

OIL ANALYSIS REPORT

(YA163827) 411024

Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (10 GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

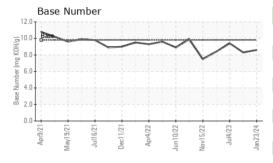
Fluid Condition

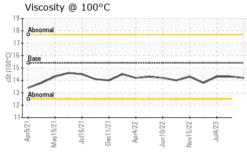
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0089877 GFL0080518 GFL0086864 Gample Date Client Info 23 Jan 2024 13 Oct 2023 04 Jul 2023 04 Jul 2023 06 Jul 2023 06 Jul 2023 07 Jul 2023 07 Jul 2023 08 Jul 2024 13 Oct 2023 08 Jul 2024 08 Jul 2023 08 Jul 2023 08 Jul 2023 08 Jul 2024 08 Jul 2023 09 Jul 2023 0	SAMPLE INFORM	ΙΔΟΙΤΔΝ	wethod	Jul2021 Dec2021	Aprzozz Junzozz Novzozz Juli Current	history1	history2
Sample Date Client Info 23 Jan 2024 13 Oct 2023 04 Jul 2023 Machine Age hrs Client Info 18699 1317 1317 Oil Age hrs Client Info Not Changed Chan		IATION		IIIIIIIIIIII			
Machine Age hrs Client Info 18699 1317 1317 Oil Age hrs Client Info 1317 0 1317 Oil Changed Client Info Not Changd Changed Changed Changed Changed Sample Status WC Method NoRMAL NORMAL NORMAL VEAR WC Method >3.0 <1.0 <1.0 Water WC Method NEG NEG NEG Mycg NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 10 6 3 Chromium ppm ASTM D5185m >5 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 1 0 0 Copper ppm ASTM D5185m >5 <1 <1	·						
Oil Age hrs Client Info 1317 0 1317 Oil Changed Sample Status Client Info Not Changed Changed Changed Changed Changed Changed Changed Changed Changed NoRMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >3.0 <1.0 <1.0 <1.0 Wear METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 10 6 3 Nickel ppm ASTM D5185m >5 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1 0 0 0 Silver ppm ASTM D5185m >20 3 0 2 <1 0 0 Chapter ppm ASTM D5185m >150 <1 <1 <1 </th <th>•</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	•						
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NORMAL NORMAL NORMAL		hrs					
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 10 6 3 Nickel ppm ASTM D5185m >4 0 <1 0 0 Nickel ppm ASTM D5185m >4 0 <1 0 0 Silver ppm ASTM D5185m >2 0 0 0 0 Silver ppm ASTM D5185m >20 3 0 2 1 <1 0 0 2 1 <1 0 0 0 1 <1 <1 <1 <1	Oil Changed		Client Info				
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 10 6 3 Chromium ppm ASTM D5185m >5 <1 <1 <1 Nickel ppm ASTM D5185m >4 0 <1 0 O Silver ppm ASTM D5185m >2 0 0 0 O Silver ppm ASTM D5185m >20 3 0 2 Lead ppm ASTM D5185m >90 <1 <1 0 O	CONTAMINATI	ON	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185n >5 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>165	10	6	3
Nickel	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Titanium	Nickel		ASTM D5185m	>4	0	<1	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 3 0 2 Lead ppm ASTM D5185m >150 <1							
Aluminum							
Lead							
Copper ppm ASTM D5185m >90 <1 <1 2 Tin ppm ASTM D5185m >5 <1							
Tin							
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 <1 9 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 0 0 2 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 884 828 952 Calcium ppm ASTM D5185m 1070 1069 1028 1108 Phosphorus ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1							
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 <1				>5			
ADDITIVES							
Boron		ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 60 58 60 61 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 58 60 61 Manganese ppm ASTM D5185m 0 <1	Boron	ppm		0		<1	9
Manganese ppm ASTM D5185m 0 <1	Barium	ppm	ASTM D5185m	0	0	2	0
