VILNIUS SEMINAR ON ANTI-PERSONNEL LAND MINES

BRIEF BY LT COL C N HOLMAN, UK MOD

MILITARY OPERATIONS WITHOUT ANTI-PERSONNEL LAND MINES

Generals, ladies, gentlemen. My name is Lt Col Charles Holman and I work in the Counter Proliferation and Arms Control section in the UK Ministry of Defence. Thank you for inviting me to speak and I am honoured to have been asked to present our views to you as part of the debate as to the continued relevance, requirement and importance of an alternative to AP land mines within the context of the British Army's war-fighting doctrine.

Please note that this presentation is a personal view and does not represent a statement of UK policy.

CURRENT UK POSITION

To set the scene: as you know, the UK is a State Party to both the Ottawa Convention and the CCW treaty[1]. Under Ottawa, our treaty obligations require us to forgo production, storage, use and distribution of AP land mines and to assist, induce or encourage others to do the same. We ratified the Ottawa Convention 31 July 1998 after passing national legislation – the UK's "Land mine Act" – that allowed us to meet our obligations under it[2]. Following ratification by the 40th state, the Ottawa Convention entered into force 1 March 1999. Of note, our national legislation takes a strict interpretation of the Ottawa Convention and, to the extent that we have also made **components** of AP mines prohibited objects, places us under greater and more restrictive obligations Nationally than does the Convention itself.

The UK signed the CCW Treaty on 10 April 1981 and ratified Protocols 1, 2 and 3 on 13 February 1995. It ratified AP2 and Protocol 4 on 11 February 1999. We hope to be able to ratify the new Protocol V this year.

Although we fully support the Ottawa process, we recognise that some Nations have declined yet to commit themselves to the Ottawa or CCW processes. We cannot predict where or when our Armed Forces might become involved in either war fighting or what we call "Other Operations" – for example Peace Keeping or Peace Enforcement - and it is

[1] Convention on Prohibition or Restrictions on the Use of Certain Conventional Weapons Which may be Deemed to be Excessively Injurious or have Indiscriminate Effects. Including Amended Protocol II
[2] UK LM Act – 28 July 1988

essential that, if we are to be able to cope with all possible threats and remain operationally effective, our troops are trained to understand and deal with AP mines. This implies not only being able to carry out our own military operations but also provide support and assistance to indigenous or coalition forces if we are working with partners in, for example, a peace support role.

Production and Storage Issues. The UK no longer has any military stocks of AP mines. Some are retained by training and research organisations, as allowed under Article 3 of the Treaty, for the purpose of training both civilians and military personnel and for developing detection and demining capabilities. Our doctrine is clear that, we will not allow partners or allies to store or move AP mines on or across our territory. In addition, members of our Armed Forces may neither take part in planning the use of AP land mines if attached to coalition partners or allies nor assist in laying, moving or storing them. British Army training no longer includes any mention of laying AP mines; although as noted earlier we continue to train our Servicemen and women to clear them.

ASSUMPTIONS

There are a number of assumptions that underpin my talk. These apply to UK specifically and will not necessarily be relevant to all of you here today.

Firstly **doctrine**. Our doctrine for future war fighting is “manoeuvrist”, by which I mean we will use speed and flexibility to exploit an enemy’s weaknesses. Key tenets to this doctrine are tempo (speed), simultaneity (doing things at the same time), surprise and the ability to concentrate our forces quickly. This implies mobility, “battlefield awareness” and equipment (and planning) agility to be able to capitalise on short-lived opportunities more quickly than an enemy can respond. This has implications for the way in which we might wish deploy obstacles restricting freedom of movement. Our obstacle plan must be flexible and should not affect our own freedom of movement in the long term.

We expect future battlefields to be **less dense** (ie fewer troops and equipment on them), implying a greater reliance on systems rather than personnel to cover gaps between troops. In addition, the growing trend towards Peace Support Operations is likely to continue. Such operations are characterised by strict Rules of Engagement and are often characterised by low-level actions, sometimes with no clear distinction between combatants and non-combatants. The implication here is that a lethal antipersonnel

system appropriate for fighting a “shooting war” is unlikely to have wide application in lower intensity operations such as peace support operations or operations other than war.

