

Machine Id

CATERPILLAR M318D EX4111 (S/N 0D8W00463)

Component Hydraulic System

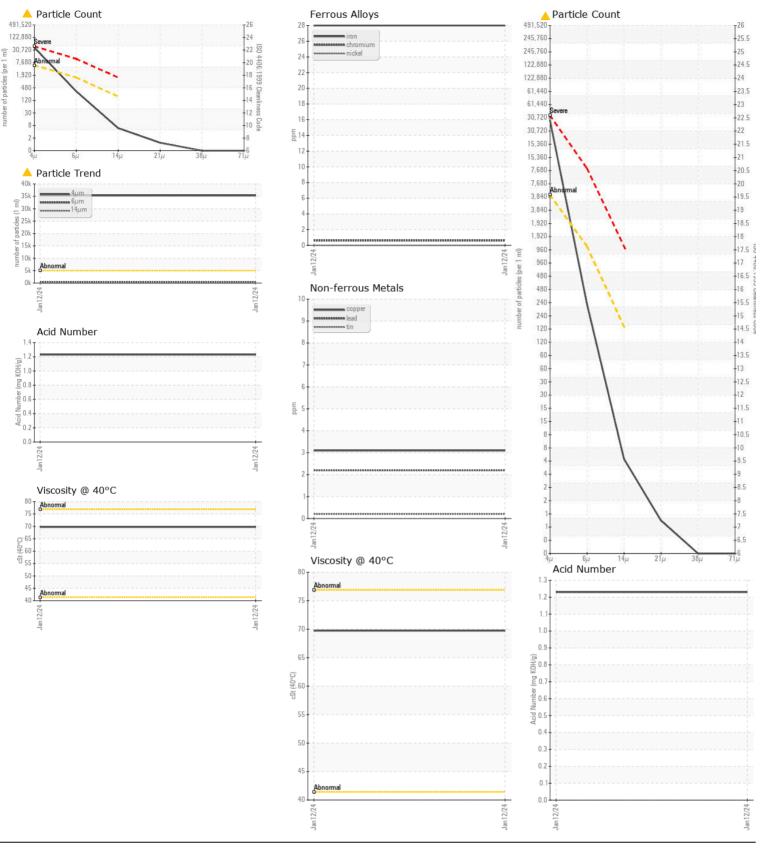
DURALENE ZD ADVANCED 46 (--- GAL)

