

OIL ANALYSIS REPORT

(P1184783) Preferred Service-Tractor [Preferred Service-Tractor] 192A32028B

Diesel Engine

Fluid PETRO CANADA DURON UHP 5W30 (36 QTS)

DIAGNOSIS

A Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

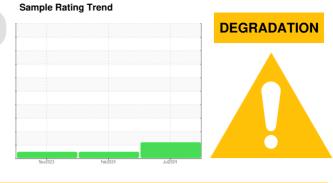
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN level is low. The oil is no longer serviceable.



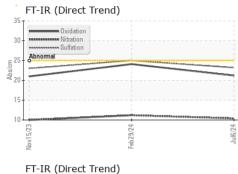
Sample Date Client Info 06 Jul 2024 29 Feb 2024 15 Nov 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age mis Client Info 67668 49511 32922 Oil Age mis Client Info 49511 49511 32922 Oil Changed Client Info 49511 49511 32922 Sample Status Client Info ABNORMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 Fuel WC Method >0.0 <1.0	Sample Number		Client Info		PCA0126896	PCA0116680	PCA0109420
Oil Age mis Client Info 49511 49511 32922 Oil Changed Client Info Changed Not Changed Sample Status Not Method Imil/base current Not Changed CONTAMINATION method Imil/base current Not Changed Water WC Method So.0 <1.0	Sample Date		Client Info		06 Jul 2024	29 Feb 2024	15 Nov 2023
Oil Changed Sample Status Client Info Changed ABNORMAL Changed NORMAL. Not Changed NORMAL. Not Changed NORMAL. CONTAMINATION method limit/base current history1 history2 Fuel WC Method >6.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 25 48 23 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >22 0 <1 <1 <1 Silver ppm ASTM D5185m >22 8 17 10 Lead ppm ASTM D5185m >22 8 17 10 Lead ppm ASTM D5185m >15 2 4 2 Vanadum ppm ASTM D5185m	Machine Age	mls	Client Info		67668	49511	32922
Oil Changed Client Info Changed ABNORMAL Not Changed Not Changed Sample Status Image Image Current NormAL NormAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >0.2 NEG NEG NEG Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 25 48 23 Chromium ppm ASTM D5185m >20 <1	Oil Age	mls	Client Info		49511	49511	32922
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >6.0 <1.0	Oil Changed		Client Info		Changed	Changed	Not Changd
Fuel WC Method >6.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1	Sample Status				ABNORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imil/base current history1 history2 Iron ppm ASTM D5185m >100 25 48 23 Chromium ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1	Fuel		WC Method	>6.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 iron ppm ASTM D5185m >100 25 48 23 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
ron ppm ASTM D5185m >100 25 48 23 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 <1 0 Fitanium ppm ASTM D5185m >2 <1	ron	ppm	ASTM D5185m	>100	25	48	23
Nickel ppm ASTM D5185m >2 0 <1 0 Titanium ppm ASTM D5185m >2 <1	Chromium		ASTM D5185m	>20	<1	1	<1
Titanium ppm ASTM D5185m <1 <1 <1 Silver ppm ASTM D5185m >2 <1	Nickel				0	<1	0
Silver ppm ASTM D5185m >2 <1 <1 <1 Aluminum ppm ASTM D5185m >25 8 17 10 Lead ppm ASTM D5185m >40 <1	Titanium		ASTM D5185m		<1	<1	<1
Auminum ppm ASTM D5185m >25 8 17 10 Lead ppm ASTM D5185m >40 <1				>2	<1		<1
Lead ppm ASTM D5185m >40 <1 <1 <1 Copper ppm ASTM D5185m >330 42 114 113 Tin ppm ASTM D5185m >15 2 4 2 Vanadium ppm ASTM D5185m <1	Aluminum				8		10
Tin ppm ASTM D5185m >15 2 4 2 Vanadium ppm ASTM D5185m <	Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Tin ppm ASTM D5185m >15 2 4 2 Vanadium ppm ASTM D5185m <	Copper		ASTM D5185m	>330	42	114	113
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 15 24 20 Barium ppm ASTM D5185m 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 Magnesium ppm ASTM D5185m 0 <116 1116 1112 1068 Calcium ppm ASTM D5185m 1160 1116 1112 1068 Calcium ppm ASTM D5185m 820 899 963 922 Phosphorus ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 225 6 17 12 Solicon ppm ASTM D5185m >20 24 5 5 <t< td=""><td></td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><th>2</th><td>4</td><td>2</td></t<>		ppm	ASTM D5185m	>15	2	4	2
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 15 24 20 Barium ppm ASTM D5185m 0 0 0 0 Malpanese ppm ASTM D5185m 64 60 69 60 Magnesium ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		<1	<1	<1
Boron ppm ASTM D5185m 0 15 24 20 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 64 60 69 60 Marganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 64 60 69 60 Manganese ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1160 1116 1112 1068 Calcium ppm ASTM D5185m 820 899 963 922 Phosphorus ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 64 60 69 60 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	15	24	20
Manganese ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1160 1116 1112 1068 Calcium ppm ASTM D5185m 820 899 963 922 Phosphorus ppm ASTM D5185m 1160 1116 1112 1068 Zinc ppm ASTM D5185m 1160 996 1040 984 Zinc ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cmm *ASTM D741<	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1160 1116 1112 1068 Calcium ppm ASTM D5185m 820 899 963 922 Phosphorus ppm ASTM D5185m 1160 996 1040 984 Zinc ppm ASTM D5185m 1160 996 1040 984 Zinc ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/.1mm *ASTM D7415 </td <td>Volybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>64</td> <th>60</th> <td>69</td> <td>60</td>	Volybdenum	ppm	ASTM D5185m	64	60	69	60
Calcium ppm ASTM D5185m 820 899 963 922 Phosphorus ppm ASTM D5185m 1160 996 1040 984 Zinc ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	<1	2	<1
Phosphorus ppm ASTM D5185m 1160 996 1040 984 Zinc ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >20 24 65 5 Potassium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415<	Magnesium	ppm	ASTM D5185m	1160	1116	1112	1068
Zinc ppm ASTM D5185m 1260 1330 1297 1204 Sulfur ppm ASTM D5185m 3000 2782 3203 2703 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Calcium	ppm	ASTM D5185m	820	899	963	922
SulfurppmASTM D5185m3000278232032703CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2561712SodiumppmASTM D5185m>20455PotassiumppmASTM D5185m>20246540INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.50.70.5NitrationAbs/cm*ASTM D7624>2010.411.210.0SulfationAbs/1m*ASTM D7415>3023.225.023.0FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2521.224.121.0	Phosphorus	ppm	ASTM D5185m	1160	996	1040	984
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2561712SodiumppmASTM D5185m455PotassiumppmASTM D5185m>20246540INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.50.70.5NitrationAbs/cm*ASTM D7624>2010.411.210.0SulfationAbs/.1mm*ASTM D7415>3023.225.023.0FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2521.224.121.0	Zinc	ppm	ASTM D5185m	1260	1330	1297	1204
Silicon ppm ASTM D5185m >25 6 17 12 Sodium ppm ASTM D5185m 4 5 5 Potassium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/cm *ASTM D7624 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Sulfur	ppm	ASTM D5185m	3000	2782	3203	2703
Sodium ppm ASTM D5185m 4 5 5 Potassium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 24 65 40 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Silicon	ppm	ASTM D5185m	>25	6	17	12
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Sodium	ppm	ASTM D5185m		4	5	5
Soot % % *ASTM D7844 >3 0.5 0.7 0.5 Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Potassium	ppm	ASTM D5185m	>20	24	65	40
Nitration Abs/cm *ASTM D7624 >20 10.4 11.2 10.0 Sulfation Abs/.1mm *ASTM D7615 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 23.2 25.0 23.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Soot %	%	*ASTM D7844	>3	0.5	0.7	0.5
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Nitration	Abs/cm	*ASTM D7624	>20	10.4	11.2	10.0
Oxidation Abs/.1mm *ASTM D7414 >25 21.2 24.1 21.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.2	25.0	23.0
	FLUID DEGRAD		method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	21.2	24.1	21.0

