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Strike Industries Barrel Test Report

1 INTRODUCTION

1.1 BACKGROUND

With Strike Industries adding AR-15 barrels to the product lineup, these tests are established as a third-party verification of quality indicators sought by customers in the firearms market in general, and of Strike Industries in particular.

1.2 OBJECTIVE

1.2.1 Objective 1: Establish baseline accuracy of the articles with a variety of factory loaded ammunition.

1.2.2 Objective 2: Collect accuracy data under simulated real-world conditions using factory loaded ammunition.

1.2.3 Objective 3: Develop custom load data and compare accuracy with baseline and real-world accuracy data.

1.2.4 Objective 4: Conduct continual select-fire test until rifle malfunction.

1.2.5 Objective 5: Perform long-term throat and barrel erosion testing and record the delta.

1.3 TEST ITEM DESCRIPTION

A total of four barrels will be supplied by Strike Industries for the purpose of this test: two 16 inch and two 11.5 inch barrels.

2 TEST SETUP AND PROCEDURES

2.1 TEST SETUP

A 16" and a 10.3" barrel was each assembled into an upper receiver and mounted in a fixture similar to the unit in Figure 1. The fixture actuates the trigger through a solenoid, removing the human element from the equation. Each barrel then fired 5 four-shot strings of each type of ammunition. These shots were fired through a chronograph into a target 215 feet from the muzzle. This range was also indoors, removing environmental variables from skewing test data.

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Figure 1. Test Firing Fixture

2.2 Data Acquisition

Data was collected using a chronograph, digital calipers, and an infrared thermometer. Barrel temperature was recorded on the first and fourth shot of each string. Velocity was recorded for each shot, with the exception of MOA Customs loads.

3 Test Results

3.1 Objective 1: Baseline accuracy with a variety of factory loaded ammunition.

Baseline accuracy was established on Lake City M193 NATO, Tula, Remington, and Winchester ammunition in 55 grain. Lake City M855 62 grain was also baselined. The results of these baselines can be found in Table 1.

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Barrel/Round	Avg Velocity	Avg MOA
Short M193	2739.90	0.683
Long M193	3150.05	0.699
Short Tula	2692.80	0.719
Long Tula	3080.05	0.740
Short Rem	2712.20	0.694
Long Rem	3101.10	0.708
Short Win	2713.30	0.692
Long Win	3105.05	0.705
Short M855	2626.80	0.654
Long M855	2954.70	0.664

Table 1. Baseline Accuracy

3.2 Objective 2: Collect accuracy data under simulated real-world conditions using factory loaded ammunition.

Both test articles were subjected to a heat cycle and retested for accuracy. The NATO M193 55 grain ammunition was used for this test. After the baseline accuracy was established, each barrel fired 7 full 30 round magazines in rapid succession. Then the accuracy test was conducted again. The data from this test is contained in Table 2.

Barrel/Round	Avg Velocity	Avg MOA	Avg Barrel Temp
Hot Short	2704.75	0.764	743.5
Hot Long	3122.00	0.828	735.5

Table 2. Hot Barrel Accuracy

3.3 Objective 3: Develop custom load data and compare accuracy with baseline and real-world accuracy data.

The accuracy baseline test was accomplished using MOA Custom loads. This data along with all the baseline data is contained in Table 3.

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Long Win	3105.05	0.705
Short M855	2626.80	0.654
Long M855	2954.70	0.664
Short MOA	2552.35	0.476
Long MOA	2918.70	0.504

Table 3. All Accuracy Data

3.4 Objective 4: Conduct continual select-fire test until rifle malfunction.

The 16" test article will be fired until failure at a later date. A supplement to this report will be submitted when completed. The test will be recorded with video and thermal imaging.

