

## **OIL ANALYSIS REPORT**

Sample Rating Trend

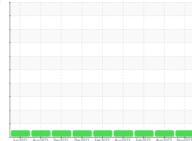




Machine Id 382M Component

Diesel Engine

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





#### SAMPLE INFORMATION method GFL0101544 GFL0086650 GFL0068631 Sample Number **Client Info** Sample Date Client Info 17 Nov 2023 11 Aug 2023 14 Feb 2023 Machine Age hrs **Client Info** 15958 11116 11918 Oil Age hrs Client Info 11918 11918 7319 Oil Changed **Client Info** Changed Changed Changed NORMAL Sample Status NORMAL NORMAL CONTAMINATION Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS >120 6 30 20 Iron ppm ASTM D5185m Chromium ASTM D5185m >20 ppm <1 <1 <1 0 Nickel >5 0 ppm ASTM D5185m <1 Titanium ppm ASTM D5185m >2 <1 <1 0 Silver ASTM D5185m >2 0 0 0 ppm 2 2 Aluminum ASTM D5185m >20 2 ppm Lead ASTM D5185m >40 1 4 2 ppm ASTM D5185m >330 2 1 Copper ppm <1 1 Tin ppm ASTM D5185m >15 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium 0 0 ASTM D5185m <1 ppm ADDITIVES Boron ppm ASTM D5185m 0 <1 0 0 Barium ASTM D5185m 0 9 0 0 ppm 62 64 Molybdenum ASTM D5185m 60 58 ppm Manganese ASTM D5185m 0 ppm <1 <1 <1 Magnesium ASTM D5185m 1010 893 1033 844 ppm 1010 Calcium ppm ASTM D5185m 1070 1106 1193 Phosphorus ppm ASTM D5185m 1150 974 1016 899 Zinc 1270 1374 ppm ASTM D5185m 1190 1121 Sulfur ASTM D5185m 2060 2881 2924 2086 ppm

CONTAMINAN	ITS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	5	6	5
Sodium	ppm	ASTM D5185m		<1	20	3
Potassium	ppm	ASTM D5185m	>20	3	4	4

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	0.4	1.4	0.7
Nitration	Abs/cm	*ASTM D7624	>20	7.3	10.3	10.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.5	23.7	21.6
FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.3	20.2	17.4
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.9	4.9	5.1

## DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

#### Contamination

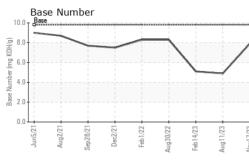
There is no indication of any contamination in the oil.

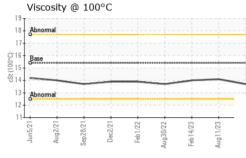
### **Fluid Condition**

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



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		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	$\langle     \rangle$	Yellow Metal		*Visual	NONE	NONE	NONE	NONE
	$\searrow$	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
Vecz/z1 Feb1/22 Aug30/22	Feb14/23 Aug11/23	Appearance Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Fel Aug.	Feb	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
2		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.7	14.1	14.0
		GRAPHS						
		Ferrous Alloys						
		<sup>30</sup> T	· · · · · · · · · · · · · · · · · · ·	Λ				
/22	/23	25 - iron						
Feb 1/22 Aug 30/22	Feb 14/23 Aug 11/23	25 - nickel	Å	/				
Au	Ai Fi	20	$\Lambda$	/				
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		Jun5/21 Aug2/21 Sep28/21	Feb 1/22 Aug 30/22	Feb14/23 Aug11/23	Nov17/23			
				Fe	Na			
		Non-ferrous Met	als					
		copper						
		8 - tin						
		Ed.						
		4		A				
		2	1.000	CARGON DARRY OF THE OWNER	1			
		Contraction of the local division of the loc	Statistics of the state of the	THE COLOR DE				
		5/21 2/21	1/22 -	l/23 -	//23			
		Jun5/21 Aug2/21 Sep28/21	Feb 1/22 Aug 30/22	Feb14/23 Aug11/23	Vov17/23			
		07		4	2			
		Viscosity @ 1009	°C					
		Viscosity @ 100 <sup>4</sup>	°C		10.0	Base Number		
		7 =	°C			Base Number		
		<sup>19</sup>	°C			Base Number		
		19 18 - Abnormal 17 -	°C			Base Number		
		19 18 - Abnormal 17 -	°C			Base Number		
		19 18 17	°C			Base Number		$\checkmark$
		19 18 Abnoma 17 5-00 15 8 14	°C		(6,0HOX) But Jack 4.0	Base Number		$\checkmark$
		19 Abnormal 17 20 <sup>16</sup> Base 000 15 30 14	°C		0.8 0.0 KOH/di per	Base Number		$\checkmark$
		19 18 Abnoma 17 5 16 Base 5 14 Abnoma 17 4 Abnoma 17 5 16 15 5 14 Abnoma	°C		(D)(HQ)() (D)(HQ	Base Number		
		19 Abnormal 17 2016 Base 3016 4 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 12 12 12 12 12 12 12 12 12 12		4/23	(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(	Base	2221 1/22 0/2	423
		19 18 17 10 10 10 10 15 14 13 Abnomal 12		Feb14/23	(D)(HQ)() (D)(HQ	Base Number	Dec2/21- Feb1/22- Aug30/22-	Feb14/23 Aug11/23
		19 18 10 10 10 10 10 10 10 10 10 10	Feb1/22 Aug30/22		(0, 8.0 (0, HOX) Buil and HOX BUIL and HO	Jun5/21 Aug2/21 Sep 28/21	A	
4	Laboratory Sample No	19 Abnormal 17 10 10 10 10 10 10 10 10 10 10	- 501 Madisc	on Ave., Ca	(0,H0) Bu + 4.0 Bu + 4.0 C2/LINN Try, NC 27513	Jun5/21 Aug2/21 Sep 28/21	1272-90 Tironmental - 415	- Michigan Eas
	Sample No.	19 19 10 10 10 10 10 10 10 10 10 10	- 501 Madisc Received	on Ave., Ca : 21 I	(0,H0) Bu + 0 (0,H0)	Jun5/21 Aug2/21 Sep 28/21	√ vironmental - 415	- Michigan Eas 6200 Elmridge
	Sample No. Lab Number	19 4bnormal 17 10 10 10 10 10 10 10 10 10 10	- 501 Madisc Received Diagnosed	on Ave., Ca : 21 M d : 21 M	(0,H0) Bu + 0 (0,H0)	Jun5/21 Aug2/21 Sep 28/21	√ vironmental - 415	- Michigan Eas 6200 Elmridge ing Heights, M
TESTING LABORDATION	Sample No.	<sup>19</sup> <sup>4</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup>	- 501 Madisc Received	on Ave., Ca : 21 M d : 21 M	(0,H0) Bu + 0 (0,H0)	Jun5/21 Aug2/21 Sep 28/21	∝ vironmental - 415 Sterl	- Michigan Eas 6200 Elmridg

\* - 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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