

VI PRODUCT IMPROVEMENT TASKS

Arms Rack

Blank Firing Attachment

Top Sling Adaptor

Modified Buttstock

General Purpose Cleaning Brush

Plastic Cased Blank Ammunition

M203 Grenade Launcher Attachment

Die Cast Receiver

Quadrant Sight

ARMS RACK, XM12

FOR M16/M203

BACKGROUND:

Due to the rapidly increasing rifle inventory and recognizing that an adequate storage rack was required, development of the XM12 arms rack was initiated in 1968. The initial prototypes conformed to the past concepts of storage racks from which rifles cannot be removed without the use of tools. Upon completion of actions necessary for a statement of suitability for issue, an In-Process Review by correspondence was initiated. The results of this Review dictated redesign to provide:

Resistance to bolt cutters
Delay against hack saw
Incorporation of security padlock

CURRENT STATUS:

A recent design review meeting, attended by all interested agencies, resulted in agreement on the actions necessary to provide the required security. Appropriate design changes have been prepared, and a new Type Classification Action is currently in AMC Headquarters.

BLANK FIRING ATTACHMENT

XM15/XM15E1

BACKGROUND:

The XM15 BFA, developed in 1964/65, has proven to be unsatisfactory for field use. Approximately 32,000 were produced under LP authorization. Field experience illustrated that this BFA was difficult to attach and detach, had a high mortality due to breakage, did not have blast deflection capability, and produced unacceptable gas tube clogging when coupled with the M200 Blank. Additionally, the relatively high cost was another objection. A recently completed USAWECOM product improvement effort has produced a redesigned BFA designated XM15E1. Results of Engineer Design Test indicate that all unsatisfactory features have been eliminated.

CURRENT STATUS:

Prototypes of the XM15E1 are currently undergoing ET/ST at USATECOM. A final report is expected in the near future, after which a formal IPR will be conducted as soon as possible. USAMUCOM efforts have produced a "clean" M200 Blank to overcome the gas tube clogging problem. Major commands have stated a requirement for approximately 165,000 BFA's. First quarter FY72 has been targeted for receipt of first production quantities of the M15A1 BFA.

TOP SLING ADAPTER

FOR M16 RIFLE

BACKGROUND:

Numerous instances in which soldiers were observed carrying their rifles slung over the shoulder and in a ready to fire position prompted Limited War Laboratories to develop a top mounted sling adaptor kit for the M16 Rifle. Prototypes of the LWL design were field tested by USATECOM and modified by LWL/USAWECOM to overcome noted weaknesses and objections. When the design was finalized USARV stated a requirement for 323,000 kits.

CURRENT STATUS:

A contract to produce the kits has been awarded to Raven Industries and to date 95,000 kits have been produced and shipped.

MODIFIED BUTTSTOCK

FOR M16 RIFLE

BACKGROUND:

In response to a stated requirement for in-weapon stowage of cleaning equipment, modification of the buttstock was initiated in 1968. In addition to providing stowage capability, this modification has produced a stock approximately 450% stronger than the original. This increase in strength coupled with the elimination of the current maintenance equipment pouch is expected to result in a significant rifle program cost reduction. The modified stock provides stowage of the following maintenance kit:

Cleaning Rod and Tip
Bore Brush
Chamber Brush
General Purpose Brush
Pipe Cleaners
Swabs
Lubricant Container
Pouch

CURRENT STATUS:

The modified buttstock has been incorporated in the FY71 rifle procurement for 254,000 rifles. Additionally, 200,000 are being procured from stock funds, of which 157,000 are earmarked for Marine Corps retrofit. Replacement in the field for Army and other services will be by attrition. First production quantities will be received in May 71.

GENERAL PURPOSE CLEANING BRUSH

FOR M16 RIFLE

BACKGROUND:

A stated requirement has resulted in the development of a general purpose brush to be included in the M16 Rifle Maintenance Kit. This brush, similar to a double ended tooth brush, has the capability of cleaning previously hard to reach areas, primarily the interior of the lower receiver.

CURRENT STATUS:

First production run of 200,000 will start on 15 Jan with initial deliveries to government on 1 Feb 71. Provisioning plans will provide one brush per rifle plus attrition replacement.

PLASTIC-CASED BLANK AMMUNITION

BACKGROUND:

Since the last Steering Group Meeting, a visit was made to Frankford Arsenal to discuss the feasibility of a 5.56MM plastic- (or plastic/metal) cased blank round using PEMA funds available to the Product Manager. It was decided at that time that, because of the several years of apparently successful development work on a 7.62MM plastic-cased blank, a state-of-art exists capable of being applied to a 5.56MM blank round. In other words, nottechnical barriers exist, so a PEMA funded "product improvement" program may be legally authorized by AMC, Headquarters.

A Frankford Arsenal program of approximately 18 months duration, including ET/ST, and at a cost of \$165,000 has been drafted and is expected in the Product Manager's office in the immediate future. Authority to expend available funds will be requested of AMC and, if approved, Frankford Arsenal will be provided money to direct a combination in-house/contract product improvement effort for a 5.56MM plastic blank round for the M16 Rifle.

DIE CAST RECEIVER

FOR M203 GRENADE LAUNCHER

BACKGROUND:

As you may know, the Product Manager's Office has been pursuing a die cast receiver for the M203 under separate contract with AAI. Several attempts have been made, unsuccessfully, using standard die casting techniques. The basic causes of the failures have been the inability to achieve the density required by MIL-STD-6021 and deformation of the receiver during firing. A configuration change was made to overcome the deformation, but that too proved unsuccessful. By changing the material from A360 to A357-T6 and changing the process to ACURAD casting, we believe we now have the answer. The ACURAD process is die casting that employs slower injection speeds and a double stroke piston to compress the core material, thus reducing or eliminating internal porosity. With proper heat treating we have achieved physical properties of:

Tensile - 43,000 psi

Yield - 39,000 psi

Elong - 2-1/2%

This compares favorably with the forging physicals of:

Tensile - 44,000 psi

Yield - 37,000 psi

Elong - 10%

CURRENT STATUS:

Under the present manufacturing technique 100 operations are eliminated and machining time is cut from 4.67 hours to 1.43 hours. We cannot accurately forecast the savings in the mass production contract, but it should be around \$5 per weapon. Besides the cost advantage to the M203 procurement, the development of this technology has wide potential in other small arms applications.

DIE CAST RECEIVER FOR M203 GRENADE LAUNCHER

This program is still under way. If the castings are good, they will be machined later this month and tested at TECOM in February. We are hopeful that the concept can be proven and the change made in the TDP before the new contractor gets too far along in tooling up for the forged receiver.

After a hesitant start, we firmly decided that a quadrant sight would be supplied with each launcher. Once this was decided, AAI began real effort on an improved sight. The present sight has some 28 parts and is constructed mainly from precision aluminum castings and we are paying some \$38 per copy. An improved sight has been fabricated and successfully tested at TECOM. This sight is constructed of 14 parts and is mainly stampings and reinforced nylon moldings. This sight, in addition to having some improved features, is also much cheaper. AAI advertises the cost at \$3.63; but considering testing it will probably come in around \$5-\$6, still a substantial savings. The TDP for this sight is now being completed, and the solicitation should go out in the early spring.