

DARPA's XM-3 Sniper Rifle

By Steve Reichert

FOR YEARS MARINE SNIPERS HAVE BEEN USING THEIR COVETED BOLT-ACTION M40's (A1/2/3/5) TO TAKE OUT ENEMIES ALL OVER THE WORLD. THESE RIFLES HAVE ALL BEEN BUILT BY HAND AT THE MARINE CORPS PRECISION WEAPONS SHOP (PWS) IN QUANTICO, VA. THE MARINES AT PWS BUILD SOME OF THE MOST ACCURATE SNIPER RIFLES IN DOD, YET WHEN 9/11 SENT THE MARINES INTO IRAQ AND AFGHANISTAN THE SHORTCOMINGS OF THE NEW M40A3 WERE FAST TO SHOW. MARINES ON THE FRONT LINES NEEDED RIFLES THAT WERE SHORTER, LIGHTER, WITH BETTER FIELDS OF VIEW AND QUIET. THE WEAPONS PROCUREMENT TIMELINES IN NON-SPECIAL OPERATIONAL FORCES ARE RATHER LONG. WHAT SHOULD TAKE MONTHS TYPICALLY TAKES MANY YEARS.

ENEMY SNIPERS TAKE A TOLL

When urgent needs statements (UNS's) started coming from the sniper platoons on the front lines one government agency was quick to respond, The Defense Advanced Research Project Agency better known as DARPA. In 2003 DARPA became interested in helping the Marine snipers counter insurgent snipers who were rather successful in killing a number of Marine snipers in their hide sites. When our nation's elite snipers are killed by enemy snipers it tends to get the attention of all groups in DOD, DARPA being no exception. DARPA looked at the problem from a technology standpoint. What could DARPA do in order to increase the Marine snipers chances of survival, while increasing their lethality? One project they were working on was a sniper detection system called the Boomerang. This system was being field tested at Camp Lejeune in 2004 against Marine Snipers on Hathcock Range. The Marine Corps representative to DARPA Col Otto Weigl was on deck watching the Marine snipers fire against the system. The Col noticed an older gentleman getting down in the dirt and talking to the Marines behind the rifles. The man asking the Marine questions was LtCol Norm Chandler USMC (Ret.). LtCol Chandler was responsible for building Hathcock range in the 90's so anytime a new technology was being tested on the range he took interest. LtCol Chandler noticed the Marine was having issues with his optics, and asked the Marine what issues they are having in general with their current issued M40A3's. That day on the range Col Weigl was exposed to the shortcomings of the Marines sniper rifles and equipment.



An XM-3 on duty with 2nd Force Recon in Iraq in 2007

DARPA GET'S IN BED

I was the SNCOIC of the 2nd Marine Divisions Pre-Sniper course in 2004 when I got a call from LtCol Chandler. I had known him for years and knew his company built some rock-solid rifles. LtCol Chandler told me he had spoken extensively with Col Weigl and that the Col might be able to provide some technological assistance to the next set of units heading out the door. I found it hard to believe that an O-6 would have taken such an expressed interest so I called Col Weigl's office at the Pentagon. The Col explained what DARPA could and couldn't do, and asked to arrange a meeting with snipers and some key leadership within the Division. That year DARPA held a small conference with Marine snipers to gather information on equipment and desired improvements. DARPA decided to do an evaluation of off the shelf equipment that could be acquired, deployed and evaluated that could help develop a new DARPA program.

“In mid-2005 DARPA provided a deploying MEU with spotting scopes, laser range finders, clip on night-vision devices for weapons, carbine suppressors and deployed 2 Mirage 1200 counter sniper systems. DARPA also provided night vision and suppressors to the Marine Corps Warfighting Lab’s first distributed operations platoon deployed in Afghanistan.” Col Weigl

The initial equipment that DARPA fielded was used in combat on a daily basis. The technical reports and after action reports received provided DARPA with the justification needed to start the M40XM program. Since DARPA had used Iron Brigade Armory to get the equipment to the Marines they had a great working relationship. The folks at DARPA understood what a battle hardened rifle needed to so it was a natural fit for them to select Iron Brigade Armory. In 2005 DARPA contracted IBA to build and test lightweight sniper rifles that incorporated the improvement’s the snipers desired in combat.

DARPA’s mission was to develop a complete sniper system for both day and night operations. The system had to be lighter, and smaller than the existing M40’s while having better accuracy, clip-on night vision that did not require a re-zero, better optics, and better stock and suppressed.

