

OIL ANALYSIS REPORT

Sample Rating Trend





Recommendation

Contamination

Fluid Condition

Wear

oil.

Resample at the next service interval to monitor.

There is no indication of any contamination in the

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

All component wear rates are normal.

oil is suitable for further service.

CATERPILLAR 1311

Diesel Engine

PETRO CANADA DURON HP 15W40 (--- Oz)

Sample Date Client Info 07 Nov 2023 11 Jul 2023 07 May 2023 Machine Age hrs Client Info 0 14708 136 Dil Age hrs Client Info 0 0 136 Dil Age hrs Client Info N/A N/A N/A Changed Sample Status Client Info N/A N/A NORMAL NORMAL	ON HP 15W40 (-	Oz)	Aug2019 No	v2020 May2022 Oct2022	Feb2023 Apr2023 May2023 Jul202	3 Nov2023	
Sample Date Client Info 07 Nov 2023 11 Jul 2023 07 May 2023 Machine Age hrs Client Info 0 14708 136 Dil Age hrs Client Info 0 0 136 Dil Age hrs Client Info N/A N/A N/A Changed Sample Status Client Info N/A N/A NORMAL NORMAL	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 14708 136 Dil Age hrs Client Info 0 0 136 Dil Changed Client Info N/A N/A N/A Changed Sample Status Imit/Dase current Nistory1 Nistory2 Fuel WC Method >5 <1.0 <1.0 <1.0 Glycol WC Method >5 <1.0 <1.0 <1.0 Biycol WC Method >5 <1.0 <1.0 <1.0 WEAR METALS method Imit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sample Number		Client Info		PCA06002062	PCA0083457	PCA0083452
Dil Age hrs Client Info 0 0 136 Dil Changed Client Info N/A N/A N/A Changed Sample Status Imit base NORMAL NORMAL NORMAL NORMAL CONTAMINATION method Imit base current history2 history2 Fuel WC Method >5 <1.0	Sample Date		Client Info		07 Nov 2023	11 Jul 2023	07 May 2023
Dil Changed Client Info N/A N/A N/A Changed Sample Status Imit/base current NISTANL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >5 <1.0	Machine Age	hrs	Client Info		0	14708	136
Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 Fuel WC Method >5 <1.0	Dil Age	hrs	Client Info		0	0	136
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		N/A	N/A	Changed
Fuel WC Method >5 <1.0 <1.0 <1.0 Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 <1 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 0 Auminum ppm ASTM D5185m >2 0 0 0 0 Vanadium ppm ASTM D5185m >40 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 1 1 1 Vanadium <td>Sample Status</td> <td></td> <td></td> <td></td> <th>NORMAL</th> <td>NORMAL</td> <td>NORMAL</td>	Sample Status				NORMAL	NORMAL	NORMAL
Biycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 iron ppm ASTM D5185m >100 16 16 12 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron ppm ASTM D5185m >100 16 16 12 Chromium ppm ASTM D5185m >20 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 0 0 <1 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 2 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >40 0 0 0 Vanadium ppm ASTM D5185m >15 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Soron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ron	ppm	ASTM D5185m	>100	16	16	12
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 2 2 ead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 0 0 0 Auminum ppm ASTM D5185m >25 2 2 2 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1 <1 <1 Vanadium ppm ASTM D5185m >15 0 0 0 0 Vanadium ppm ASTM D5185m >15 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185m 59 61 58 Maganese ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 2902 2991 </td <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <th>0</th> <td>0</td> <td><1</td>	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Auminum ppm ASTM D5185m >25 2 2 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <1 <1 <1 Tin ppm ASTM D5185m >15 0 0 <1	Aluminum	ppm	ASTM D5185m	>25	2	2	2
Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 4 4 1 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 59 61 58 Manganese ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 905 1033 1084 Phosphorus ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 1 2 Sodium ppm ASTM D	_ead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 4 4 1 0 0 0 Barium ppm ASTM D5185m 4 4 4 1 1 Barium ppm ASTM D5185m 4 4 4 1 Barium ppm ASTM D5185m 59 61 58 Maganese ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 20 2 1 2	Copper	ppm	ASTM D5185m	>330	<1	<1	<1
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 4 4 1 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 59 61 58 Manganese ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 4 4 1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 59 61 58 Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 59 61 58 Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 902 2991 3944 Sulfur ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 59 61 58 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m		4	4	1
Maganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 3 Sodium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Sulfation	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 946 931 999 Calcium ppm ASTM D5185m 1024 1094 1064 Phosphorus ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 2902 2991 3944 Sulfur ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 3 Sodium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/.tmm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation A	Molybdenum	ppm	ASTM D5185m		59	61	58
Calcium ppm ASTM D5185m 1024 1094 1064 Phosphorus ppm ASTM D5185m 905 1033 1088 Zinc ppm ASTM D5185m 9292 2991 3944 Sulfur ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 3 Sodium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 histor	Manganese	ppm	ASTM D5185m		0	<1	<1
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Zinc ppm ASTM D5185m 1216 1216 1344 Sulfur ppm ASTM D5185m 2902 2991 3944 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 3 Sodium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7848 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Calcium	ppm	ASTM D5185m		1024	1094	1064
SulfurppmASTM D5185m290229913944CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25543SodiumppmASTM D5185m>20211PotassiumppmASTM D5185m>20212INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.70.60.5NitrationAbs/cm*ASTM D7624>206.86.86.4SulfationAbs/Imm*ASTM D7415>3019.019.318.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/Imm*ASTM D7414>2514.014.315.1	Phosphorus		ASTM D5185m		905	1033	1088
SulfurppmASTM D5185m290229913944CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25543SodiumppmASTM D5185m>20211PotassiumppmASTM D5185m>20212INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.70.60.5NitrationAbs/cm*ASTM D7624>206.86.86.4SulfationAbs/lim*ASTM D7415>3019.019.318.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/lim*ASTM D7414>2514.014.315.1			ASTM D5185m		1216	1216	1344
Silicon ppm ASTM D5185m >25 5 4 3 Sodium ppm ASTM D5185m 0 0 1 Potassium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Sulfur		ASTM D5185m		2902	2991	3944
Sodium ppm ASTM D5185m 0 0 1 Potassium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/cm *ASTM D7615 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Silicon	ppm	ASTM D5185m	>25	5	4	3
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.tmm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 14.0 14.3 15.1	Sodium	ppm	ASTM D5185m		0	0	1
Soot % % *ASTM D7844 >3 0.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Potassium	ppm	ASTM D5185m	>20	2	1	2
Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 6.8 6.8 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Soot %	%	*ASTM D7844	>3	0.7	0.6	0.5
Sulfation Abs/.1mm *ASTM D7415 >30 19.0 19.3 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1	Nitration	Abs/cm	*ASTM D7624	>20			6.4
Dxidation Abs/.1mm *ASTM D7414 >25 14.0 14.3 15.1							
	FLUID DEGRA		method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.0	14.3	15.1
	Base Number (BN)	mg KOH/g			8.4	9.0	8.6