Like everyone else we don’t have infinite amounts of money to spend on defence. Although our equipment is designed for **high intensity warfighting** it must have wide utility and be usable across the entire spectrum of conflict. In this respect, AP mines were a warfighting weapon with particular utility in positional defence, for example the Cold War.

Finally, despite the technological advances enabling us to fight effectively at increasing ranges, there is still a need for the good, old fashioned infantry business of **close, dismounted combat**, albeit under the threat of increased surveillance and indirect precision attack.

PURPOSE AND CHARACTERISTICS OF AP MINES

Before we can identify why and how we might need to fill the capability gap left by the removal of APL, it is important to identify what we want. This can be termed the “**endstate**” and is what we are trying to achieve. Don’t forget; it is the AP mine that is banned, not its effect. We are considering the military effect it produced whilst avoiding the negative humanitarian outcomes that lead AP mines to be banned.

The crucial step here is to look at how we achieved the desired endstate using AP mines. In other words, why did we use AP mines in the first place? This will give an idea of the key attributes we need to consider when examining our options.

Overview

AP mines were a cheap and readily available munition, widely used throughout the world. They were an extremely cost effective way of inflicting injuries, sometimes fatal, on any person unfortunate enough to trigger the fuse mechanism. It is a military fact that serious traumatic leg injuries can be highly effective at demoralising other potential victims (ie other soldiers) and thereby deterring further movement into a mined area. Fear of becoming a victim of a mine strike can work as a highly effective psychological deterrent.

Deployment of APL

AP mines were a means to an end. It was not AP mines as such that were important, but the purpose that they served and on which any replacement must focus. Now, the UK defined the basic principles of laying AP mines in terms of:

- **Ways** (how we do it) – lay mines and mark area.
- **Means** (method of achieving the desired result) – mines inflict or threaten injury or death if area entered.
- **Endstate** (what we want to happen) – freedom of movement denied to dismounted troops and pace of operations slowed and disrupted.

Usage

AP mines were deployed as autonomous weapons. Designs were predominantly non-metallic, needed no maintenance and remained effective for years. Some more sophisticated designs could be programmable, enabling either self-destruction or self-neutralisation after a given period. With their small size, AP mines were easy to conceal even when laid on the surface by hand or from a launcher of some sort.

UK doctrine requires all hand or mechanically laid mines to be recorded, marked and guarded and it is of note that the very existence of such fencing can enhance the mine's deterrent value. Troops that are mine aware - those who have already encountered mines and are aware of the potential consequences of activating one - are likely to be alert to signs of minelaying activity and avoid potential mined area.

The main reason for using AP mines was to **deny freedom of movement** to dismounted military personnel. Even a short period of disruption or indecision can be used to:

- Inflict casualties.
- Protect whatever is in or behind the mined area.
- Provide warning of movement in an area not covered by other observation.
- Allow fewer troops to achieve the desired defensive effect.

The second reason for using APL was in order to **inflict casualties**. This:

- Deterred further troop movement by instilling fear - the psychological effect.
- Overloaded local medical and logistic support facilities.
- Lowered Morale.

AP mines can reduce the freedom of movement of dismounted personnel. They will injure, maim and kill victims who stray into mined areas. They can be a potent psychological weapon.

Limitations

From what I have just said it would appear that AP mines had clear military utility. This may have been true, but their Achilles Heel was that they killed and injured both combatant and non-combatant, young and old, human and animal and kept on doing so long after hostilities had ended.

Unlike many other weapon systems they were usually autonomous, remained effective after a conflict had ended and their target could neither be predicted in advance nor amended if circumstances changed. It was the post-conflict legacy of AP mines, particularly when they were used indiscriminately, that led to them being banned.

The UK accepts that the humanitarian threat posed by AP mines was unique and justified a unique response. We fully support the ban on AP mines and the other detailed requirements of the Ottawa Convention.

Key characteristics

AP Mines had a number of key characteristics that contributed to their effectiveness as a weapon system. Some of these have military advantages:

- APL are **cheap**.
- They employ **simple technology**.
- Most AP mines use simple **mechanical initiation systems** and are long-lifed and effective.