Getting funding for the project was not an issue according to Col Weigl” Funding for the prototypes XM-1 through XM-3, as well as the 56 full systems was not a problem since there was interest from the DARPA director Tony Tether, SOCOM General Brown and USMC General Mattis.” . The support and funding made it possible to expedite the development and fielding of the systems.

DEVELOPING THE M40XM

IBA began development of the M40XM1 in early 2005. From the onset they wanted to develop a rifle that was lighter, shorter, and possessed a suppressor & night vision capability. Some of the issues with the Army’s M24 and the Marines M40A3’s were long barrels, long actions (M24), weaver rails (M24), heavy stocks (M40A3) and fixed power optics. IBA had to look at each issue on the M24 and M40A3 with a critical eye. DARPA wasn’t interested in them developing another M40A3 boat anchor. IBA looked at all the parts in a standard Remington 700 action and began



One of MARSOC’s legendary Snipers with the XM-3 in 2008

working to lighten and modify any factory parts to achieve better results.

So what made the XM3’s so different? The receivers were clip slotted to accept the reverse engineered titanium picatinny rail (IBA Design) to fit firmly. The receivers internal threads were opened up to 1.070” to allow a perfectly true alignment with the bolt face and chamber/bore dimension. The chamber was cut to accept M118LR ammo. The titanium recoil lug was built with the 1.070” diameter opening for the larger barrel threads and surface ground true. The stainless steel magazine box was hand fitted and welded to eliminate movement when assembled. The stocks were custom made specifically for the project . The barreled actions were bedded in titanium Devcon and Marine Tex to allow for decades of hard use without losing torque or consistency.

During the development IBA went through a total of five different configurations before settling on the XM3’s final configuration. The 1st and most obvious departure from a regular M40A3 was the stock. The Marines who used the M40A1 loved the sleek, low profile stock. It didn’t weigh much, it was easy to maneuver and fit most guys well. The only down fall to the McMillian A1 stock was the low comb height, and the fact that the forend was not wide enough to accept the new in-line night vision mounts. I called McMillian Brothers out in AZ and spoke to Mr. McMillian himself. I explained what the XM program was about and asked if he could take an A1 rear, raise the comb 1/2” and use an A3 forend. He said it wouldn’t be a problem and they got on it. Within 3 weeks I had the new A6 (at the time, now the A1-3) stock at my doorstep. Now the stock problem was solved!



A SSgt with 2nd Force Recon fires the XM-3 from a seated position

The second major departure from the sniper rifles of the day was primarily barrel length and contour. The barrel had to be short enough to allow for maneuverability, yet long enough to deliver a 10" group at 1000 yards. If the barrel was too heavy, it would decrease the maneuverability, yet if the barrel was too light it would only be able to shoot a few rounds before the groups started to shift due to barrel temperature. IBA tested a number of barrel lengths, ranging from 16-20" and in different contours. Each rifle with a different length was assigned a XM designator starting with XM1 through XM3. In each case everything on the prototype rifles was kept the same, minus the barrel. During the final phases of testing it was found that the 18" barrels had no issued keeping up with their longer 20" brethren. The final barrel length was set at 18.5" and the contour was a modified #7. The straight taper on the barrel was only 2" vs. 4" and the overall diameter at the muzzle was .85" vs. .980. This helped reduce a lot of the rifles weight while not negatively effecting accuracy or effective range. A number of the groups at 1000 yards were -1 MOA.

Once the final rifle configuration had been settled upon the prototype XM-3 was sent to the Naval Surface Warfare Center in Crane Indiana for testing, safety certification and a comparison test. The tests conducted at Crane were very scientific in nature. Every round was fired on a fully instrumented range and recorded. The XM-3 was tested side by side with the Mk13 Mod 5 and the Mk 11 Mod 0. The XM-3 did extremely well during testing. A full report from NSWC Crane can be found here ([link](#)).

The time it took IBA to develop and field the XM3 rifle was light years ahead of typical government programs. By the time the 1st XM3 rifle had been shipped out

the door only 12 months had passed since DARPA had contacted them.

THE XM-3 ROLLS OUT

You would think with such support from SOCOM and General Mattis that the Marines would be chomping at the bit to get these new weapons systems in hand. Despite the interest from Gen Mattis some Marine program managers at Marine Corps Systems Command (SYSCOM) said that there were no requirements for a new sniper rifle and made DARPA jump through numerous hoops. The Marines tested and evaluated the XM-3 in Quantico. SYSCOM required an official safety certification from the Navy's Surface Warfare Center, and once the bureaucratic push back from SYSCOM, PWS and unit armory and supply officers was overcome the systems were sent to the units.