Magnesium ppm ASTM D5185m 1010 884 828 952 Calcium ppm ASTM D5185m 1070 1069 1028 1108 Phosphorus ppm ASTM D5185m 1150 974 955 1076 Zinc ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m >20 8 8 9 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >7.5 1.1 0.7 0.2 Nitration Abs/cm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base	Molybdenum	ppm	ASTM D5185m	60	58	60	61
Calcium ppm ASTM D5185m 1070 1069 1028 1108 Phosphorus ppm ASTM D5185m 1150 974 955 1076 Zinc ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m >30 3 2 2 Potassium ppm ASTM D5185m >20 8 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 1.1 0.7 0.2 Nitration Abs/:nm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 974 955 1076 Zinc ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m >30 4 <1	Magnesium	ppm	ASTM D5185m	1010	884	828	952
Zinc ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m 4 <1	Calcium	ppm	ASTM D5185m	1070	1069	1028	1108
Zinc ppm ASTM D5185m 1270 1148 1114 1296 Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m 4 <1	Phosphorus	ppm	ASTM D5185m	1150	974	955	1076
Sulfur ppm ASTM D5185m 2060 2548 2828 3912 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m 4 <1			ASTM D5185m	1270	1148	1114	1296
Silicon ppm ASTM D5185m >35 3 2 2 Sodium ppm ASTM D5185m 4 <1 2 Potassium ppm ASTM D5185m >20 8 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 1.1 0.7 0.2 Nitration Abs/cm *ASTM D7624 >20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6	Sulfur					2828	3912
Sodium ppm ASTM D5185m 4 <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 4 <1 2 Potassium ppm ASTM D5185m >20 8 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 1.1 0.7 0.2 Nitration Abs/cm *ASTM D7624 >20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6	Silicon	ppm	ASTM D5185m	>35	3	2	2
Potassium ppm ASTM D5185m >20 8 8 9 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 1.1 0.7 0.2 Nitration Abs/cm *ASTM D7624 >20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6							
Soot % % *ASTM D7844 > 7.5 1.1 0.7 0.2 Nitration Abs/cm *ASTM D7624 > 20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 > 30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 15.4 14.0 13.6				>20			9
Nitration Abs/cm *ASTM D7624 >20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 8.8 7.5 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6	Soot %	%	*ASTM D7844	>7.5	1.1	0.7	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 20.0 18.9 18.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6							
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6							
Oxidation Abs/.1mm *ASTM D7414 >25 15.4 14.0 13.6							
		AHON	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.6 8.3 9.4		Abs/.1mm	*ASTM D7414	>25	15.4	14.0	13.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.6	8.3	9.4



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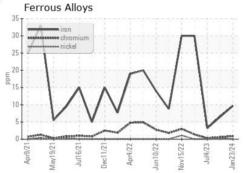


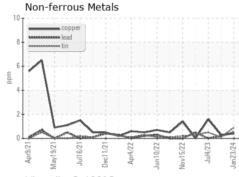


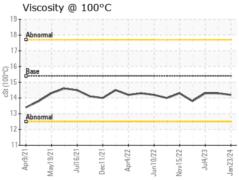
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

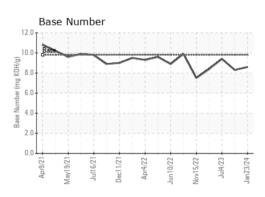
FLUID PROPE	RTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.3	14.3

GRAPHS













Certificate L2367

Laboratory Sample No.

Lab Number Unique Number : 10848151 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0089977 : 06071474

Recieved

: 26 Jan 2024 : 26 Jan 2024 Diagnosed Diagnostician : Wes Davis

GFL Environmental - 018 - Fayetteville

4621 Marracco Drive Hope Mills, NC US 28348

Contact: Robert Carter robert.carter@gflenv.com T: (910)596-1170

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)