

OIL ANALYSIS REPORT

(34252Z) Walgreens - Tractor Machine Id [Walgreens - Tractor] 136A62500

Diesel Engine

PETRO CANADA DURON SHP 10W30 (11 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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.

SAMPLE INFORMATION method imit/base current history1 history1 Sample Number Client Info 16 Nov 2023 07 Aug 2023 16 Mar 2023 Machine Age mls Client Info 161818 143271 114155 Oil Age mls Client Info 114155 250000 500000 Oil Changed Client Info N/A Oil Added Changed Sample Status Imit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Water WC Method >0.2 NEG NEG NEG Water ppm ASTM D5165m >2 0 <1 1 Timu ppm ASTM D5165m >2 0 <1 0 Silver ppm ASTM D5165m >2 1 0 0 Silver ppm ASTM D5165m	62500						
Sample Number Client Info PCA0105911 PCA0091549 PCA009146 Sample Date Client Info 16 Nov 2023 07 Aug 2023 16 Mar 2023 Machine Age mis Client Info 161818 143271 114155 Oil Age Client Info 114155 50000 50000 Oil Changed Client Info N/A Oil Added Changed Sample Status Imethod Imit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0 NEG NEG NEG Water WC Method >0 19 37 Nickel ppm ASTM 05185 >2 10 <1 0 Nickel ppm ASTM 05185 >2 18 14 25 Lead ppm ASTM 05185 >2 0 <1 0 1 Vanadum ppm ASTM 05185 >4	GAL)		Ma	2023	Aug2023 Nov20	23	
Sample Date Client Into 16 Nov 2023 07 Aug 2023 16 Mar 2023 Machine Age mis Client Info 118115 143271 114155 Oil Age mis Client Info 114155 25000 50000 Sample Status Client Info N/A Oil Adged NORMAL N	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age mis Client Info 161818 143271 114155 Oil Age mis Client Info 114155 25000 50000 Oil Changed Client Info N/A Oil Added Changed Sample Status Imit/base current NoRMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 Fuel WC Method >5 <1.0	Sample Number		Client Info		PCA0105911	PCA0091549	PCA0091469
Oil Age mis Client Info 114155 25000 50000 Oil Changed Client Info NA Oil Added Changed Sample Status Imit Normal NORMAL NORMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 Fuel WC Method >5 <1.0	Sample Date		Client Info		16 Nov 2023	07 Aug 2023	16 Mar 2023
Oil Changed Sample Status Client Info N/A Oil Added NORMAL Changed NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >5 <1.0	Machine Age	mls			161818	143271	114155
Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	-	mls			114155	25000	
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	-		Client Info				0
Fuel WC Method >5 <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 >110 30 19 37 Chromium ppm ASTM D5185m >2 <1	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >110 30 19 37 Chromium ppm ASTM D5185m >4 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >110 30 19 37 Chromium ppm ASTM D5185m >2 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185m >110 30 19 37 Chromium ppm ASTM 05185m >4 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM 05185m >110 30 19 37 Chromium ppm ASTM 05185m >4 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1 0 <1 Titanium ppm ASTM D5185m >2 0 <1	Iron	ppm	ASTM D5185m	>110	30	19	37
Titanium ppm ASTM D5185m 2 0 0 0 Silver ppm ASTM D5185m >2 0 <1	Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Silver ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >25 18 14 25 Lead ppm ASTM D5185m >45 <1 0 <1 Copper ppm ASTM D5185m >45 4 5 4 Tin ppm ASTM D5185m >4 1 0 1 Vanadium ppm ASTM D5185m >4 1 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 2 Barium ppm ASTM D5185m 0 63 60 62 Magnesium ppm ASTM D5185m 0 1155 1077 1121 Phosphorus ppm ASTM D5185m 200	Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum ppm ASTM D5185m >25 18 14 25 Lead ppm ASTM D5185m >45 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >45 <1 0 <1 Copper ppm ASTM D5185m >85 4 5 4 Tin ppm ASTM D5185m >4 1 0 1 Vanadium ppm ASTM D5185m >4 1 0 0 Cadmium ppm ASTM D5185m 2 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 0 <1	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper ppm ASTM D5185m >85 4 5 4 Tin ppm ASTM D5185m >4 1 0 1 Vanadium ppm ASTM D5185m <	Aluminum	ppm	ASTM D5185m	>25	18	14	25
Tin ppm ASTM D5185m >4 1 0 1 Vanadium ppm ASTM D5185m <<1	Lead	ppm	ASTM D5185m	>45	<1	0	<1
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 0 2 Barium ppm ASTM D5185m 2 0 0 2 Barium ppm ASTM D5185m 0 63 60 62 Barium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 950 994 956 910 Calcium ppm ASTM D5185m 1050 1155 1077 1121 Phosphorus ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base	Copper	ppm	ASTM D5185m	>85	4	5	4
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 0 2 Barium ppm ASTM D5185m 0 0 0 0 2 Barium ppm ASTM D5185m 0 63 60 62 Magnesium ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 950 994 956 910 Calcium ppm ASTM D5185m 995 1081 1018 1027 Sulfur ppm ASTM D5185m 2600 239	Tin	ppm	ASTM D5185m	>4	1	0	1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 0 0 2 Barium ppm ASTM D5185m 0 0 0 <1	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 2 0 0 2 Barium ppm ASTM D5185m 0 0 0 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 <1 Molybdenum ppm ASTM D5185m 50 63 60 62 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 63 60 62 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	2	0	0	2
Maganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 950 994 956 910 Calcium ppm ASTM D5185m 1050 1155 1077 1121 Phosphorus ppm ASTM D5185m 995 1081 1018 1027 Zinc ppm ASTM D5185m 995 1081 11252 1240 Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *	Barium	ppm	ASTM D5185m	0	0	0	<1
Magnesium ppm ASTM D5185m 950 994 956 910 Calcium ppm ASTM D5185m 1050 1155 1077 1121 Phosphorus ppm ASTM D5185m 995 1081 1018 1027 Zinc ppm ASTM D5185m 995 1081 1018 1027 Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D741	Molybdenum	ppm	ASTM D5185m	50	63	60	62
Calcium ppm ASTM D5185m 1050 1155 1077 1121 Phosphorus ppm ASTM D5185m 995 1081 1018 1027 Zinc ppm ASTM D5185m 1180 1291 1252 1240 Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 20 53 38 6 7 Sodium ppm ASTM D5185m 20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7414 >3 0.9 9.7 10.6 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION m	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 995 1081 1018 1027 Zinc ppm ASTM D5185m 1180 1291 1252 1240 Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm	Magnesium	ppm	ASTM D5185m	950	994	956	910
Zinc ppm ASTM D5185m 1180 1291 1252 1240 Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 </td <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1050</td> <td>1155</td> <td>1077</td> <td>1121</td>	Calcium	ppm	ASTM D5185m	1050	1155	1077	1121
Sulfur ppm ASTM D5185m 2600 2393 3390 2786 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m >30 8 6 7 Potassium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Phosphorus	ppm	ASTM D5185m	995	1081	1018	1027
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>30867SodiumppmASTM D5185m210PotassiumppmASTM D5185m>20533864INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.90.71NitrationAbs/cm*ASTM D7624>209.99.710.6SulfationAbs/.1mm*ASTM D7415>3022.320.723.3FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2518.917.320.0	Zinc	ppm	ASTM D5185m	1180	1291	1252	1240
Silicon ppm ASTM D5185m >30 8 6 7 Sodium ppm ASTM D5185m 2 1 0 Potassium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.tmm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 18.9 17.3 20.0	Sulfur	ppm	ASTM D5185m	2600	2393	3390	2786
Sodium ppm ASTM D5185m 2 1 0 Potassium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 53 38 64 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Silicon	ppm	ASTM D5185m	>30	8	6	7
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Sodium	ppm	ASTM D5185m		2	1	0
Soot % % *ASTM D7844 >3 0.9 0.7 1 Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7615 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Potassium	ppm	ASTM D5185m	>20	53	38	64
Nitration Abs/cm *ASTM D7624 >20 9.9 9.7 10.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.3 20.7 23.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Soot %	%	*ASTM D7844	>3	0.9	0.7	1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Nitration	Abs/cm	*ASTM D7624	>20	9.9	9.7	10.6
Oxidation Abs/.1mm *ASTM D7414 >25 18.9 17.3 20.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.3	20.7	23.3
	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 7.0 7.6 6.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.9	17.3	20.0
	Base Number (BN)	mg KOH/g	ASTM D2896		7.0	7.6	6.6

