LESS THAN LETHAL WEAPONS

Less Lethal Projectiles - An Investigation[1]

David Andrew[2]

"Load up, load up, load up, the rubber bullets"[1]

INTRODUCTION

The Australian Defence Force is becoming more involved in military non-combatant control and peacekeeping in areas such as Timor and Bougainville, boarding parties, and the handling of illegal immigrants. This is compounded by Defence Aid to the Civil Power requirements, in events such as boarding parties, the Olympics, and the Commonwealth Heads of Government Meeting. The issue of non-combatant control becomes critical where the use of lethal force would be illegal.

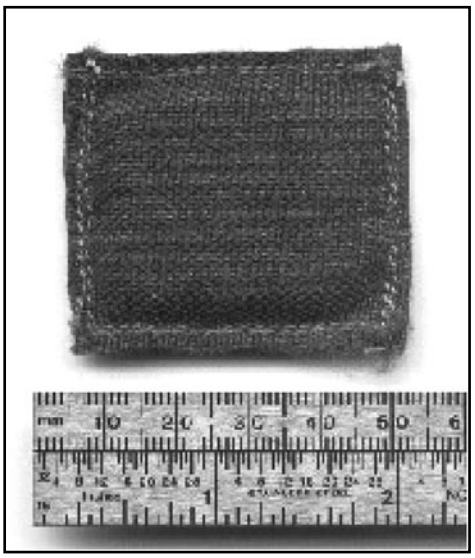
Less lethal projectiles could fill this niche and can be used with current weapon such as the Steyr F88 rifle, the M79/203 grenade launcher and the Remington12-gauge shotgun. Less lethal projectiles are those designed to incapacitate a target without inflicting lethal injuries[2], but will do so if used incorrectly[3]. This paper will discuss their design, use and effects, concentrating on rubber and plastic bullets and beanbags.

FLEXIBLE PROJECTILES - BEAN BAGS

Less Lethal projectiles can be categorised into two groups[2]: flexible and non-flexible. The flexible projectile is one that is not of solid formed construction and the one most widely used is the 'Bean Bag' design, which is a tightly woven bag loaded with fine lead shot[4]. It can be fired out of 12-gauge shotguns, 37mm gas guns[2] and 40mm grenade launchers[5]. It is folded into a wad and then inserted into a shell. The bean bag shown in Figure 1 is made by MK Ballistic Systems and weighs 40.4 grams.

In data obtained from 106 United States law enforcement agencies up until 30 May 2001, these projectiles had caused four deaths from 623 firings when used against citizens. The victims were hit in chest (three) and neck (one). Two of the chest impact deaths resulted from penetration into the thoracic cavity and the other still has a coroner's report pending[6]. The majority of non-lethal injuries are bruises and abrasions to the abdomen, chest and back. Impacts to the head tended to cause lacerations and fractures over 50% of the time.[6]

Figure 1: Bean Bag.



Current training in the Los Angeles Police Department is to have the point of impact within a six inch radius of the navel and on a frontal aspect[7], but movement of the target, obscured vision and the extreme situation involved does not always allow this to happen[4]. Personnel are taught to shoot at the centre of mass with lethal weapons so under stress this aim point may be taken[7]. This may lead to an unwanted penetration of the thoracic cavity or head.

In a series of tests in Canada, Dahlstrom, Powley and Penke[8] fired Deftech 23BR 12 gauge bean bags at three different targets 21 feet (6.5 metres) away to try to understand a previous fatality with the ammunition. Five rounds were fired into a block of ballistic gelatin, three rounds into a block of gelatin with pig's ribs embedded 1-2 inches from the entrance surface, and three rounds into a block of gelatin with the fresh draped belly skin of a pig over the entrance surface. They also studied the bean bag's orientation

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when it hit the target. This could be with the projectile open and contacting the target surface flat, with the sewn edge striking first, or being still rolled up and contacting target surface with sewn edge of bag as leading edge.

The five bean bags that were not of flat orientation in all but one instance (when the bag struck a rib) penetrated deeper than the flat orientation. The other non flat bag broke three ribs and penetrated deeper than the flat bean bag that passed between the ribs (7.6 cm versus 5.1 cm)[8]. This could lead to a fatal injury.

Bean bags must be used cautiously, and tested to determine the minimum distance for shooting so penetration is not a consequence. The round must also not be shot at or into the chest, back or head to avoid a potentially fatal injury[4,6-8].

NON FLEXIBLE PROJECTILES

Non-flexible rounds come in a variety of types, shapes and sizes, and include wooden, rubber or plastic bullets fired from 37mm gas guns[9], plastic bullets fired from rifles, rubber bullets fired from rifle canisters, and rubber balls and pellets fired from shotguns[9].

