

SHD STAFF REPORT

By: Harry Fleming and Randy Long

January 2008

The POF 5.56mm Rifle

SHD Consulting began working with Frank DeSomma, President of Patriot Ordnance Factory, in early 2004 on the refinement of POF's gas-piston operated 5.56mm rifles, specifically the P-415 and the P-416. We were interested in his designs that eliminate the gas impingement system in favor of a single unit gas piston / operating "pushrod." No powder fouling is exhausted into the receiver and excessive heat is kept from the bolt carrier group and the chamber. Combined, these improvements reduce the problems that plague the military M4 carbine such as gas port wear, excessive chamber heat, increased pressure curves and the related shear stresses to ejected casings and the bolt carrier group. In the subsequent three years, our test rifles have run demonstrably cooler than the conventional gas impingement rifles with little to no lubrication. Most importantly, we have experienced reduced field maintenance, wear and breakage over our traditional 5.56 mm AR-type rifles.

Our initial experience with POF began with a pair of P-415 series rifles taken directly from the factory. The break-in procedure consisted of simply shooting about 700 rounds of FMJ the first day on the range per rifle. We did not lubricate the weapons, clean the barrel or the receiver on either rifle. During our on-going tests we have shot more than 33,000 rounds and 25,000 rounds respectively, through these two test weapons. The rifle with 33,000 still shoots inside a 30 mm circle with commercial quality ammo. The only breakage occurred after approximately 23,000 rounds in the higher round count weapon, when the pushrod bent during firing. The operator did not realize it and continued shooting. After a couple of malfunction drills the shooter managed to break the head off the pushrod. Once we obtained a replacement pushrod, the user simply unscrewed the gas plug, removed the piston and the broken pieces fell out. He inserted the new pushrod effecting what could be called a simulated "combat repair." No other parts have been replaced since and no malfunctions that could be attributed to the operating system have occurred in this rifle. Of the 30 POF rifles we have used, the only other malfunction occurred in a discontinued rifle shooting low-pressure ammunition. The gas port had been machined with a smaller, out-of-tolerance diameter, and mistakenly left the factory. No other malfunctions or stoppages have occurred in any of the other POF 5.56mm rifles we own or have used. This is phenomenal reliability for any firearm.

The POF 7.62mm Rifle

The P-308 is comparable to POF's 5.56mm line of gas piston operated rifles, but this rifle is designed specifically for the powerful 7.62mm x 51mm cartridge. Handling the rifle, the examiner is immediately impressed with the weapon's solid appearance and tight build quality. Charlie Cutshaw in Defense Review describes the weapon's unique features brilliantly so we defer to his article in this regard. Briefly, all POF weapons including the P-308 are CNC machined out of the best materials available, operate on the pushrod system, don't require lubrication and incorporate patent-pending reliability enhancements. Readers are urged to examine the detailed photos and the P-308 weapon specifications found at the POF-USA web site and to explore the care and craftsmanship with which this rifle is constructed.

Because the P-308 is based on the 415 series, the fire controls are the same save the ambidextrous bolt release and absence of a forward assist. The release may prove a benefit to some users, but until this type of bolt release becomes somewhat universal, we would not choose to make its use a standard practice. The right side of the bolt release is located within easy reach of the trigger finger and works well, if you can remember it's there. The addition will also allow for easier manipulation by left handed/left eye dominant shooters. Lack of the forward assist is not a detriment though. We believe that if a bolt is not closing on its own or with a firm push in the area where the bolt carrier is relieved, it is better to recycle the action than to force a potentially bad round into the chamber.

All the components for the P-308 are manufactured in POF's Glendale Arizona facility. One hundred percent of labor and POF weapons' materials, parts, coatings, platings and heat treatments are sourced within the United States, most in the greater Phoenix area. This allows POF complete control over the quality and availability of the weapons' parts. It is absolutely critical that professional weapons handlers have access to this type of supply chain since our business is, by its nature, one of crisis management.

Initial Evaluation of the P-308

Including Don Alexander and Harry Fleming as core instructors, SHD has among its staff, Randy Long, a Colorado peace officer for more than 25 years and Rocky Senatore, a retired Special Forces soldier and sniper. Together we have combined experience of over 90 years of SWAT, Special Forces and commercial firearms experience with individual weapons. We are but a small and mobile cadre of tactics trainers with restricted funding for laboratory-style weapons testing. However, we must attempt a real world evaluation of any new gear that we think may offer the professional operator an advantage in the field. It is then important to communicate this information to our clients in a timely fashion. Therefore, we offer here the preliminary results of our on-going testing of the POF P-308 rifle.