3.5 Objective 5: Perform long-term throat and barrel erosion testing and record the delta.

The 10.3" barrel underwent a baseline throat measurement of .224". This measurement was taken at the chamber end of the barrel, approximately .25" in from the beginning of the rifling. This article was then fired until projectiles began to keyhole. Keyholing is the phenomenon that occurs when the projectile is no longer being stabilized correctly and hits the target in an orientation other than point first. This occurred at ~70k rounds. The second throat measurement was taken in the same location as the baseline, and the measurement is .229". The delta of .005" is significant because Cerrosafe takes a mold of the chamber and barrel, and the measurement shows erosion of the grooves of the barrel, not the lands that contact the projectile. It is safe to assume that the lands would show similar or even greater erosion. The environmental conditions for this test were more extreme than what most in the industry would consider normal. The barrel was mounted on a select fire lower, and fired on auto for one to three magazines worth of ammo. After, the firearm was returned to storage directly under an A/C vent. Once cool, this cycle was repeated.

Figures 1 and 2 are baseline borescope images of a typical Strike Fighter barrel, taken at the gas port and also 2" in from the crown of the barrel. Figures 3 and 4 show the long-term test barrel after ~70k rounds.

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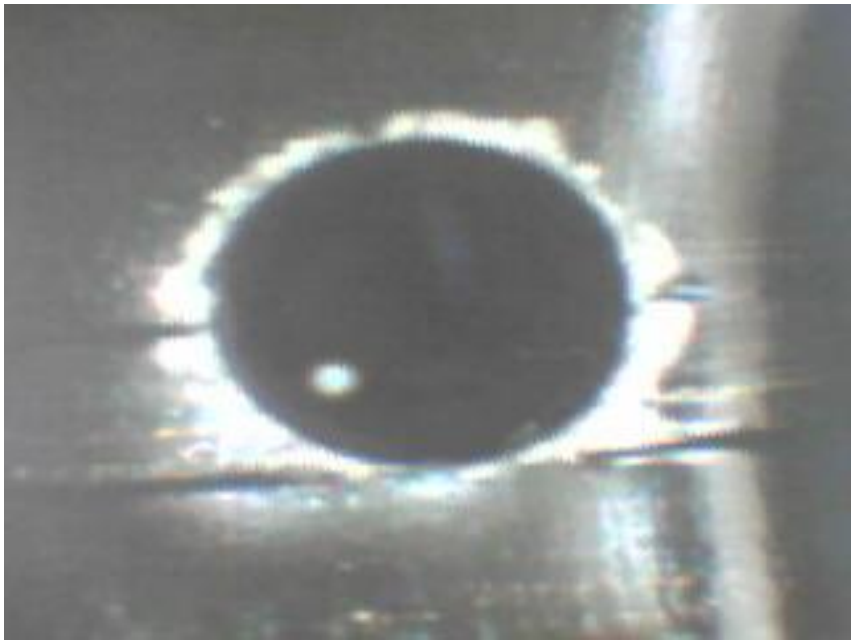