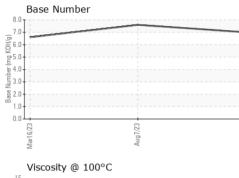
Sample Rating Trend

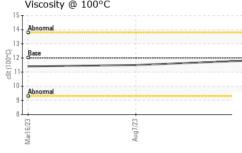
NORMAL



OIL ANALYSIS REPORT

VISUAL





	VICONE	methe				
	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
/23	Appearance	scalar *Visual	NORML	NORML	NORML	NORML
Aug7/23 Nov16/23	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 PROPE			current	history1	history2
	Visc @ 100°C	cSt ASTM D	445 12.00	11.8	11.5	11.4
	GRAPHS					
	Ferrous Alloys					
Aug7/23 -	35 - iron chromium					
Aug	30 - mickel					
	25					
	틆 20 -					
	15					
	10					
	5-					
	0 Li	~				
	Mar16/23	Aug7/23	Nov16/23			
	Mar	Au	Nov			
	Non-ferrous Meta	ls				
	10 copper					
	8					
	tin					
	6-					
	u dd					
	4+					
	2					
	Statistics of the local division of the loca		n New York Topological Statistics			
	Mar16/23	Aug7/23	Nov16/23			
			Nov			
	Viscosity @ 100°	C		Base Number		
	15		8.			
	14 - Abnormal		7.			
	13-		(B)(HO) 5. 	0		
	D 12 Base		OX 85.	0-		
	30 12 - Base 00 12		ш а	0-		
	-		Man 3.	0		
	Abnormal		8 2.	o		
	9 -		1.	1		
	84					
	Mar 16/23	Aug7/23	Nov16/23	Mar16/23	Aug7/23	
	Mari	Auç	Nov1	Mar	Aut	
Laboratory	: WearCheck USA -	501 Madison Ave	. Carv. NC 2751	3 Transervi	ce - Shop 1361 - I	Berkelev-Wind
Sample No.	: PCA0105911		24 Nov 2023			State Road
Lab Number	: 06016169		27 Nov 2023			Windsor,
Unique Number	: 10755313		Wes Davis			US 535
ificate L2367 Test Package						act: Mike Hur
discuss this sample report,					-	ranservice.c
Denotes test methods that a atements of conformity to spec	are outside of the ISO	17025 scope of ac	creditation.	(JCGM 106·2012)	T:	(608)846 (608)846

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

F: (608)846-0389