In 2006 the Marine Corps started to take delivery of the XM-3 sniper weapon system. The system included:

- Rifle – XM-3
- Hardigg iM3200 Storm Case
- Suppressor – Surefire FA762SS w/ soft case
- Day Scope – Nightforce NXS 3.5-15X50 MD w/ ZS
- Night Vision Unit – AN/PVS-22 UNS w/ soft case
- Harris Bipod - BRMS w/ PodLoc
- Eagle Cheekpiece
- Turner Saddlery AWS Sling
- Dewey Cleaning Rod and Bore Guide
- Seekonk Torque Wrench @ 68 in lb.
- Kleinendorst Bolt Disassembly Tool
- Allen 5/32 T-Wrench
- SK T30 T-Wrench
- Kobalt 1/2" Adapter
- 3 Bore Brushes

A number of the 1st units to receive the XM-3 were West Coast infantry battalion's. Col Weigl had been working with one of the Corps top snipers GySgt Ken Sutherby to ensure the rifles made a smooth transition into the fleet. GySgt Sutherby was instrumental in insuring that the sniper platoons who received the XM-3's knew how they operated, and what they could and could not do. This was the 1st time the Marines had seen in-line night vision devices that did not require them to be zeroed to a specific rifle. It was also the 1st time the Marines had variable power scopes and most importantly the 1st time they were able to shoot their rifles suppressed.

Col Weigl, Norm Chandler Jr were on hand at Camp Pendleton when the 1st shipment of rifles was delivered to I-MEF. As with all IBA rifles the XM-3's were test fired and zeroed before leaving the shop. When the Marines cracked open the cases and went to zero the rifles they were pleasantly surprised that all the rifles were within a ½ MOA of their point of aim. The Marines were able to hit their targets all the way out to 1000 yards with ease. That night is when the Marines jaws really dropped. After the sun went down the Marines tossed on the PVS-26 universal Night Sights. Using their prior data more than 3/4 of the Marines had 1st round hits at 900 yards, fully suppressed!

The Marines loved the fact that the rifle was more compact, lighter and had additional capabilities their existing M40A3's. For the most part the rifle was able to keep up accuracy wise with the longer barreled M40A3's. Even though the barrel on the XM-3 was a full 6 inches shorter muzzle velocity was only reduced by 100fps on average. Did this make the rifle less accurate? No, it just meant that depending on the environment the rounds sometimes went trans-sonic prior to reaching the 1000 yard mark.

XM-3 GOES TO WAR

Shortly after I-MEF took receipt of the XM-3's the first units in II-MEF took receipt of theirs. By mid-2006 there were dozens of XM-3's in Iraq quietly killing insurgents. One of the first reports back described a team of three insurgents emplacing an IED about 400 yards away from the team. It was just after midnight when the team shot the 1st insurgent. The other two had no idea where the shot came from and starting running directly towards the team. The sniper took out the second guy, while the third guy kept running towards the team. The third guy was dropped about 200 yards from the team's position. There were reports like this coming back from theater monthly. I thought the Marines themselves could sum up their thoughts on the XM-3 the best:

"I last deployed in 2008 and carried the XM-3 on every operation. The rifle shot great and the size was perfect for the insert platforms." GySgt USMC [MARSOC]

"I think the move to the XM-3 was great - beautiful gun - big step forward. Never had any problem with function (or malfunction) --- awesome rifle - love it." MGySgt USMC [2nd Force Recon]



XM-3 on duty with MARSOC

"The length of the XM-3 helped with employment issues as well. In an urban environment where you can get some stand off from your loophole, size is not such an issue. In the mountains of Afghanistan, and in the small mud buildings of our AO, we were often wedged into our positions. A shorter weapon was welcomed." Sgt USMC [Sniper Instructor]

"Why we haven't adopted this model of rifle, I have no idea. I love this rifle. If I could afford it, I would buy one myself." SSgt USMC [Sniper Instructor]

"The greatest advantage to this rifle compared to the M40A3 was the decreased weight, suppressor, inline night sight rail over the barrel, and variable power scope. That would not be significant nowadays, but back then, it was a force multiplier" CWO2 USMC [Marine Gunner & former Sniper School SNCOIC]

"The length of the rifle was its real advantage. To be able to t-bone it across your pack and not have it sticking as far out as our 40's was advantageous" SSgt USMC [Sniper School Instructor]

"Everyone in our platoon loved that gun. Nobody ever got to take it out with them because Gunny was so possessive of it. He called it "his gun" Sgt USMC [Sniper School Instructor]