Figure 1. Baseline Gas Port

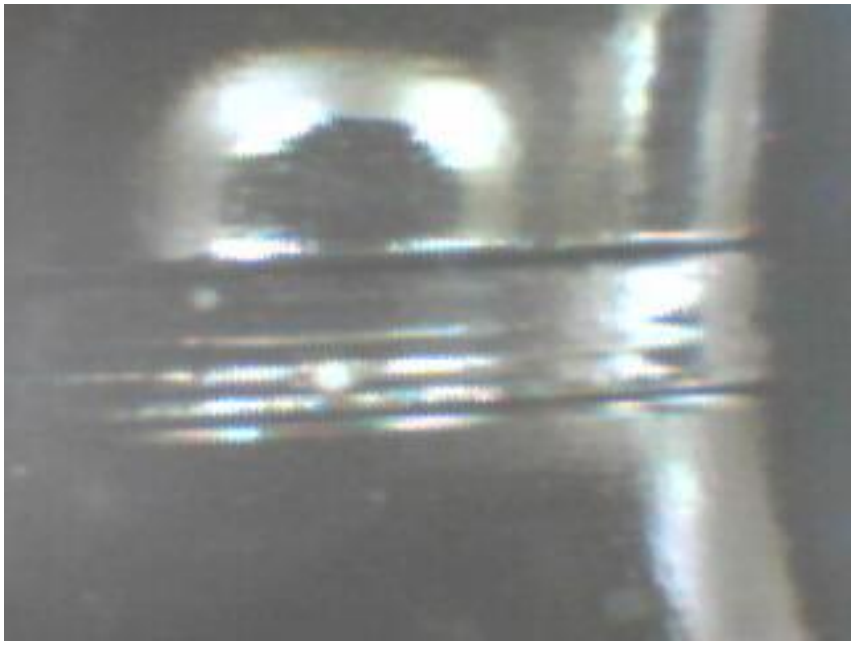

Figure 2. Baseline Barrel, 2" from crown

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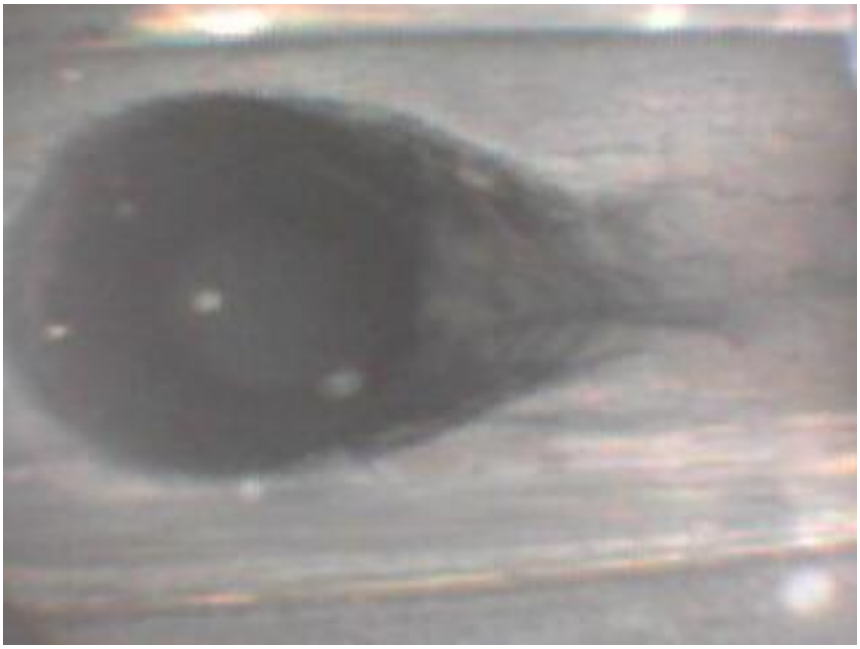

