

## **OIL ANALYSIS REPORT**

## Area (40957HA) 826028-1018

Component **Diesel Engine** 

Fluid PETRO CANADA DURON SHP 15W40 (--- LT

### 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.

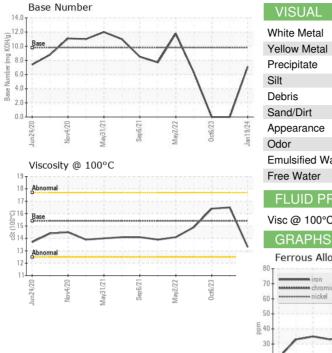
LTR)						
SAMPLE INFORM	IATION	method	limit/base	Sep2021 May2022 Oct2023	Jan 2024 history1	history2
Sample Number		Client Info		GFL0108531	GFL0083888	GFL0083879
Sample Date		Client Info		19 Jan 2024	22 Nov 2023	06 Oct 2023
Machine Age	hrs	Client Info		0	17549	14693
Oil Age	hrs	Client Info		0	17549	14693
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ABNORMAL	ABNORMAL
CONTAMINATIO	NC	method	limit/base	current	history1	history2
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	;	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	7	68	73
Chromium	ppm	ASTM D5185m	>4	<1	2	2
Nickel	ppm	ASTM D5185m	>4	3	0	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	3	3	3
Lead	ppm	ASTM D5185m	>50	0	7	4
Copper	ppm	ASTM D5185m		2	9	9
Tin	ppm	ASTM D5185m	>4	0	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	5	5
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m	60	59	65	66
Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Magnesium Calcium	ppm	ASTM D5185m ASTM D5185m	1010	946	987	979
	ppm	ASTM D5185m	1150	1140 1054	1165	1114 966
Phosphorus Zinc	ppm ppm	ASTM D5185m	1270	1224	1034 1285	1256
Sulfur	ppm	ASTM D5185m	2060	3088	2566	2481
CONTAMINANT	ſS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>15	3	11	11
Sodium	ppm	ASTM D5185m		3	13	14
Potassium	ppm	ASTM D5185m	>20	<1	<b>6</b> 0	<b>6</b> 5
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>6	0.4	<b>▲</b> 5.4	4.8
Nitration	Abs/cm	*ASTM D7624		9.3	12.9	12.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	29.9	29.3
FLUID DEGRAD	ATI <u>ON</u>	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.2	18.6	18.5
	mg KOH/g	ASTM D2896		7.1	▲ 0.0	▲ 0.0
	0					

