

OIL ANALYSIS REPORT









(9511) Front Load FEL191361

Component **Diesel Engine**

PETRO CANADA DURO

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

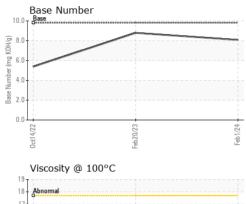
Fluid Condition

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 PCA0110035 PCA0083082 PCA00780 Sample Date Client Info 01 Feb 2024 20 Feb 2023 14 Oct 202 Machine Age hrs Client Info 11077 10174 9566 Oil Age hrs Client Info 11077 10767 10174 9566 Oil Age hrs Client Info N/A N/	N SHP 15W40 (1	0 GAL)	00	12022	Feb2023 Feb20	24	
Client Info	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		PCA0110035	PCA0083082	PCA0078031
Dil Age	Sample Date		Client Info		01 Feb 2024	20 Feb 2023	14 Oct 2022
Dil Changed Client Info N/A N/A N/A N/A NORMAL NOR	Machine Age	hrs	Client Info		11077	10174	9566
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history history history Astronomical Normal Norma	Oil Age	hrs	Client Info		11077	10767	10174
CONTAMINATION method limit/base current history1 history	Oil Changed		Client Info		N/A	N/A	N/A
Water	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG 0.0 NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 4 19 30 Chromium ppm ASTM D5185m >20 <1 1 1 Nickel ppm ASTM D5185m >20 <1 1 1 Silver ppm ASTM D5185m >2 0 5 4 Silver ppm ASTM D5185m >2 0 <1 <1 Aluminum ppm ASTM D5185m >20 4 4 2 Lead ppm ASTM D5185m >40 1 1 2 2 Copper ppm ASTM D5185m >40 1 1 2 1 1 Vanadium ppm ASTM D5185m 0 0 0	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >120 4 19 30 Chromium ppm ASTM D5185m >20 <1	Nater		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	0.0	NEG
Chromium	WEAR METAL	.S	method	limit/base	current	history1	history2
Silver	ron	ppm	ASTM D5185m	>120	4		
Silver		ppm		>20			
Saliver	Nickel	ppm					
Aluminum		ppm			-		
December December							
Copper							
Acade Acad							
Aranadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 11 5 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 2 <1 Magnesium ppm ASTM D5185m 0 1 2 <1 Magnesium ppm ASTM D5185m 1070 928 1101 1153 Posphorus ppm ASTM D5185m 1070 928 1101 1153 Phosphorus ppm ASTM D5185m 1270 1100 1220 1236 Sulfur ppm ASTM D5185m 2060 2633 3079 3091 CONTAMINANTS method limit/base current	• •				-		
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 11 5 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 61 61 Manganese ppm ASTM D5185m 0 1 2 <1				>15			
ADDITIVES							
Soron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0		ppm					
Description							
Molybdenum ppm ASTM D5185m 60 56 61 61 Manganese ppm ASTM D5185m 0 1 2 <1 Magnesium ppm ASTM D5185m 1010 843 915 928 Calcium ppm ASTM D5185m 1070 928 1101 1153 Phosphorus ppm ASTM D5185m 1150 899 931 970 Zinc ppm ASTM D5185m 1270 1100 1220 1236 Sulfur ppm ASTM D5185m 2060 2633 3079 3091 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 6 3 Sodium ppm ASTM D5185m >20 1 62 <1 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td>							
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Solition ppm ASTM D5185m >25 2 6 3	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 2 49 2 Potassium ppm ASTM D5185m >20 1 62 <1 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.7 1.4 Nitration Abs/cm *ASTM D7624 >20 8.6 10.7 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3							
Potassium ppm ASTM D5185m >20 1 62 <1 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.5 0.7 1.4 Nitration Abs/cm *ASTM D7624 >20 8.6 10.7 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3							
Soot % % *ASTM D7844 >4 0.5 0.7 1.4 Nitration Abs/cm *ASTM D7624 >20 8.6 10.7 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3	Potassium	ppm	ASTM D5185m	>20	1	62	<1
Nitration Abs/cm *ASTM D7624 >20 8.6 10.7 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 8.6 10.7 11.2 Sulfation Abs/.1mm *ASTM D7615 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3	Soot %	%	*ASTM D7844	>4	0.5	0.7	1.4
Sulfation Abs/.1mm *ASTM D7415 >30 19.1 21.5 25.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.7 16.2 20.3		Abs/cm		>20			
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30		21.5	
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	 Oxidation	Abs/.1mm	*ASTM D7414	>25	14.7	16.2	20.3
				9.8			



OIL ANALYSIS REPORT



VISUAL		method				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
	DTIES	mothod	limit/bass	ourropt	hiotonyi	hiotory?

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19 T		
18 - Abnormal		
Apriorital		
17		
(5) 16 Base 15 Base		
2 15		
201		
814-		
13 - Abnormal		
Abnormal	***************************************	
12		
11 1		
2		
0ct14/22	Feb 20/23	2
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FLUID PROPE	RTIES	method	limit/	base '	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4		12.9	13.4	13.8
GRAPHS							
Iron (ppm)				100-	Lead (ppm)		
250 - Severe		***************************************		80	Severe		
E 150 Abnormal				Ed 40			
100				40	Abnormal		
50				20			
Oct14/22	Feb20/23		Feb1/24		0ct14/22	Feb20/23	Feb1/24
aluminum (ppm)	LP.				Chromium (p		
Severe				50			
40				40 - _ 30 -	0		
20 Abnormal				E 20	Abnormal		
10				10			
Oct14/22	Feb20/23 -		Feb1/24	0	0ct14/22	Feb 20/23	Feb1/24
	Feb.		Ē			Feb	Ĭ
Copper (ppm) 400 Severe				80	Silicon (ppm)		
Abriotrial				60	1		
Ē 200				튑 40	A		
100				20	Abnormal		
0 22	- 23		24	0	22	23+	24
0ct14/22	Feb20/23		Feb1/24		Oct14/22	Feb 20/23	Feb1/24
Viscosity @ 100°C				10.0	Base Number		
18 Abnormal				(0H/d) 8.0			
Base Ahnomal				Base Number (mg KOH/g) 0.9 8.0 0.7 4.0 0.7 2.0			
Abnormal				quin 4.0-			
10				0.0		-	
0ct14/22	Feb 20/23		Feb1/24		0ct14/22	Feb20/23	Feb1/24
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Certificate L2367

Laboratory

Sample No. : PCA0110035 Lab Number : 06084992 Unique Number : 10872437 Test Package : MOB 2

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

Tested Diagnosed

: 09 Feb 2024 : 12 Feb 2024

: 12 Feb 2024 - Wes Davis

UMM - Shop 401 - Norton 186 South Washington Street

Norton, MA US 02766

Contact: Dave Wilson Jr. Dwilson1@win-waste.com

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)

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