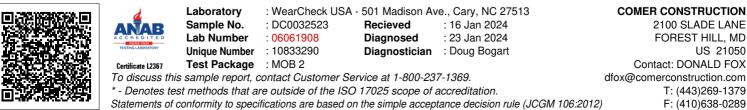
Sample Number Client Info D0032923	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
nest service interval to monitor. Machine Age hrs Citent Info 4796 4.0 OI / Age hrs Citent Info 4796 4.0 OI / Age hrs Citent Info 4796 4.0 Entite Age hrs Citent Info 422 4.0 Filter CARMER 4.0 OI / Changed 1.0 Entite Age hrs Citent Info 4000 Filter CARMER 4.0 Not Change 4.0 N	No corrective action is recommended at this time. Resample at the next service interval to monitor.	Sample Number		Client Info		DC0032523		
Machine Age Ins Client Info 929 Image Image Filter Age hrs Client Info 822 OI Changed Client Info 822 OI Changed Client Info Not Change Sample Status Tom ppm ASIN 0515m -00 All component wear rates are normal. Chromium ppm ASIN 0515m 10 0 Silver ppm ASIN 0515m 10 0 All component wear rates are normal. Titanium ppm ASIN 0515m 10 2 Auminum ppm ASIN 0515m 10 2 Auminum ppm ASIN 0515m 10 2 Vaadum ppm ASIN 0515m 10 2 Vaadum ppm ASI		Sample Date		Client Info		12 Jan 2024		
Filter Age ins Client Info 222		Machine Age	hrs	Client Info		4796		
Oil Changed Filter Change Satus Client Info Not Chang Responsatus Not Chang Change Satus Not Change Responsatus Not Responsatus Not Responsatus <th< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>282</th><th></th><th></th></th<>		Oil Age	hrs	Client Info		282		
Filter Changed Sample Status Claim of ABX080M Image of ABX080M Image of ABX080M Image of ABX080M Image ABX080M Image ABX0000M Image ABX080M <thimage ABX080</thimage 		Filter Age	hrs	Client Info		282		
Sample Status Kework Nework		-		Client Info		Not Changd		
VEAR Iron ppm ASTM 05185m -20 28 All component wear rates are normal. Chromium ppm ASTM 05185m -10 Nickel ppm ASTM 05185m -10 0 Nickel ppm ASTM 05185m 10 2 All component wear rates are normal. ppm ASTM 05185m 10 2 All manum ppm ASTM 05185m 10 2 Lead ppm ASTM 05185m >10 2 Vanadium ppm ASTM 05185m >10 2 Vanadium ppm ASTM 05185m >10 2 Vanadium ppm ASTM 05185m >20 2 Vanadium ppm ASTM 05185m >20 2				Client Info		•		
All component wear rates are normal. Chromium ppm ASTM D5185n >100 <1		Sample Status				ABNORMAL		
All component wear rates are normal. Chromium ppm ASTM D5185n >100 <1	WEAR All component wear rates are normal.	Iron	ppm	ASTM D5185m	>20	28		
Nuclear ppm ASTM D5165m C C C C Silver ppm ASTM D5165m C C C C Silver ppm ASTM D5165m C C C C Lead ppm ASTM D5165m S10 2 C C Copper ppm ASTM D5165m S10 C C C Vanadium ppm ASTM D5165m S10 C C C Vanadium ppm ASTM D5165m O C C C Vanadium ppm ASTM D5165m O C C C Velow Metal scalar Visual NONE NONE C C The oil . Silicon ppm ASTM D5165m S0 A C C Paticles >4gum ASTM D7647 S00 A S3317 C C Paticles >4gum ASTM D7647 S00 A S317		Chromium		ASTM D5185m	>10			
Silver pm ASTN D5180 0 0		Nickel	ppm	ASTM D5185m	>10	0		
Aluminum ppm ASTM D5165m >10 2 Lead ppm ASTM D5165m >75 3 Tin ppm ASTM D5165m >75 3 Vanadium ppm ASTM D5165m >75 3 Vanadium ppm ASTM D5165m >75 3 Vanadium ppm ASTM D5165m >750 2 4 Vanadium ppm ASTM D5165m >20 2 CONTAMINATION Silicon ppm ASTM D5165m >20 2 Potassium ppm ASTM D7647 >5000 A 53317 Particles >4µm ASTM D7647 >100 0 Particles >2µm ASTM D7647 >100 0 Particles >2µm ASTM D7647 >100 0		Titanium		ASTM D5185m		<1		