Figure 3. Eroded Gas Port

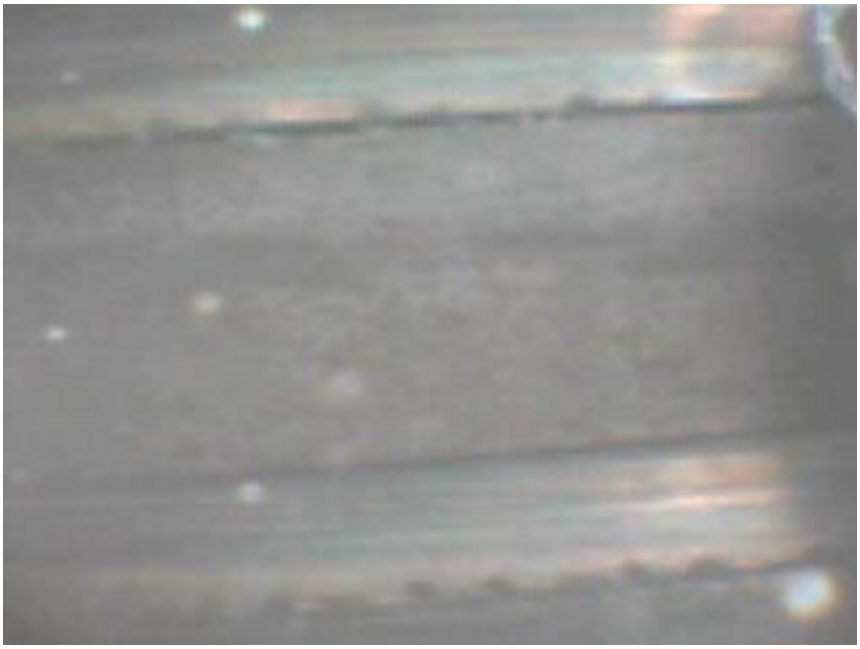

Figure 4. Rifling 2" from crown

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4 EVALUATION

4.1 ANALYSIS

The test articles performed in a predictable manner. The short barrel was more accurate while the long barrel provided superior velocity. All factory ammunition exhibited similar performance. All ammunition tested was sub-MOA accurate. The data collected from the hot barrel test was quite interesting. Both barrels held sub-MOA accuracy after heating to over 725 degrees Fahrenheit. The short barrel opened up from 0.683 MOA to 0.784 while losing 35.15 feet per second of average velocity. The long barrel dissipated heat better and opened up from 0.699 MOA to 0.828 while losing 28.5 feet per second of average velocity.

Another surprising observation is how well these barrels shot the 62 grain M855 NATO round. The 1:8 twist of the barrels seem to stabilize the heavier projectile better than the 55 grain rounds tested.

The collected data is contained in the following charts.

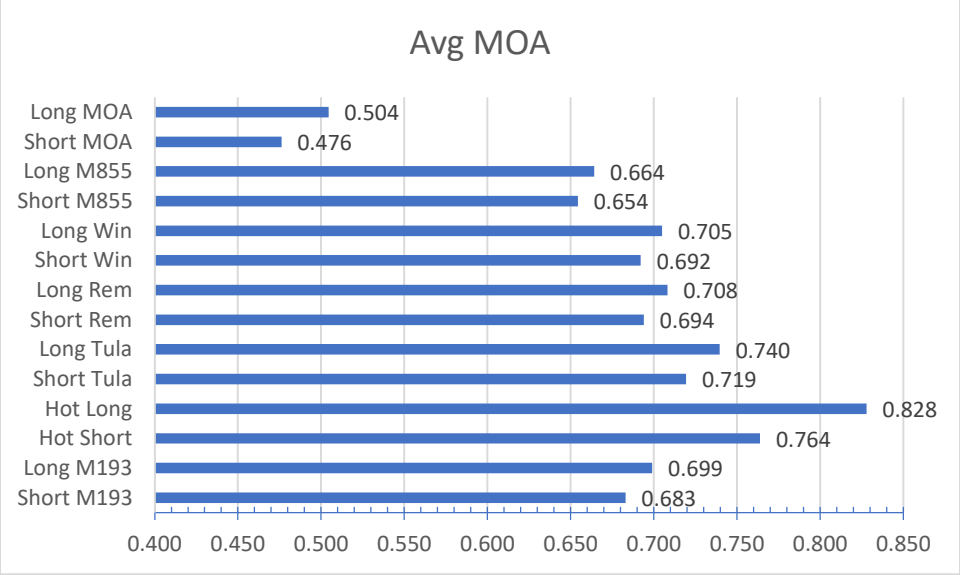

Chart 1. Average MOA

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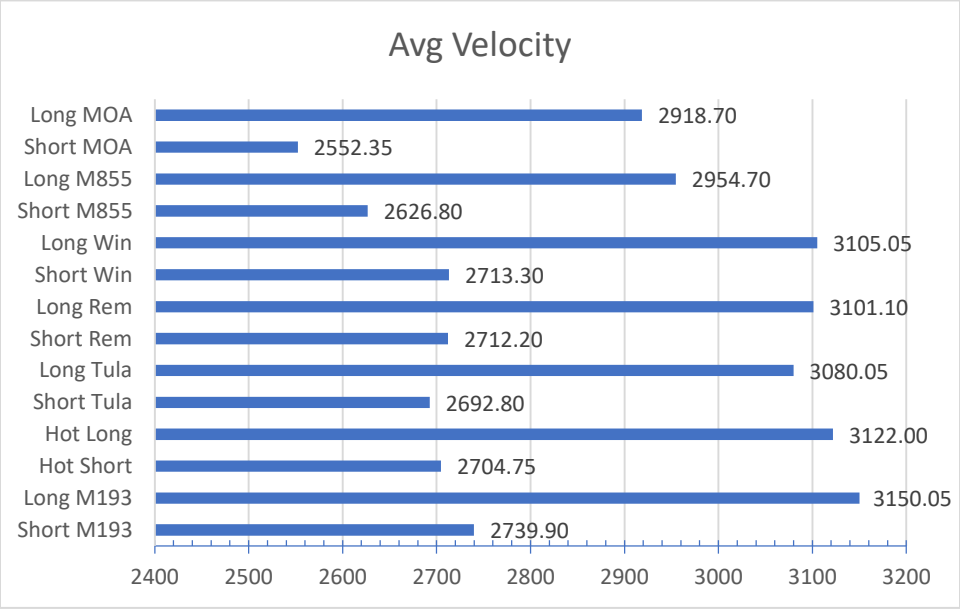

