

Machine Id

CATERPILLAR M318D EX4111 (S/N 0D8W00463)

Component Hydraulic System

DURALENE ZD ADVANCED 46 (--- GAL)

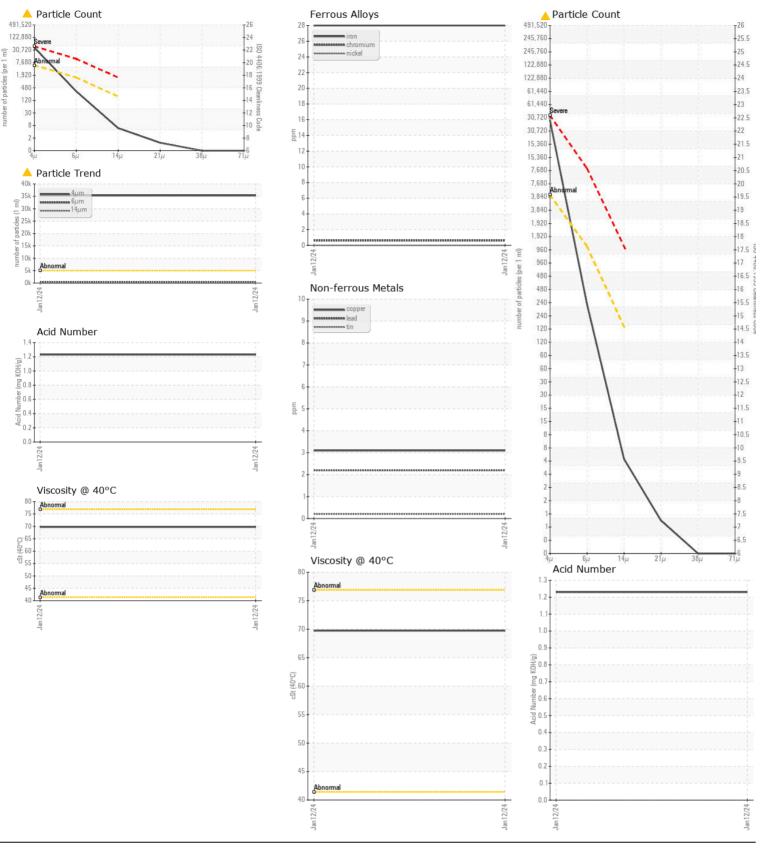
Sample Number         Client Info         D0032923	RECOMMENDATION	Test	UOM	Method	Limit/Abn	Current	History1	History2
nest service interval to monitor. Machine Age hrs Citent Info 4796 4.0 OI / Age hrs Citent Info 4796 4.0 OI / Age hrs Citent Info 4796 4.0 Entite Age hrs Citent Info 422 4.0 Filter CARMER 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>&gt;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		<b>Oil Cleanliness</b>		ISO 4406 (c)	>19/17/14	<b>A</b> 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		

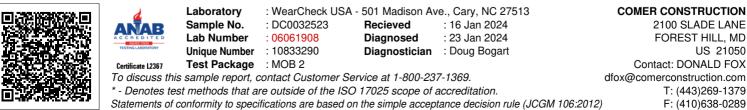
Acid Number (AN) mg KOH/g ASTM D8045 Visc @ 40°C cSt ASTM D445

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1.23

69.74





Submitted By: DONALD FOX

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