- The small charge, minimal metallic content and predominantly plastic casing makes them **hard to detect**.
- They are **easy to deploy** and don't need sophisticated mechanical layers/dispensers.
- They are **autonomous**, remain effective 24/7 and in all weathers apart from some extreme conditions (e.g. thick ice).
- They allow **reduced numbers of troops** to achieve a given endstate, especially where troop numbers maybe short or where the type of terrain makes deployment difficult (e.g. thick undergrowth or in confined areas with poor fields of view or fire).

But there are also significant disadvantages:

- AP mines offer **no possibility for graduated response** in their use.
- AP mines will strike whatever object initiates the fuse mechanism - combatant or non-combatant, human or animal – they **cannot differentiate** between options.

Characteristics for the future

So what are the positive characteristics that we might wish to retain as being militarily desirable? Equally, what are the characteristics that must be eliminated? Of course, some characteristics may no longer be appropriate for the way we plan to conduct operations due either to the changed environment or advances in other weapon capabilities. A replacement system should:

- Be able to **differentiate between targets**.
- Have a **finite life**. It must not leave a post-conflict hazard.
- Must be **effective** - and this means it must be able to stop or delay advancing troops.
- Be **affordable** – it must be cost-effective as well.
- Have **wide utility** across the full spectrum of conflict. It should be able to provide an appropriate, graduated response appropriate to the type of operation and the threat.
- Be suitably **resistant to countermeasures**

- Provide a **24 hr capability** with the minimum of troop commitment.

FUTURE REQUIREMENTS

Legislation

It is clear that a replacement must not replicate the characteristics of an AP mine to the extent that it effectively becomes an AP mine by another name. This would be unacceptable. However, this does not remove the military requirement to have an antipersonnel system beyond that of a soldier with a rifle that will fulfil some, or all, of the effects previously achieved through the use of AP mines.

Ottawa Constraints.

Thus although AP mines have been banned, antipersonnel *systems* as such are not banned as long as they don't match the definition of an AP mine or adopt their unacceptable characteristics. The desired effect is to limit dismounted troops' freedom of movement. There is a need for a flexible, effective system, easily deployable and controlled, that can be used across the whole spectrum of conflict.

There are 3 ways we might achieve this:

Automatic.

The first is an automatic system that acts autonomously. Once in place, it operates entirely without further external input and will identify a target either through direct contact or some form of sensor. Following identification, the system has an automatically triggered response that produces the desired endstate. This was effectively how an AP mine operated. It relied on presence, proximity or contact to activate the integral explosive charge (Figure 1).

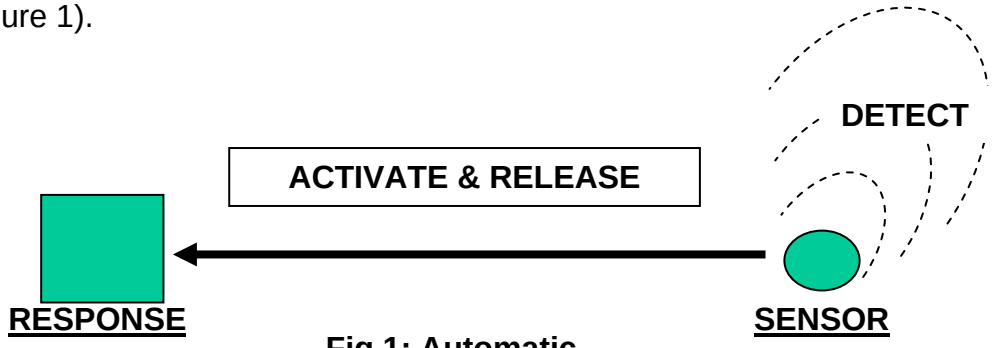

Fig 1: Automatic

Semi-Automatic.

The second is semi-automatic and is sometimes defined as having “a man in the loop”. In this case there is a direct link between sensor and the response but – crucially – this cannot take place until external authorisation is received (Figure 2).