"At the time, none of our 40's were set up with suppressors. That in my opinion is what gave it the advantage over the M40's" GySgt USMC [Sniper School Instructor]

"I personally shot over 1000 rnds through the XM-3 and had no issues. With M118 I held sub minute of angle groups back to the 1000 yrd line suppressed and non-suppressed. This was the norm and not the anomaly" CWO2 USMC [Marine Gunner & former Sniper School SNCOIC]

"These benefits are hard to explain to a commander that only leaves the wire under the protection of an armored vehicle. We tried one night, but our Battalion Commander could not see how any military unit could justify spending that much money on a weapon system. We explained to him that a lot of our heavy weapons cost a lot more. This was to no avail. In the end, I left him with a playing card that I had shot the spade out of from 100 yards using the XM-3" Sgt USMC [Sniper Instructor]

“All XM-3’s rifles (I mean every one) that I tested were sub-minute of angle guns at 300 yards with Black Hills ammunition and I never encountered any stoppages, malfunctions or failures to fire during any tests or field use” MGySgt USMC [Former Marine Rifle Team SNCOIC]

“All around the XM3 was the solution for a primarily urban fight the required long range shooting when the opportunity presented itself. The suppressed capabilities allow snipers to remain un-compromised and take more than one shot from a concealed position” GySgt USMC [Sniper School Instructor]

XM-3 ISSUES

One of the few pitfalls of the XM-3 program was it wasn’t an official program of record; therefore no structured training nor maintenance plans were in place nor ever implemented. This meant that if one of the rifles went down for whatever reason the rifles life was over. Although the XM-3 could have easily been maintained by the 2112’s SYSCOM wouldn’t officially let them work on the rifles therefore reducing their productive lifespan in the hands of the Marine snipers. I know of a few 2112’s who would do the right thing and fix any sniper rifle a Marine was using, regardless of what paperwork was or wasn’t on file at SYSCOM.

Another issue from a shooters point of view was the optic selected for use. The optic was the same optic used by the SEAL’s on their Mk13’s, but it was adjusted in MOA. When the XM-3’s were fielded the Marines just started switching over to the SSDS with MIL adjustments. The veteran snipers knew MOA adjustments but not all really understood them since their Unertl 10X’s were single revolution BDC’s. New snipers coming out of sniper school who knew mil’s, now he had to learn MOA. The scope also lacked the reticle in the 1st focal plane. This meant the only way to do correct mil readings or moving target leads was to power the scope to its max. Some of the unit’s used the Nightforces and did great with them, others never could figure out MOA’s and either put on old Unertl 10X’s or the new SSDS’s.

Most of the XM-3’s became theater assets, meaning that they were left in the combat zones and were transferred from unit to unit. This meant that an incoming Marine sniper was issued the XM-3 upon entry into his area of operations. The Marine probably had no prior training and most importantly data someone else gathers yet he had not confirmed.

7 YEARS LATER

In doing the research for this article I found that most of the XM-3’s had been sent to the Marine Corps Logistics Base (MCLB) Albany Georgia. Had there been a program of record the 2112’s could have worked on the rifles and kept them in service. As it stands right now the 48 XM-3’s in Albany are slated for destruction in July/August of 2012. Four rifles remain in the fleet.

The Marines could do a few things with the XM-3’s to ensure they continue their service in some way shape or form. 1st. They could wisely spend some end of year funds to get the rifles refurbished and upgraded by the manufacture. This would add 52 more sniper rifles to the inventory bringing the Marine Corps total number of sniper rifles just shy of 1200. Total cost to have all 52 rifles re-barrled/re-bolted/re-bedded and upgraded to a detachable box magazines would be just over \$100k. 2. The rifles could be sent back to the manufacture where they would be any worn parts that would cause safety issues would be replaced, and the rifles would then be sold in the same manner as Remington is doing with the Army’s old M24’s to raise money for the Wounded Warrior Project. The 3rd option would be to have every rifle chopped up and dropped in the dumpster.

It would be a shame if these fine combat sniper rifles were destroyed. I hope that the Marine Corps does the right thing and puts these rifles to use, either killing insurgents or raising money for our wounded warriors. I feel kind of attached to these rifles since I was involved heavily with their development. I’d still have my own XM-3 today but times were tough not too long ago so I sold my XM-3 to a Marine Sniper instructor in Hawaii. I hated to see it go, but glad it went to a fellow shooter. To this day, even with over 6,000 documented rounds he’s still getting 1/2-1/3 MOA!

Semper Fi
Steve Reichert

www.SteveReichert.com
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