Lead pp ASTM 05/85n >10 2 Copper ppm ASTM 05/85n -70 3 Tin ppm ASTM 05/85n 10 -1 Vanadium ppm ASTM 05/85n 10 -1 Vanadium scala Visual NONE NONE NONE Velow Mate scala Visual NONE NONE The sia high amount of silt (particulates < 6 microns in size) present in the oil. Silicon ppm ASTM 05/85n -20 4 Particles >6 pim ASTM 0747 -100 ASTM 0747 -100 ASTM 0747 -100 Particles >6 pim ASTM 0747 -100 ASTM 0747 -100 Particles >6 pim ASTM 0747 -100 ASTM 0747 -100 Particles >7 µm <th>Silver</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th></th> <th></th>		Silver	ppm	ASTM D5185m		0		
Copper ppm ASTM D5185m >75 3 Tin ppm ASTM D5185m >10 <1 < < Vanadium ppm ASTM D5185m >10 < < < White Metal scalar 'Visual NONE NONE < < CONTAMINATION NONE NONE < < < Protessium ppm ASTM D5185m >20 < < Protessium ppm ASTM D518m >20 < < Protessium ppm ASTM D7647 >100 < < Particles >4µm ASTM D7647 >100 < < < Particles >4µm ASTM D7647 >10 < < < Particles >4µm ASTM D7647 >10 < < < Particles >4µm ASTM D7647 >10 <t< th=""><th>Aluminum</th><th></th><th>ASTM D5185m</th><th>>10</th><th>2</th><th></th><th></th></t<>		Aluminum		ASTM D5185m	>10	2		
Copper ppm ASTM D585m >75 33 Tin ppm ASTM D585m >10 <1 < < Vanadium ppm ASTM D585m >00 < < White Metal scalar 'Visual NONE NONE < Scontrammer Silicon ppm ASTM D585m >20 Protass ppm ASTM D585m >20 Protass ppm ASTM D7647 >100 ASTM 256 Particles >4µm ASTM D7647 >100 Particles >4µm ASTM D7647 >10 0		Lead	ppm	ASTM D5185m	>10	2		
Vanadium ppm ASTM D5185m Co 0 White Metal scalar "Visual NONE NONE CONTAMINATION Polos ppm ASTM D5185m >20 4 Particles shum ppm ASTM D5185m >20 4 Particles >4µm ppm ASTM D5185m >20 4 Particles >4µm ppm ASTM D5185m >20 4 Particles >4µm StM D57647 >100 4 5 Particles >4µm ASTM D7647 >100 4 Particles >7µm ASTM D7647 >10 1 Particles >7µm ASTM D7647 >10 Particles >7µm ASTM D7647 >10		Copper	ppm	ASTM D5185m	>75	3		
White Metal Yellow Metal scalar Visual Visual NONE NONE Image And And And And And And And And And And		Tin	ppm		>10	<1		
Yellow Metal scalar Visual NONE		Vanadium	ppm	ASTM D5185m		0		
Silicon ppm ASTM D5185m >20 4 There is a high amount of silt (particulates < 6 microns in size) present in the oil. Silicon ppm ASTM D5185m >20 2 Water WC Method >0.1 NEG Particles >4µm ASTM D7647 >5000 ▲ 33317 Particles >4µm ASTM D7647 >100 2 Particles >51µm ASTM D7647 >100 5 Particles >21µm ASTM D7647 >100 0 Particles >21µm ASTM D7647 >10 0		White Metal	scalar	*Visual	NONE	NONE		
Potassium ppm ASTM D5185m >20 2 Water WC Method >.0.1 NEG Particles >6µm ASTM D7647 >100 ASTM 5000 ASTM 5000 ASTM Particles >6µm ASTM D7647 >100 288 Particles >21µm ASTM D7647 >100 5 Particles >21µm ASTM D7647 >10 0 Particles >21µm ASTM D7647 >10 0 Particles >71µm ASTM D7647 >10 0 Particles >71µm ASTM D7647 >10 0 Salt Scalar "Visual NORE NORE Sand/Dir scalar "Visual NORE NORE		Yellow Metal	scalar	*Visual	NONE	NONE		
Potassium ppm ASTM D5185m >20 2 Water WC Method >.0.1 NEG Particles >6µm ASTM D7647 >100 ASTM 5000 ASTM 5000 ASTM Particles >6µm ASTM D7647 >100 288 Particles >21µm ASTM D7647 >100 5 Particles >21µm ASTM D7647 >10 0 Particles >21µm ASTM D7647 >10 0 Particles >71µm ASTM D7647 >10 0 Particles >71µm ASTM D7647 >10 0 Salt Scalar "Visual NORE NORE Sand/Dir scalar "Visual NORE NORE	CONTAMINATION	Silicon	maa	ASTM D5185m	>20	4		
