

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 913061

Fluid

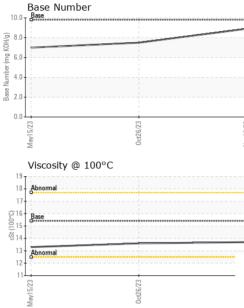
Component **Diesel Engine** 

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

DIAGNOSIS	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Recommendation	Sample Number		Client Info		GFL0089167	GFL0093147	GFL0081441
Resample at the next service interval to monitor.	Sample Date		Client Info		18 Nov 2023	26 Oct 2023	15 May 2023
Wear	Machine Age	hrs	Client Info		3135	2997	1837
All component wear rates are normal.	Oil Age	hrs	Client Info		2997	1837	0
Contamination	Oil Changed		Client Info		N/A	Changed	Changed
There is no indication of any contamination in the	Sample Status				NORMAL	NORMAL	NORMAL
oil.	-			11 11 11			
Fluid Condition	CONTAMINAT	ION	method	limit/base	current	history1	history2
The BN result indicates that there is suitable	Fuel		WC Method		<1.0	<1.0	<1.0
alkalinity remaining in the oil. The condition of the	Water		WC Method	>0.2	NEG	NEG	NEG
il is suitable for further service.	Glycol		WC Method		NEG	NEG	NEG
	WEAR METAL	.S	method	limit/base	current	history1	history2
	Iron	ppm	ASTM D5185m	>120	8	13	23
	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
	Nickel	ppm	ASTM D5185m	>5	2	1	6
	Titanium	ppm	ASTM D5185m	>2	<1	0	0
	Silver	ppm	ASTM D5185m		0	<1	0
	Aluminum	ppm	ASTM D5185m		2	<1	2
	Lead	ppm	ASTM D5185m		- <1	0	0
	Copper	ppm	ASTM D5185m		1	5	47
	Tin		ASTM D5185m		، <1	<1	1
	Vanadium	ppm	ASTM D5185m	>10	0	0	
		ppm					0
	Cadmium	ppm	ASTM D5185m		<1	0	0
	ADDITIVES		method	limit/base	current	history1	history2
	Boron	ppm	ASTM D5185m	0	<1	3	1
	Barium	ppm	ASTM D5185m	0	9	4	0
	Molybdenum	ppm	ASTM D5185m	60	68	58	60
	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
	Magnesium	ppm	ASTM D5185m	1010	1014	842	005
	O a la la vez					012	925
	Calcium	ppm	ASTM D5185m	1070	1223	924	925 1074
		ppm ppm	ASTM D5185m ASTM D5185m	1070 1150	1223 1145		
	Calcium Phosphorus Zinc	ppm	ASTM D5185m			924	1074
	Phosphorus		ASTM D5185m ASTM D5185m	1150	1145	924 983	1074 959
	Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m	1150 1270	1145 1333	924 983 1113	1074 959 1214
	Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	1150 1270 2060 limit/base	1145 1333 3344 current	924 983 1113 2430 history1	1074 959 1214 2989 history2
	Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm JTS	ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	1150 1270 2060 limit/base	1145 1333 3344 current 5	924 983 1113 2430 history1 3	1074 959 1214 2989 history2 4
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ITS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	1150 1270 2060 limit/base >25	1145 1333 3344 current 5 2	924 983 1113 2430 history1 3 4	1074 959 1214 2989 history2 4 3
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm JTS	ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060 <i>limit/base</i> >25 >20	1145 1333 3344 current 5 2 3	924 983 1113 2430 history1 3 4 0	1074 959 1214 2989 history2 4 3 0
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ITS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060 limit/base >25 >20 limit/base	1145 1333 3344 current 5 2 3 3 current	924 983 1113 2430 history1 3 4	1074 959 1214 2989 history2 4 3
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm JTS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844	1150 1270 2060 imit/base >25 >20 imit/base >4	1145 1333 3344 current 5 2 3	924 983 1113 2430 history1 3 4 0	1074 959 1214 2989 history2 4 3 0 history2 0.8
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm JTS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060 imit/base >25 >20 imit/base >4	1145 1333 3344 current 5 2 3 3 current	924 983 1113 2430 history1 3 4 0 history1	1074 959 1214 2989 history2 4 3 0 history2
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm JTS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844	1150 1270 2060 imit/base >25 >20 imit/base >4 >20	1145 1333 3344 current 5 2 3 3 current 0.3	924 983 1113 2430 history1 3 4 0 0 history1 0.7	1074 959 1214 2989 history2 4 3 0 history2 0.8
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm JTS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7844	1150 1270 2060 imit/base >25 >20 imit/base >4 >20	1145 1333 3344 current 5 2 3 current 0.3 6.1	924 983 1113 2430 history1 3 4 0 history1 0.7 7.5	1074 959 1214 2989 history2 4 3 0 history2 0.8 8.1
	Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ITS ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7844	1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >20 >20 >30 <b>imit/base</b>	1145 1333 3344 current 5 2 3 current 0.3 6.1 18.7	924 983 1113 2430 history1 3 4 0 history1 0.7 7.5 19.1	1074 959 1214 2989 history2 4 3 0 history2 0.8 8.1 20.6