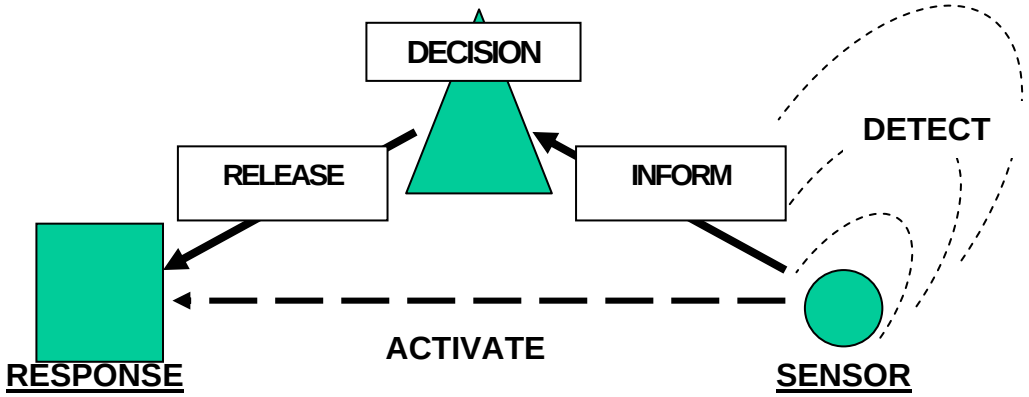

Fig 2: Semi-Automatic

Manual.

Finally, manually controlled munitions have no internal triggering capability. Any response is reliant on human supervision and intervention at all stages. The sensor merely provides a means of warning with no direct linkage to the response – and in theory this could be whatever the commander wants. But remember - the principal purpose is to deny freedom of movement and therefore, without a lethal response of some sort, the sensor merely becomes a surveillance asset. Sensors do not by themselves provide an AP capability to fill the gap left by AP mines - it needs the combination of sensor and lethal response (Figure 3).

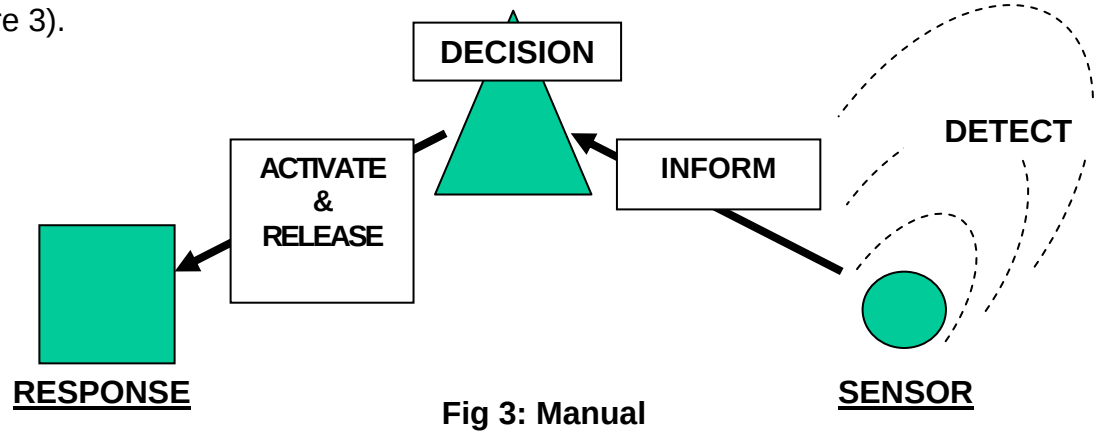

Fig 3: Manual

Comparison of Options

Comparing these 3 options we can deduce that: **automatic** systems:

- Are victim activated. Depending on the effect (eg if it is an explosive charge) they may **not be Ottawa compliant**.
- Have no requirement for an external “decision maker”. They are likely to be cheaper, simpler and be unlimited by distance from friendly or enemy forces.
- Have an “Instantaneous” response. More likely to catch the victim(s) before they can escape or take evasive action.
- Be less susceptible to disruption or reliability problems.
- Are not unduly affected by visibility (depending on initial sensor technology), weather, fatigue, moral or confusion.