Sample Rating Trend

NORMAL



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		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$\setminus$	1	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
V	1	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	$\setminus$ /	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	$\setminus$ /	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	$\setminus$ /	_ Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
21-	24							
Sep6/21	0ct6/23 Jan 19/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
		0001	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	$ \rightarrow $	Visc @ 100°C	cSt	ASTM D445	15.4	13.3	<b>1</b> 6.5	▲ 16.4
	\	GRAPHS						
		Ferrous Alloys						
Sep6/21-	0ct6/23	70 - iron chromium		r	1			
Se	00	60 nickel		1				
		50 - Ē 40 -						
				1				
		30	-					
		10						
			And Designation of the local division of the local division of the local division of the local division of the	****	Inerita			
		Jun24/20 - Nov4/20 -	Sep6/21-	May2/22 - 0ct6/23 -	Jan 19/24 •			
		7 2		Ma	Jan			
		Non-ferrous Metal	S					
		100						
		160 - copper		۸				
		160 - copper 140 - tin		Λ				
		assassassas lead		$\wedge$				
		140 - lead 120 -		$\wedge$				
		140 120 <u><u><u></u></u> <u><u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u></u></u>		$\bigwedge$				
		140 120 120 80 60		$\bigwedge$				
		140 120 120 80 60 40	$\square$	$\bigwedge$				
		140 140 120 120 80 60 40 20	$\checkmark$	<u> </u>				
		140 indicating indicat		227 (22)	124			
		140 indicating indicat	Sep6/21	May222	Jan1924			
		140 indicating indicat		May222	Jan19/24			
		1400 1200 1000 1000 1000 1000 1000 1000		0et6/22		Base Numbe	21	
		Viscosity @ 100°C		May222	14.0		217	
		Uint de lead 140 120 100 100 100 100 100 100 10		Oct6/22	14.0		2r	
		Lad 140 120 100 100 100 100 100 100 10		May2/22	14.0		217	4
		Lad 140 120 100 100 100 100 100 100 10		May2/22	14.0		21	
		Lin		0ct6/23	14.0		21	
		Land Land		May222	14.0		21	
		Lin		May222	14.0 12.0 12.0 12.0 10.0 10.0 10.0 10.0 10		er	
		Land Land		0c6023	14.0 12.0 (9)H00.0 900 8.0 900 8.0 9000 8.0 900 8.0 9000 8.0 900000000000000000000000000000000000		21	
		Line Line Line Line Line Line Line Line			14.0 12.0 () () () () () () () () () () () () ()	Base		222 3/23 1/74
		Line Line Line Line Line Line Line Line		May222	14.0 12.0 (9)H00.0 900 8.0 900 8.0 9000 8.0 900 8.0 9000 8.0 900000000000000000000000000000000000	Base		May222 Oct6/23 Jan 19/24
		Line Line Line Line Line Line Line Line			14.0 12.0 () () () () () () () () () () () () ()	Base		Mar/222 0c:6/23 Jan19/24
	Laboratory	Line Line Line Line Line Line Line Line	Sep6/21	May222	14.0 12.0 (0)HOX BUI) ta munu seeg 4.0 4.0 6.0 4.0 7.0 100 4.0 0.0	02/b2mL	Sep6/21	edericksburg Hauling
	Laboratory Sample No.	Lin	501 Madia	EZZQUEW son Ave., Ca	14.0 12.0 (HO) Bull and 6.0 2.0 4.0 2.0 4.0 2.0 0.0 ry, NC 27513 Jan 2024	02/b2mL	IZIE Vironmental - 652 - Fr 109	edericksburg Hauling 154 Houser Drive
	Laboratory Sample No. Lab Number	ind ind ind ind ind ind ind ind	501 Madia Recieved	czzzłew son Ave., Ca d : 29 . ed : 30 .	14.0 12.0 10,000 10,000 10,0	02/b2mL	IZIE Vironmental - 652 - Fr 109	edericksburg Hauling 54 Houser Drive edericksburg, VA
	Laboratory Sample No. Lab Number Unique Number	Line Line Line Line Line Line Line Line	501 Madia	czzzłew son Ave., Ca d : 29 . ed : 30 .	14.0 12.0 (HO) Bull and 6.0 2.0 4.0 2.0 4.0 2.0 0.0 ry, NC 27513 Jan 2024	02/b2mL	vironmental - 652 - Fr 109 Fre	edericksburg Hauling 54 Houser Drive edericksburg, VA US 22408
Termicate L2367 of circuments	Laboratory Sample No. Lab Number Unique Number Test Package	ind ind ind ind ind ind ind ind	501 Madia Recieved Diagnost	EZZ/SEM son Ave., Ca d : 29 d ed : 30 d tician : Wes	14.0 12.0 12.0 10.0	02/b2mL	vironmental - 652 - Fr 109 Fre Contact	edericksburg Haulin 54 Houser Drive edericksburg, VA US 22408 : WILLIAM MILC
o discuss thi	Laboratory Sample No. Lab Number Unique Number Test Package s sample report,	Line Line Line Line Line Line Line Line	501 Madia Recieved Diagnost Diagnost	son Ave., Ca d : 29 . ed : 30 . tician : Wei	14.0 12.0 12.0 10.0	02/b2mL	vironmental - 652 - Fr 109 Fre Contact	edericksburg Haulin 54 Houser Drive edericksburg, VA

Submitted By: TECHNICIAN ACCOUNT