Base

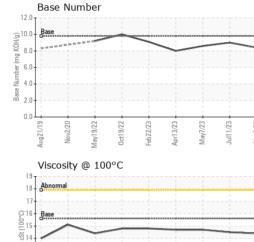
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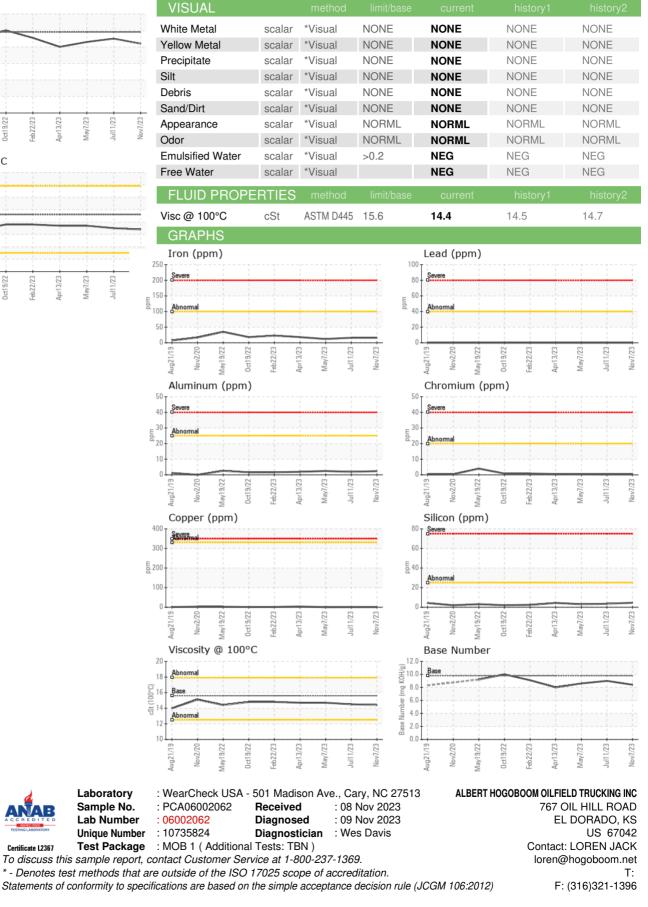
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Certificate L2367

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