Chart 2: Average Velocity

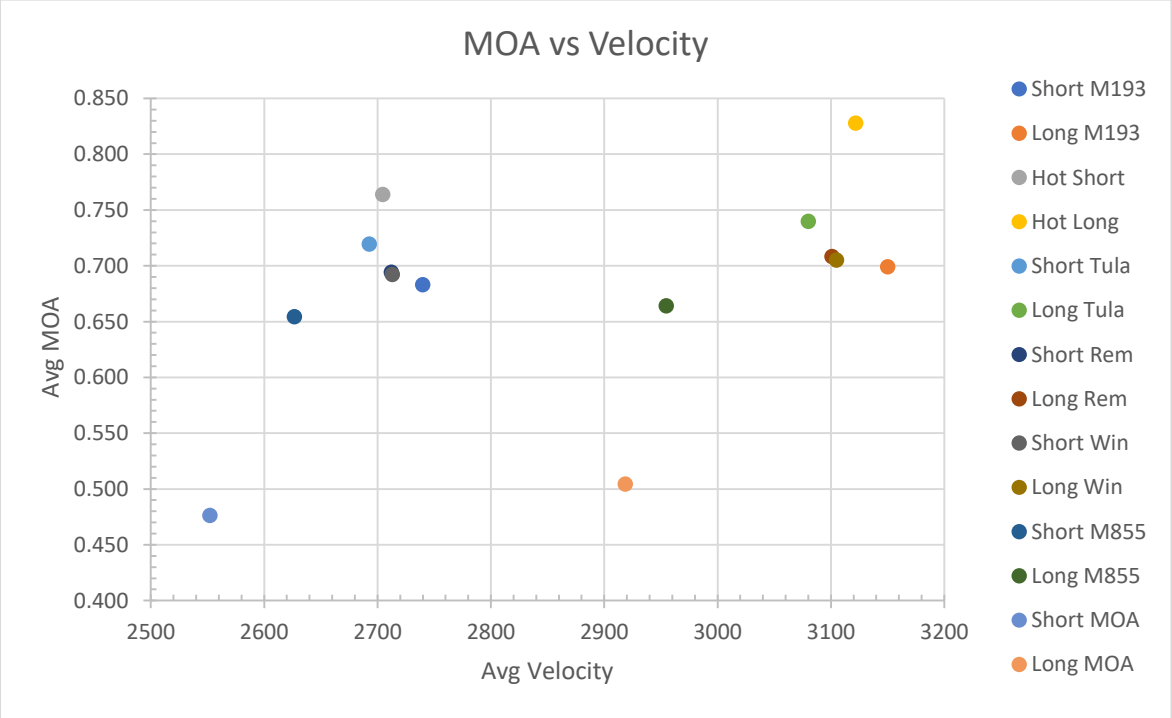

Chart 3. MOA vs Velocity

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4.2 Conclusion and Recommendations

The MIL-SPEC for the M4 Carbine and the M16A2 rifle require an accuracy of 3 MOA. The test articles in this report consistently printed groupings in the sub-MOA range, and with custom ammunition the accuracy was sub ½ MOA in the 10.3" barrel.

The barrels also performed admirably in the heat test. 7 full magazines were selected because this is the standard Army Ranger loadout. For a barrel to maintain sub-MOA accuracy after a simulated worst case scenario is impressive and reassuring.

These barrels perform exceptionally well and for the price point, are a bargain. The conditions of the long-term test were purposely harsh on the barrel to return a life-span on the conservative side. Having a non-chrome lined stainless steel barrel last approximately 70,000 rounds is very impressive. Most customers will never wear out this barrel.