The rubber bullet, or rubber baton round (RBR), is made of slightly flexible rubber, is 37mm diameter and 15cm long with a slightly rounded tip[10]. It has no gyroscopic stability, its flight path is unpredictable and it readily tumbles on firing. 55,000 of these rounds were used in Northern Ireland from 1970-75, causing three deaths, two from head impacts and one from a chest impact, and many skull fractures, eye injuries and lung contusions[10]. Soldiers were instructed to fire at the legs of rioters but, as the rounds were inaccurate, they did not always go where aimed[10].

Millar et al. reported on 90 patients that presented at hospitals in Northern Ireland with injuries from rubber bullets. The number of rounds fired during their study was 33,000. The mortality ratio was 1:16,000, the serious injury ratio 1:800 and a disability ratio of 1:1900, with 54% of injuries to the head and neck, 26% to chest and abdomen and 20% to the limbs. 67% of the victims were male, with 64% of these in the 10-19 age group[11].

Of all the injuries, 87 had skin lesions, 21 had sustained fractures of the face and skull bones, 24 had eye or adnexa injuries, three had severe brain injuries with one being a fatality of an 11 year old boy allegedly shot from 2-3 metres[11]. Nine had chest injuries and three had abdominal injuries with the other fatality being a chest injury that may have been caused by the projectile injury or as a result of respiratory obstruction on route to hospital[11]. Of the 90 studied, two died, 14 had various degrees of blindness, 4 were facially disfigured, three had anosmia and one had a stiff finger joint, with the other 62 having no permanent disability or disfigurement[11].

The study raises the issue of using rubber bullets against young or disabled people involved in the riots, as the youngest person hit was seven and one victim had osteogenesis imperfecta[11]. The severity of injury is increased in children due to the reduced body mass and immature bone growth. Such use could also lead to claims of brutality against children and disabled people with the ensuing political and legal ramifications.

The 37mm plastic bullet, or plastic baton round (PBR)6, replaced the rubber baton round used in Northern Ireland in 1975. Up to 1999, over 60,000 had been fired and, even though they were more accurate, they caused more injuries. This was due to their tendency to strike head on as a consequence of their rod like shape, which meant that the energy was transferred over a smaller surface area causing more injuries[10]. There had been fourteen deaths in Northern Ireland with ten from head strikes and four from chest strikes[10].

The American experience shows that the belly button aim point often lead to chest injury. The three recorded deaths[7] were from the rounds fracturing a rib, which pierced the heart in one case, the lung in the second and both the heart and lung in the third[6]. The literature does not expound the non-lethal injuries caused by individual types of projectiles.

Rocke in 1983 compared Millar et al's research[11] to a similar number of people struck with plastic bullets and found that, while the plastic bullets tended to be more lethal when the skull is hit, the rubber bullet struck more people in the face and also caused more lung contusions[12].

Rubber and plastic ammunition is used in Israel and was designed to be used by the Israeli Defence Force to cause sudden and reversible immobilisation of demonstrators by inflicting painful and non-penetrating injuries[13]. This was to avoid the serious

wounds and deaths caused by conventional military ammunition[13]. There are four variants of the rubber bullets, which are fired from a canister mounted on either the M-16 or Galil combat rifles. Two are spherical rubber balls 1.8 cm in diameter known as the Standard Rubber Bullet (SRB)[13]. The other two are cylindrical projectiles of the same diameter and 1.8 cm in length[13]. The plastic bullet is fired from a 5.56 assault rifle, weighs 0.85g and is composed of an alloy of PVC and metallic fragments[13].

There were 17 fatalities recorded with ten from the rubber bullet and seven from the plastic bullet[13]. Ten fatalities were from brain injury, two from cardiac injury, three from internal haemorrhage, and single cases of spinal shock and blood aspiration[13]. Again, their use against young males is highlighted, with 12 fatalities in the 10-19 age group with a mean age of 15. There was only one woman fatality aged 42. Non-lethal injuries were not discussed in the report.

As an aside, not all less-lethal projectiles are designed to control people or are sophisticated in design. A 12 gauge shotgun round called a 'Smack' round is made and marketed from a cattle property in Nebo, Queensland, and is a used in rounding up cattle.[14]. It is made by loading a cut off shotgun wad into a plastic case, inserting a piece of hydraulic hose and sealing the case.

CONCLUSION

Less-lethal projectiles are aptly named because, although they are designed to injure, they can kill if they hit vulnerable areas of the body, particularly the chest and head. They give law enforcement and military personnel an option, however, of using something other than lethal force. Training is required to prevent serious and fatal injuries.

The ADF has a need for such rounds where the use of lethal force is unwarranted or illegal, such as in peacekeeping or Defence Aid to the Civil Power. It has the weapons to fire these projectiles and, with proper training and rules of engagement, these rounds would be a valuable adjunct to military operations.

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