## **OIL ANALYSIS REPORT**



		VISU	AL		method	limit/base	current	history1	history2
		White M	etal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow N	/letal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipita	ate	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt		scalar	*Visual	NONE	NONE	NONE	NONE
		Debris		scalar	*Visual	NONE	NONE	NONE	NONE
		Sand/Dir	rt	scalar	*Visual	NONE	NONE	NONE	NONE
0ct26/23	Nov18/23	Appeara	ince	scalar	*Visual	NORML	NORML	NORML	NORML
00	Nov	Odor		scalar	*Visual	NORML	NORML	NORML	NORML
			ed Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Wa	ater	scalar	*Visual		NEG	NEG	NEG
		FLUI	D PROP	PERTIES	method	limit/base	current	history1	history2
		Visc @		cSt	ASTM D445	15.4	13.7	13.6	13.3
		GRA							
		Ferrou	is Alloys						
/23			iron chromium						
0ct26/23		20-	nickel						
		15							
		mdd 10							
		10-				/			
		5-							
			and the second se			and the second se			
		123 10		/23-		/23			
		May15/23		0ct26/23		Nov18/23			
			errous Met	tals		~			
		50 T	inous me						
			copper						
		40 -							
		30							
		40 - 30 - Ed							
		30							
		40 - 30 - Ed							
		40 30 20							
				23		23			
				receiza -		ov18/23			
		40 30 20 0 E20 5 10 0 E20 5 1/eW	as lead	Out26/23		Nov18/23			
		40 30 20 10 0 E2CS I/few Viscosi	ity @ 100			2	Base Numbe	r	
		40 30 20 10 0 5225 5 /m W Viscosi 19 18 Abnormal	ity @ 100			2 10.1	Base	r	
		40 30 20 10 10 10 10 10 10 10 10 10 1	ity @ 100			2 10.1	Base	r	
		40 30 20 10 10 10 10 10 10 10 10 10 1	ity @ 100			2 10.1	Base	r	
		40 30 20 10 10 10 10 10 10 10 10 10 1	ity @ 100			2 10.1	D = Base	r	
		40 40 30 20 10 0 EZ25 I/eW Viscosi 19 18 Abnomal 17 16 Base 14	ity @ 100			2 10.1	D = Base	r	
		40 30 20 10 0 EZ25 / kew Viscosi 19 18 Abnormal 17 16 Base 14 13 Abnormal	ity @ 100			ال 10. (B)   10. (	D - Base	r	
		40 30 20 10 0 EZ25/kw Viscosi 19 Abnormal 17 16 Base 14 13 Abnormal 12	ity @ 100			2 10.0 (0) 8.0 (0) 10 (0) (0) 10 (0)	D = Base	r	
		40 40 40 40 40 40 40 40 40 40	ity @ 100	°C		2 10.1 (0)HOX 0u 0.1 10,HOX 0u 0.1 10,HOX 0u 0.1 10,000 0.1 10,000 0.1	D = Base		
		40 40 40 40 40 40 40 40 40 40	ity @ 100			2 10.0 (0) 8.0 (0) 10 (0) (0) 10 (0)	D = Base	r 0426/23	
		40 30 10 10 0 EZ25 / New Viscosi 19 Abnomal 17 16 Base 13 14 13 14 12 11 EZ25 / New Viscosi 19 18 19 18 19 18 19 18 19 18 19 18 19 18 18 19 18 19 18 18 19 18 18 19 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 18 18 18 18 18 18 18 18	ity @ 100	°C		Nov19/22 Nov19/		0ct26/23	
	pratory	40 30 10 10 10 10 10 10 10 10 10 1	ity @ 100	°C	son Ave., Ca	2 10.1 (0)HOX 00 10,0			
Sam Sam		40 30 10 10 0 EZ25 / New Viscosi 19 Abnomal 17 16 Base 13 14 13 14 12 11 EZ25 / New Viscosi 19 18 19 18 19 18 19 18 19 18 19 18 19 18 18 19 18 19 18 18 19 18 18 19 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 19 18 18 18 18 18 18 18 18 18 18	** lead ** tin ity @ 100 heck USA 89167	°C	<b>d</b> : 21 l	Nov19/22 Nov19/		EZISTRA EXISTENTIAL - 415	5 <b>- Michigan Ea</b> 6200 Elmridg
Sam Lab	pratory ple No.	40 30 10 10 0 EZ25 / keW Viscosi 19 18 Abnomal 17 16 Base 13 14 12 11 EZ25 / keW Viscosi 19 18 20 18 18 20 19 18 20 19 18 20 19 18 20 19 18 20 19 18 20 19 18 20 19 18 20 19 18 18 20 19 18 18 18 18 18 18 18 18 18 18	** lead ** tin ity @ 100 heck USA 89167 33	°C	d :21   ed :21	2 10.1 ()HOY B Bull sequence 2.1 0.1 EC001000 ry, NC 27511 Nov 2023		EZISTRA EXISTENTIAL - 415	5 - Michigan Ea
Sam Lab	oratory ple No. Number ue Number Package	40 30 20 10 10 10 10 10 10 10 10 10 1	** lead ** tin ity @ 100 ** tin **	• C	d : 21   ed : 21   tician : We	2 10.1 (b)(D) b() aquum) asses 2.1 0.1 czcle 100 czcle 1000 czcle 100 czcle 100 czcle 100		evironmental - 415 Ster Conta	6200 Elmridg ling Heights, I

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

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