Early in 2007, DeSomma shipped us a 16.5" barrel P-308 for evaluation. The rifle was fitted with a fluted stainless Rock Creek Barrel and custom muzzle brake. Shooting or standing beside someone who is shooting with a muzzle brake on their rifle can cause a great deal of hearing discomfort from the over pressure. We are not fans of these devices

in all shooting environments. Compensators and muzzle brakes work well in some applications such as large-bore target shooting, hunting and of course on extreme calibers, but the 5.56mm and 7.62mm military and commercial loadings don't cause the POF gas piston rifles to recoil enough to warrant its incorporation into the design. A recommendation to end-users who will use these rifles for serious work, is to replace this device with a flash or sound suppression apparatus for use in tactical environments.

The collapsible stock on the 16.5" test gun left much to be desired; we changed it out in favor of the more rigid collapsible from Magpul. The Timney trigger was preset at a crisp four-pound break. The extremely short reset of this trigger aides in making faster following shots. The Modular Railed Receiver, or MRR, is an improvement on the previous design. The MRR provided a solid platform to mount a variety of optics, lights and other devices during the test. All flat-top AR-15 / AR-10 receivers lack structural integrity as compared to standard versions with integrated "carry handle" receivers. The MRR system is really a necessity for operators using a lot of attachments, particularly a vertical grip. More importantly, when pulling hard against the vertical grip to lock the rifle in place, it produces stress in critical areas subjecting the bolt to binding or breakage. The MRR's design adds strength to the barrel/receiver connection thus mitigating these stresses.

After function firing in Texas, the 16.5" P-308 was sent to Randy Long in Colorado for evaluation. His agency's SWAT team was seeking to replace its bolt-action rifles with dual purpose, semi-automatic weapons in order to provide them with a CQB and sniper capability. Fifteen hundred rounds were fired without a single malfunction as Randy collected the accuracy data. The P-308 maintained sub-minute accuracy throughout the test as shown in "Colorado Ballistic Test Results." The tightest groups with lowest dispersion occurred with Hornady 155gr. AMAX and secondly with Federal 165gr. Tactical Core Bonded. These results are remarkable from a short-barreled, magazine-fed, .308 caliber production rifle. The SWAT members of Randy's department reported lower felt recoil in this .308 platform and the ability to place 2-3 round responses inside a 3-5 inch circle during the short distance and rapid fire portion of his test.

Further testing was conducted in Arizona's punishing, mirage-producing heat of August. Here, two more variants, one with a 14.5" and the other fitted with a 24" barrel, were provided by DeSomma. The 14.5" rifle was fitted with a Surefire muzzle device for use with the 7.62 Surefire K Model Suppressor. Randy, Rocky and I met just north of Phoenix and put all three rifles through their paces.

We obtained our accuracy data (see "Arizona Accuracy Data") prone-shooting a variety of ammunition including; Federal Gold Medal, Black Hills, Hornady, Federal Tactical and other off the-shelf imports and surplus ammo. All three rifles cycled with all types of ammunition without a single malfunction. We shot the rifles using bipods and rear bag support only. Accuracy of the rifles was consistently spectacular considering the ambient temperature and the fact that we used actual human shooters and not weapons vices.

Looking at the chart, we can see that the 14.5" suppressed weapon actually returned the most ½ M.O.A. or less groups across a broad range of bullet weights. Considering that all three rifles could post ½ M.O.A. groups, we attribute this to the Surefire suppressor's reduction in sound pressure, but perhaps more importantly, to the much reduced felt recoil. The suppressor not only attenuates the muzzle blast, but also reduced the felt recoil by at least half, therefore allowing the shooter to stay on target and mitigate any pre-ignition push on the weapon. Without suppressors, these weapons don't appear to produce sonic pressures above any other compensated .308 rifle and the felt recoil is dramatically lower than other rifles of this design. As the charts show, the rifle is completely capable of shooting sub-minute groups without the suppressor, but its addition shortens the learning curve of this rifle's muzzle report and recoil characteristics. In Arizona, the 16.5" rifle seemed to prefer the Hornady 168gr TAP followed by the two 155 grain loadings in the unsuppressed mode. Surprisingly, the shorter weapons were shot more accurately than the dedicated sniper 24" barrel version. We believe that the longer fluted barrel was perhaps subjected to more whip from the semi-auto's reciprocating parts and/or from the bullets' longer travel down the rifling (dwell time). DeSomma informs me that this longer version is now being replaced by a 20" barrel version for production.

