80-						
		톱 80- 60-						
					/			
					2204 /			
					Feb22/24			
		Viscosity @ 1000	PC		ш.	Base Numbe	r	
			PC		ш.	Base Numbe	r	
		E 80 60 40 20 0 E E F F F F F F F F F F F F F	2C		10.0	Base	r	
		E 80 60 40 20 0 Viscosity @ 100° Base	vc		10.0	Base	r	
		E 80 60 40 20 0 Viscosity @ 100° Base	PC		10.0	Base	r	
		E 80 60 40 20 0 EZ+b P Viscosity @ 100 <sup>c</sup> 19 18 Abnomal 17 16 505 19 18 Base	PC		10.0	Base	r	
		E 80 60 40 20 0 C7+bay Viscosity @ 100° 19 18 Abnomal 17 16 20 10 10 10 10 10 10 10 10 10 1	°C		10.0	Base	r	
		E 80 60 40 20 0 C24 bm Viscosity @ 100 10 10 10 10 10 10 10 10 10	vc		10.0 (0,10,0) (0,10,0	Base	r	
		E 80 60 40 20 0 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	vc		10.0	Base	r	
		E 80 60 40 20 0 C24 bm Viscosity @ 100 10 10 10 10 10 10 10 10 10	°C		10.0 (0HO) 8.0 (0HO) 6.0 Jaquiny 888 2.0	- Base	r	
		E 80 60 10 20 0 EV-by Viscosity @ 1000 Base 60 0 0 0 0 0 0 0 0 0 0 0 0 0	PC		10.0 (0)HOX 0u) 400 400 400 400 400 400 400 400 400 400	Base	r	
		E 80 60 40 20 0 C2 C2 C2 C2 C2 C2 C2 C2 C2 C2	PC		10.0 (0)HOX 0u) 400 400 400 400 400 400 400 400 400 400	- Base	r	
		E 80 60 10 20 0 EV-by Viscosity @ 1000 Base 60 0 0 0 0 0 0 0 0 0 0 0 0 0	PC		10.0 (0HO) 8.0 (0HO) 6.0 Jaquiny 888 2.0	Base	r	
4	Laboratory	Viscosity @ 1000 Viscosity @ 1000 biogramma biogramma biogramma control biogramma biogramma control biogramma control b	01 Madisc		10.0 (0HO) 8.0 (0HO) 6.0 (0HO) 900 6.0 (0HO)	E27thmy	nvironmental - 95	i9A - Urbana H
NAB	Sample No.	Viscosity @ 1000	01 Madisc Recei	ived : 21	10.0 (0H0) Bull 5.0 (0H0) Bull 5.0 (	E27thmy	nvironmental - 95	<b>i9A - Urbana H</b> cunningham F
	Sample No. Lab Number	E 80 60 10 10 10 10 10 10 10 10 10 1	01 Madisc Recei Teste	ived : 21 ed : 22	10.0 (0HO) Bull 5.0 (0HO) Bull 5.0 (	GFL E	nvironmental - 95	cunningham F Urbana,
	Sample No. Lab Number Unique Number	E 80 40 40 40 40 40 40 40 40 40 4	01 Madisc Recei Teste	ived : 21 ed : 22	10.0 (0H0) Bull 5.0 (0H0) Bull 5.0 (	GFL E	nvironmental - 95 4808 (	<b>i9A - Urbana H</b> cunningham F Urbana, US 6180
THE ADDITION	Sample No. Lab Number Unique Number Test Package	E 80 40 40 40 40 40 40 40 40 40 4	01 Madiso Rece Teste Diagr	ived : 21 ed : 22 nosed : 22	10.0 (0H0) Bull 5.0 (0H0) Bull 5.0 (0H0) Bull 5.0 (0.0 (0H0) Bull 5.0 (0H0) S.0 (0H0) Bull 5.0 (0H0) Bull 5.0 (	GFL E	nvironmental - 95 4808 d Contact	cunningham I Urbana,

\* - 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)

Submitted By: Also GFL959E - Kristine Tryon

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