There is a high amount of silt (particulates < 6 microns in size) present in the oil. Water WC Method >0.1 NEG Particles >4µm ASTM D7647 >5000 ▲ 35317 Particles >4µm ASTM D7647 >500 ▲ 35317 Particles >4µm ASTM D7647 >160 50 Particles >21µm ASTM D7647 >10 0 Particles >21µm ASTM D7647 >10 0 Particles >38µm ASTM D7647 >10 0 Particles >31µm ASTM D7647 >10 0 Particles >1µm ASTM D7647 >10 0 Particles >1µm ASTM D7647 >10 0 Particles >1µm ASTM D7647 >10 0 Sitt scalar *Visual NONE NONE Sitt scalar *Visual NORM NORML								
in the oil. Particles >4µm A STM D7647 >5000 A 35317 Particles >6µm ASTM D7647 >1300 288 Particles >6µm ASTM D7647 >160 5 Particles >1µm ASTM D7647 >100 5 Particles >21µm ASTM D7647 >10 0 Particles >1µm ASTM D7647 >10 0 Particles >1µm ASTM D7647 >3 0 Particles >1µm Scalar *Visual NORE NORE Scalar *Visual NORE NORE	There is a high amount of silt (particulates < 6 microns in size) present in the oil.		1-1-					
Particles >6µm ASTM D7647 >1300 288 Particles >14µm ASTM D7647 >160 5 Particles >21µm ASTM D7647 >40 1 Particles >38µm ASTM D7647 >40 1 Particles >14µm ASTM D7647 >10 0 Particles >14µm ASTM D7647 >10 0								
Particles >21 µm ASTM D7647 >40 1 Particles >38µm ASTM D7647 >10 0 Particles >37µm ASTM D7647 >3 0 Particles >71µm Sith Scalar *Visual NONE NONE Diobris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NORE NORE Appearance scalar *Visual NORE NORE Odor scalar *Visual NORE NORE Baron ppm ASTM D5185m O		Particles >6µm		ASTM D7647	>1300	288		
Particles >38µm ASTM D7647 >10 0 Particles >71µm ASTM D7647 >3 0 Oil Cleanliness ISO 4406 (c) >1917/14 ▲ 22/15/10 Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NORH NONE Appearance scalar *Visual NORH NORME Odor scalar *Visual NORH NORML Odor scalar *Visual NORH NORML Odor scalar *Visual NORH NORML FLUID CONDITION NORH NORML		Particles >14µm		ASTM D7647	>160	5		
Particles >71µm ASTM D7647 3 0 Oil Cleanliness ISO 4406 (o) >1917/14 A 22/15/10 Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NONE NONE Odor scalar *Visual NORM NORM Odor scalar *Visual NORM NORM Odor scalar *Visual NORM NORM Brono ppm ASTM D5185m - 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m		Particles >21µm		ASTM D7647	>40	1		
Oil Cleanliness ISO 4406 (c) >19117/14 ▲ 22/15/10 Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORL NORE Odor scalar *Visual NORL NORE Odor scalar *Visual NORL NORML Odor scalar *Visual NORL NORML Odor scalar *Visual NORL NORML Odor scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Broon ppm ASTM D5185m 0 Barium p		Particles >38µm		ASTM D7647	>10	0		
Silt scalar *Visual NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORL NORML Odor scalar *Visual NORL NORML Odor scalar *Visual NORL NORML Emulsified Water scalar *Visual NORL NORML Sodium ppm ASTM D5185m 0 Boron ppm ASTM D5185m 0 Barium ppm ASTM D5185m 0 Malganese ppm ASTM D5185m 0 Malganesium ppm ASTM D5185m 0 0 Malgane		Particles >71µm		ASTM D7647	>3	0		
Debrisscalar*VisualNONESand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.1NEG		Oil Cleanliness		ISO 4406 (c)	>19/17/14	A 22/15/10		
