



ATR1 Development Summary

The following summary is provided in response to concerns expressed about the ATR1 (American Tactical Rifle 1) aluminum alloy receiver that has been developed by Bobcat Weapons, Inc. d.b.a. Red Rock Arms.

The development team was well aware of the 7.62mm Williams aluminum receiver issues in the past. That is the reason it has taken 18 months to develop, Test and Evaluation (T&E) and begin production of the ATR1. We did not want to publicly mention the project and launch production until we were confident in the results.

That said, we did not have, and do not intend to have, an independent third party test laboratory, test the rifle at this point. Rather, we have designed, developed and tested it internally. The aluminum alloy receiver is NOT a duplicate of the .308 receiver. The .308 receiver did form the basis of the design, but several modifications were made considering the properties of aluminum alloy versus steel alloy. Most of those features are the subject of a patent filing. Obviously there were also modifications made to accommodate the .223 cal. / 5.56mm cartridge.

A brief summary of the testing and calculations concerning the receiver development follow:

First prototype receiver (1P) - 6061 T6 aluminum: 10,000 rounds.

Second pre-production receiver (2PP) - 7075 T6 aluminum: 12,000 rounds and 4 each 5.56mm M-16 proof cartridges (XM-197). This is the receiver that was presented at the December 3, 2006 SAR show.

In each receiver (1P and 2PP) critical measurements did not change, and head space did not change, and the locking shoulder remained secure in the receiver. During the tests of each receiver, the locking shoulder was removed and re-installed no less than 20 times. Therefore, it can be concluded that the receiver did not "stretch".

Aluminum alloy, 6061 T6, has a published tensile yield strength of 40,000 psi. Aluminum alloy, 7075 T6, has a published tensile yield strength of 73,000 psi. Therefore, a 180% increase in receiver strength is realized from the 1P receiver to the 2PP receiver. This translates to a demonstrated 1.8 safety factor (73,000 / 40,000). Practically, the 1P receiver did not indicate any signs of degradation as measured by dimension change, including headspace change (receiver stretch); in material that has a strength of 40,000 psi. The 2PP receiver (production design receiver) has a material strength of 73,000 psi; 1.8 times greater than the 1P receiver.

Also, it is important to note that the total energy in a .223 cal./5.56mm cartridge is about one third that of a .308 cal./7.62mm cartridge. So, the stress applied to the receiver is greatly reduced.

Since ammunition was shot through the rifle as fast as possible and on a continuous basis (at test intervals) during the testing phase, the barrel was literally "toasted" as indicated by the scaling on the outside surface of both the 1P and 2PP rifles barrels. However, there was no problem replacing the worn out barrel in the 2PP receiver at 10,000 rounds. There was no galling or seizing or damage to the receiver or threads. A new barrel was installed for the last 2,000 rounds. This demonstrates that the heat generated from rapid and continuous firing is not causing degradation of the receiver.

This information may be shared, verbatim. Please note that the quantities stated herein are not exact. For example, 10,000 rounds is probably plus or minus 500 rounds. The development firing log documents exact quantities. A variety of ammunition to include reloads, Wolf steel case and Wolf Gold, Federal 5.56mm (M193 military) and 5.56mm, (XM-197 military) proof cartridges were used in the development testing. A variety of magazines manufacturers and types to include plastic, Okay, Defense Solutions, H&K, and several no-name manufacturers were used in the development testing.

The rifle will be going to at least three professionals for T&E in the next several months