



## FailZero at Rattlesnake Ridge

**Subject: Test of new UCT coating for M4/AR15 rifles.  
28 Dec 2008**

First a brief introduction. I am a retired Special Forces Warrant Officer with over 26 years of service with extensive experience in the Middle East and North Africa. I am a Colt trained armorer and chief instructor and owner of a facility near Ft Campbell Ky which provides firearms training to civilians, military units and L.E. agencies. I am a licensed Class III manufacturer and build M4 type systems for individuals and agencies. I was contacted about testing a new coating of bolt and bolt carriers for M4 type rifles by UCT Coatings out of Florida. I sent them several bolt assemblies and trigger groups which they coated. I will refer to this treatment as the "Combat Coat".

After receiving several treated bolt carrier/bolt assemblies and trigger groups for M4 and AR type rifle we immediately began to study and review them. I will admit now that we approached this with more than a little skepticism as we have, over the decades, seen many attempts to modify and improve the performance of the M4 rifle with varying degrees of failure. Although we kept an open mind about the "combat coat" when someone tells us that we can fire these guns without lubrication while maintaining the performance we expect from the M4 we were, to say the least, pessimistic. (Note: my definition of a pessimist is an optimist with experience.)

1. First thing we did was check for fit and basic function: All carrier assemblies fit perfect into the rifle. There were no rough points or edges and the bolts went into battery easily. No change to the buffer/spring was required. We tried these out in over 6 different rifles before firing to ensure a common fit. Brands were Colt, DPMS, Double Star, Stag and Bush Master. We installed the trigger groups into two lower receivers. Fit and finish on all parts were perfect and there was no problem in installation of any part.

We assembled two rifles for testing. A full auto 14.5" barrel rifle manufactured by us (Rattlesnake Ridge) on a Double Star brand upper and lower assembly. A semi auto with 16" barrel was also assembled. Both guns were "broke in" by firing about 150 rounds with the provided molly lube as the only lubrication. We then thoroughly cleaned, dried and inspected the parts.

2. Initial testing was rather informal with our primary goal being the firing of rounds down range until we saw a stoppage. We did not expect this to take very long as these guns were dry with no lubrication. Using our outdoor range complex beginning in the heat of summer we fired approximately 500 rounds thru each gun (semi auto) before inspection and cleaning. There were no malfunctions. There was the expected, normal amount of fowling on the bolt carrier and carrier key but what first surprised us was how easily the carbon cleaned off the carrier. Most of it simply wiped off and the build up on the key was scraped off easily. The hard finish allowed the use of a metal scraper/brush to remove carbon without scratching the finish. We were very pleased.

Over the following months the guns were used in training sessions with civilians, Law Enforcement and Military personnel. I would usually ask the shooter to use our rifle instead of his in the course of fire and he would not have to clean it. Shoot for a day and not have to clean the rifle, nobody turned us down.

3. The Full Auto system has been fired over 5,000 rounds using full auto and semi auto in training sessions on our ranges. The first malfunction was noted after we let it go over 900 rounds without even wiping down the bolt. The bolt was so dirty it was sluggishly traveling in the upper assembly. We were amazed it went this long. As we were in the middle of a training session we simply took about 10 minutes to quickly clean the gun and put it back on line. There were no further malfunctions and the gun was wiped down at lunch and cleaned at the end of each day with the rest of the class. Note that we used a variety of civilian and surplus ammunition some of which was rather "dirty" leaving a lot of powder residue.

4. During one specific course the full auto rifle was put on line with 12 U.S. Air force rifles. The course was during rather harsh conditions of high heat, humidity, sand and wind. There were so many malfunctions in the Air Force rifles that training was adversely affected. I won't go into detail concerning the Air Force issues but our rifle with the "combat coat" did not have even one malfunction in over 1,600 rounds during the training program. Ammunition used was military issue ball and frangible.

The full auto rifle was last used during the testing of a suppressor system on a 10" upper assembly with over 800 rounds with no malfunctions. It is scheduled to be put back on line the end of Jan and again in Feb 2009 in an upcoming military M4 course. The gun will have an additional 3,000 rounds put thru it under tactical training conditions in winter.

5. The semi auto system has had approximately 3,600 rounds put thru it in training courses and as use as a rental gun. The few malfunctions noted were traced to magazine issues and again to pushing the gun to its shooting limit without cleaning. The treated bolts were much easier to clean then the untreated bolts and at no time has any lubrication been used.

6. Once the initial 150 round break in with molly lube was completed both of these systems have been used totally without any lubrication of any type in conditions from dry, sandy, dusty to sub freezing, icy and wet. They have been used during formal tactical military/L.E. training and recreational shooting without any malfunctions attributed to the bolt/carrier or trigger group. These treated assemblies's show no noticeable wear or break down of any kind.

7. My definition of a pessimist is "an optimist with experience". In my experience this coating by UCT works as stated and better. The concept of using an M4 type rifle without lubrication has been proven. The benefits are tremendous. No petroleum lubrications means a cleaner rifle as there is nothing sticky for dust, dirt, un-burnt powder to stick to. Carbon build up is easier to remove and the gun is faster and easier to clean. All of this results in a more reliable rifle with longer life. The bolt/carrier has a much longer than normal expected life span due to its new hardness. What more could we ask for.

8. I highly recommend this treatment for those that are serious about their M4 working in all conditions at all times. I look forward to offering it as a basic part of a reliable combat rifle for Police, Security and Military personnel as well as the recreational shooter wanting the "best". I am using these bolts on a regular basis and will continue to monitor them for any adverse performance but I expect they will continue to perform better than the uncoated parts.

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