Sand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORMLNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGEmulsified Waterscalar*Visual>0.1NEGEmulsified Waterscalar*Visual>0.1NEGEmulsified Waterscalar*Visual>0.1NEGBoronppmASTM D5185mI23BariumppmASTM D5185mI0MolybdenumppmASTM D5185mI0MagnesiumppmASTM D5185mI32MagnesiumppmASTM D5185mI32PhosphorusppmASTM D5185mI1117ZincppmASTM D5185mI1117		Silt	scalar	*Visual	NONE	NONE		
Appearance Odorscalar*Visual VisualNORMLOdorscalar*VisualNORMLNORMLEmulsified Waterscalar*VisualNORMLNEGNEGSodiumppmASTM D5185m0BoronppmASTM D5185m0BariumppmASTM D5185m0MolybdenumppmASTM D5185m0ManganeseppmASTM D5185m0MagnesiumppmASTM D5185m0MagnesiumppmASTM D5185m0MagnesiumppmASTM D5185m0MagnesiumppmASTM D5185m0MagnesiumppmASTM D5185m0MagnesiumppmASTM D5185m0PhosphorusppmASTM D5185m0ZincppmASTM D5185m1117		Debris	scalar	*Visual	NONE	NONE		
Odorscalar*VisualNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGSodiumppmASTM D5185m0BoronppmASTM D5185m0BariumppmASTM D5185m0MolybdenumppmASTM D5185m0ManganeseppmASTM D5185m0MagnesiumppmASTM D5185m100MagnesiumppmASTM D5185m10MagnesiumppmASTM D5185m10MagnesiumppmASTM D5185m100PhosphorusppmASTM D5185m100ZincppmASTM D5185m1117		Sand/Dirt	scalar	*Visual	NONE	NONE		
Emulsified Water scalar *Visual >0.1 NEG FLUID CONDITION Sodium ppm ASTM D5185m 0 Boron ppm ASTM D5185m ID 23 Barium ppm ASTM D5185m ID 0 Molybdenum ppm ASTM D5185m ID ID Manganese ppm ASTM D5185m ID ID ID Mangenesium ppm ASTM D5185m ID ID ID ID ID Phosphorus ppm ASTM D5185m ID ID ID ID ID ID		Appearance	scalar	*Visual	NORML	NORML		
Sodium ppm ASTM D5185m 0 Boron ppm ASTM D5185m 23 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 0 Mangenesium ppm ASTM D5185m 0 Mangenesium ppm ASTM D5185m 0 Mangenesium ppm ASTM D5185m 0 Phosphorus ppm ASTM D5185m 0 Zinc ppm ASTM D5185m 1117		Odor	scalar	*Visual	NORML	NORML		
Boron ppm ASTM D5185m 23 The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Phosphorus ppm ASTM D5185m 0 Zinc ppm ASTM D5185m 1117		Emulsified Water	scalar	*Visual	>0.1	NEG		
Boron ppm ASTM D5185m 23 The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Phosphorus ppm ASTM D5185m 0 Zinc ppm ASTM D5185m 1117	FLUID CONDITION	Sodium	ppm	ASTM D5185m		0		
Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 2 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Calcium ppm ASTM D5185m 0 Phosphorus ppm ASTM D5185m 0 Zinc ppm ASTM D5185m 1117						23		
Suitable for further service. Molybdenum ppm ASTM D5185m 2 Manganese ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 32 Calcium ppm ASTM D5185m 2028 Phosphorus ppm ASTM D5185m 797 Zinc ppm ASTM D5185m 1117	The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.							
Manganesse ppm ASTM D5185m 0 Magnesium ppm ASTM D5185m 32 Calcium ppm ASTM D5185m 2028 Phosphorus ppm ASTM D5185m 797 Zinc ppm ASTM D5185m 1117								
Magnesium ppm ASTM D5185m 32 Calcium ppm ASTM D5185m 2028 Phosphorus ppm ASTM D5185m 797 Zinc ppm ASTM D5185m 1117				ASTM D5185m		0		
Calcium ppm ASTM D5185m 2028 Phosphorus ppm ASTM D5185m 797 Zinc ppm ASTM D5185m 1117		-		ASTM D5185m		32		
Phosphorus ppm ASTM D5185m 797 Zinc ppm ASTM D5185m 1117		Calcium						
Zinc ppm ASTM D5185m 1117		Phosphorus		ASTM D5185m		797		
		Zinc		ASTM D5185m				
		Sulfur		ASTM D5185m		3738		

Acid Number (AN) mg KOH/g ASTM D8045 Visc @ 40°C cSt ASTM D445

1.23

69.74





Submitted By: DONALD FOX

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