Semi-Automatic systems:

- Do not depend on presence, proximity or contact of a person for activation. They are **Ottawa compliant**.
- Give the opportunity to positively identify and verify target before releasing a response.
- Have a reduced chance of false alarm and strike.
- May be susceptible to external (enemy) override due to system malfunction or countermeasures
- Are likely to have a slower response than an automated system.

Manual systems:

- Activation does not depend on presence, proximity or contact of a person. **Ottawa compliant**.

- Allow for fully graduated response as appropriate at the time and as the situation changes.

- Are likely to have the slowest response time.

The conclusion is simple: semi-automatic or manual systems are the only real options for any future development.

FUTURE TECHNOLOGY OPTIONS

Non-Lethal Obstacles. We don't have to use mines to restrict the movement of people and vehicles. The effectiveness of these so-called "non-lethal" obstacles depends to a large extent on the quantity and sophistication of the enemy's mobility support equipment (route clearing equipment, bulldozers and the like) and they have particular application in operations that fall short of war fighting. Possibilities range from use of direct and indirect fire assets – cued by appropriate surveillance devices or manned observation posts - to physical or technological barriers. But none represents a psychological barrier in quite the same way that a mine does; none of them induces the same degree of fear and reluctance to move.

Let me briefly consider 2 options: technology driven concepts that may provide a warning, trigger or barrier and physical obstacles to movement. Both concepts are dependent on suitable covering fire to avoid a breach being completed.

- "Technology" options may include:
    - Foams.
    - Lights – visible and non-visible spectrum.
    - Noise – both Infra and ultra sound.
    - Sticky or non-slip surfaces.
    - Electric fences.

- Physical barriers include:
    - Wire entanglements.

- Water – high pressure jets, flooding, ditches.
- Tree felling.
- Ditches and walls.
- Rubble.

Characteristics

In all cases their general characteristics are:

- Generally non-lethal.
- Some are heavily reliant on machinery, resources and logistic support it they are to be put in place quickly or sometimes at all.
- Very difficult to conceal and offering limited surprise. A concealed position is likely to be compromised.
- Low risk of any direct serious injury caused by such a capability therefore no fear, and only limited deterrence.
- Slow to construct and extremities are relatively easy to identify and bypass. Obstacles involving extensive earthworks or other physical constructions are not viable in mobile warfighting but have some application for long-term, static defences (eg Hadrian's Wall).

In order to be effective all non-lethal barriers must be reinforced by lethal force. A non-lethal barrier on its own is nothing more than a minor inconvenience. Covered by effective fire it can become a significant obstacle imposing delay and disruption. But it is unlikely to instil fear.

It is worth pointing out that it is extremely difficult to identify what is truly non-lethal. The effect will depend on the target (soldier, women, children, elderly). War is lethal and an AP weapon system is merely another part of the overall AP capability (includes rifles, grenades, mortars etc) that reduces the dependence on the presence of troops, helps protect and reduce our own casualties and hopefully contributes to a favourable and quick conclusion of the engagement.

CONCLUSION

I would not be telling you the whole truth if I said that everyone in the British Army was initially enthusiastic about the loss of AP land mines. But their long-term legacy, the growing realisation of their impact on our own forces both during and after operations and the increased public and political awareness of their humanitarian cost, made it impossible for us to stand outside the Ottawa process. Since signing, the Armed Forces have come to realise that AP mines are no longer an essential part of our arsenal and that we can operate safely and satisfactorily without them. The elimination of our mine stocks was carried out very swiftly and we destroyed the few remaining stocks, originally retained for training in demining (as permitted by the Convention) but now outside proof and shelf life expired, in 2003. This applied of course not only to land service mines but also to aerially delivered AP mines as well.

I would not be telling you the whole truth if I said that everyone in military was convinced of the rationale for eliminating APL. Without doubt it created a gap in our operational capability. But changes to our war-fighting doctrine, advances in technology and a clear reduction in post-conflict implications have all served to minimise the overall military effect of their loss – indeed not having to remove unexploded AP mines means that in many cases we are in overall terms financially better off without them. In summary, despite this loss of capability our Armed Forces remain highly capable, but without the danger that we will add to the long-term humanitarian problems that were very often the inevitable consequence of the use of AP mines.