After accuracy testing, we replaced the scope on the 14.5 and 16.5 guns with an Aimpoint Comp M3s and used the rifles for CQB distance shooting at targets out to 25 yards. Given the overall weight (approx. 8.5 lbs) to caliber ratio, each was very easy to handle. Two and three round responses were easily kept inside a 3 to 5 inch zone. All shooters involved in the test agreed that this rifle is completely capable of working in a dual role (sniper, CQB). One problem did arise in the 14.5" suppressed rifle. Shooting the rifle with the fastest rapid fire we could muster, it malfunctioned resulting in failure-to-extract stoppages. We did not have this issue during the accuracy testing (slow fire). With the suppressor attached it illustrated the need for an adjustment to the P-308 extractor spring. The standard spring at 19 lbs was inadequate as the bolt/carrier group gained velocity through the addition of the suppressor. DeSomma worked with Wolff Gun Springs to build a stronger extractor spring designed to ensure reliable operation. Subsequent testing by POF indicates this enhancement solved the extraction issue and the new spring is now standard in all P-308 rifles. It was fortuitous that DeSomma witnessed the problem as it allowed him to identify and correct an extractor spring weakness.

Finally, we engaged multiple steel targets ranging in distance from 125 to 550 yards. All three variants of the P-308 proved their longer-range accuracy. The 14.5" inch barreled gun shot right alongside the 24" gun at the longer distances, albeit with a tad more correction for elevation. We did chronograph the 14.5", 16.5" and 24-inch barrel rifles. There was an obvious loss of velocity on the short-barreled guns (see tables) but the come-ups were close and targets were easily engaged out to stated distances.

Final Thoughts

Over the years, many marksmen, both in law enforcement and the military, searched for a semi-automatic .30 caliber rifle that could serve the dual-purpose roles of designated marksman/sniper and CQB. If someone could build a semi-auto rifle that could meet the five major criteria of: 1. Reliability, 2. Accuracy (MOA or better), 3. Affordability, 4. Caliber (.30 caliber minimum) and, 5. Portability (weight, barrel length, etc.), there would be an instant market. This is because the magazine-fed, .308 caliber rifles currently available are either built with loose tolerances giving them an inherent loss of accuracy outside that useful for precision shooting, or are manufactured toward the dedicated sniper role and hence are too heavy, cumbersome and machined with tight, unreliable tolerances. Our accuracy testing proves that this weapon can serve as a sniper's precision rifle even in 14.5" barrel lengths weighing eight and a half pounds. As further proof, Randy's experience prompted his department to order two of the 14.5" P-308s fitted with the Surefire K Model Suppressor. He states he's been waiting his whole SWAT career for this very rifle.

Reliability is another matter. It is common knowledge within the firearms industry that the current 5.56mm M4 carbine suffers from design flaws that rob it of combat reliability. Hence we see the proliferation of the pushrod weapons including foreign offerings by Germany's Heckler and Koch in the form of the HK 416. This weapon takes the Mean Rounds Before Failure rate in the M4 of approximately 5,000 and can double or triple it to 15,000 rounds. (Defensenews.com "U.S. Army Has a Better Rifle, But Not For All"). H&K is also producing prototype .308 weapons in the HK 417, but you and I cannot own or even test either of these weapons. We *can* own POF's American-designed and American-manufactured weapon that, in our hands, beats the failure rate of the HK 416 and almost outlasts *five* M4 carbines before stopping. This is the type of equipment that SHD trainers seek for themselves and for their clients.

We have every reason to believe that the P-308 will follow the P415 in reliability even though it is chambered for a more powerful cartridge. The entire rifle has been engineered to withstand the greater punishment. We therefore will be using POF rifles in both 5.56mm and 7.62mm chamberings in our classes and enthusiastically recommending them to our clients and students. We will continue to report our findings with the P-308 as we put more rounds through the rifle.