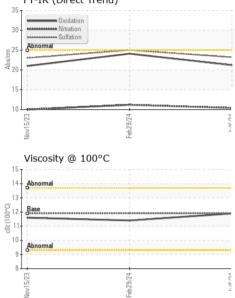


OIL ANALYSIS REPORT

method

VISUAL





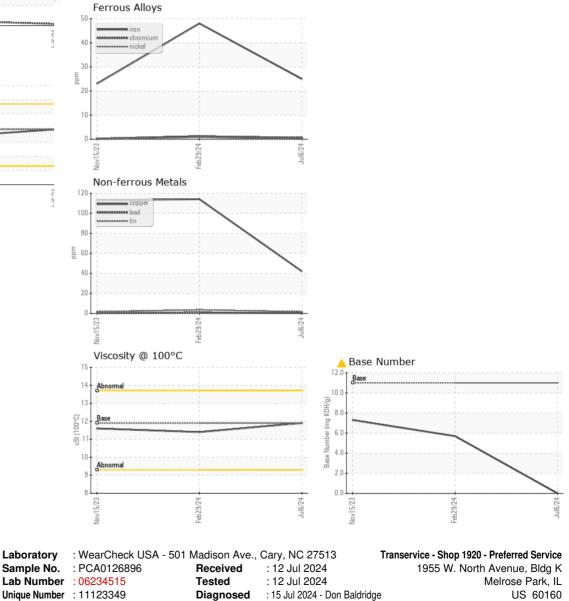
TOORE				000		
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*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		method	limit/base	current	history1	history2
		methou	iiiiii/base	current	Thistory I	Thistory 2
Visc @ 100°C	cSt	ASTM D445	11.9	11.9	11.4	11.6
GRAPHS						

limit/base

current

historv1

historv2





Test Package : FLEET Certificate 12367 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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Submitted By: Tom Lindeman Page 2 of 2