Additionally 1265 rounds of various types and brands of .308 ammunition were fired through the POF rifle in CQB drills in one afternoons range session by several shooters. We found that most
COLORADO BALLISTIC TEST RESULTS

DATA COLLECTED: June 26, 2007, Clear Creek County Range, Elev. 8,670 feet, 85 degrees, no wind, shot from bench with sandbag rest using Leupold 3.5 – 10 X MRT scope @ 100 yards. Average of five, 5 round groups shown for size. Rifle- POF .308 16.5 inch barre, adjustable stock, Timney 4.0 lb. trigger

<i>AMMUNITION</i>	<i>AVG. VELOCITY</i>	<i>GROUP SIZE</i>
Federal 168gr HPBT Match	2564	.750 – 1.250
Federal 165gr Tactical Core Bonded	2548	.250 – 1.00
Hunting Shack M118 175gr HPBT Match	2518	.500 – 1.125
Hornady 155gr AMAX	2685	.250 - .750
Winchester 168gr HPBT Match	2606	1.00 – 1.50

shooters could easily fire four rounds in less than one second while running rhythm drills. There were absolutely no stoppages encountered during any of our testing.

24 INCH BARREL WITHOUT SUPPRESSOR = 2644 fps

ARIZONA BALLISTIC TEST RESULTS

DATA COLLECTED: August 5, 2007, McMillan Range, 90 degrees, no wind, shot from prone with sandbag rest using Nightforce 18X scope and fixed MagPul stock @ 100 yards. Rifles used: POF .308 with 14.5 inch barrel, 16.5 inch barrel and 24 inch barrel. Timney 3 lb. trigger. Surefire Suppressor used as noted.

AMMUNITION	BBL.	SUPPRESSOR	GROUP SIZE
------------	------	------------	------------

POF .308 W/ 14.5 INCH BARREL

Hornady 110gr TAP	14.5	yes	.250 - .550
Hornady 110gr TAP	14.5	no	.50 - 1.00
Hornady 155gr TAP	14.5	yes	.038 - .500*
* Three round group measuring .038 shot with this ammo!			
Hornady 155gr TAP	14.5	no	.250 - .500
Hornady 168gr TAP	14.5	yes	1.25 - 1.50
Hornady 168gr TAP	14.5	no	1.25 - 1.50
Hornady 168gr Match	14.5	yes	.280 - .750
Hunting Shack 168gr Amax	14.5	yes	.300 - .500
Hunting Shack 168gr Amax	14.5	no	.750 - 1.00

POF .308 W/ 16.5 INCH BARREL

Hornady 110gr TAP	16.5	yes	.500 - 1.00
Hornady 110gr TAP	16.5	no	.500 - 1.00
Hornady 155gr BTHP	16.5	no	.250 - 1.00
Hornady 168gr TAP	16.5	no	.500 - .750
Winchester 155 A-Max	16.5	no	.250 - 1.00
Winchester 168gr Barnes	16.5	no	1.00 - 1.750

POF .308 W. 24 INCH BARREL

Hornady 110gr TAP	24	no	1.00 - 1.50
Hornady 155gr Match	24	no	.700 - 1.00
Winchester 155gr A-Max	24	no	.500 - 1.750
Hornady 168gr TAP	24	no	.500 - .780
Hunting Shack 168gr Match	24	no	.750 - 1.100

VELOCITY COMPARISON (AMMO USED HORNADY 168GR TAP)

14.5 INCH BARREL WITH SUPPRESSOR = 2427 fps
14.5 INCH BARREL WITHOUT SUPPRESSOR = 2424 fps

16.5 INCH BARREL WITH SUPPRESSOR = 2475 fps
16.5 INCH BARREL WITHOUT SUPPRESSOR = 2484 fps

Surefire

A thank you to Surefire Suppressors is in order. During the last phase of testing they were gracious enough to not only provide their 7.62 models, but a military veteran and subject matter expert to go with it. It was so effective at reducing the already soft recoil; it was given partial credit for the smallest group shot in Arizona. In addition it made no appreciable change in the point of impact when attached. The addition of the suppressor also illustrated the need for an adjustment to the P-308 extractor spring. The pistons in all POF rifles are designed for use in either the non-suppressed or suppressed mode by simply removing the piston and reversing the direction. This procedure can be easily performed in the field in a matter of seconds.

For more information or questions about this article contact the following;
Harry@shdconsulting.net, Don@shdconsulting.net, RLong@clearcreeksheriff.us, Frank DeSomma at POF-USA.com or Rocky Senatore at Rocky@dbtdefense.com