Understanding detectability
Meeting of experts
Geneva
2-4 April 2012
Background

- GGE meetings in 2004/5 discussed MOTAPM in detail
- No consensus but broader understanding of issues
- Those present at the time and technology have both moved on
- Important to refresh delegations understanding of the issues
Purpose

- To highlight the key issues related to MOTAPM detectability and how these potentially contribute to causing unacceptable humanitarian harm in some circumstances.
Why and how are MOTAPM used?

- Primarily a defensive weapon that are used to delay and disrupt enemy movement, and to channel them into ground of own choosing where they can be engaged by other weapon systems.
- For most professional armies there is a requirement nonetheless to record, in all circumstances, the details of a minefield in terms of the type, quantity and location of the mines laid as well as the extent of a minefield's perimeter, regardless of whether it is physically marked or not.
Why and how are MOTAPM used?

- The tactical advantage afforded by a minefield is enhanced by making the MOTAPM within them difficult to locate and to clear. This is most often done by burying the mines themselves but as technology has developed this has been enhanced by reducing the metal content within the mines, thereby reducing the effectiveness of the most common mine detectors which
What is detectability?

- Detectability refers to the ease in which a MOTAPM can be located by commonly-available technical mine detection equipment.
- Minimum guidelines for detectability were established during negotiation of Amended Protocol II.
- Mines shall incorporate in their construction a material or device that enables the mine to be detected by commonly-available technical mine detection equipment and provides a response signal equivalent to a signal from 8 grammes or more of iron in a single coherent mass.
- "This "8 grammes" continues to provide..."
Operational detectability

- Imperative is to find and locate the minefield and then determine whether you will breach or go around.

- Breach is usually done in time constrained environment and under threat.

- Those laying the mines can leverage many battlefield and environmental characteristics to make mines harder to detect: day/night/vegetation/water /bury/speed of movement to name a few.

- As such detectability (based on metal content) only plays a small part in making a minefield effective in comparison to other factors such as the use of terrain and integration with other weapons such as artillery, tanks, fighter aircraft and attack helicopters.
Humanitarian detectability

- The imperative for humanitarian minefield clearance is the need to not only determine the extent of the minefield and the type of mines within it but also to clear, with a better than 99.5% certainty, every mine in the minefield such that the potential for the death or injury post clearance is virtually eliminated.
- Low/no threat so battlefield characteristics are irrelevant and environment and mine design (metal content) impact most on detectability.
- Low metal content makes mines hard to find, ensure many false finds, and adds time, effort, and cost.
Mine Breaching vs Mine Clearance

- Clearing quick lanes to quickly get across a minefield versus clearing an entire minefield with great certainty.
- One risks soldiers and equipment to gain time and create tactical opportunity — potentially sacrifices a few for the sake of the many.
- The other is focused on ensuring the safety of deminers and on the lives of the civilians who will ultimately use the cleared land.
- Breaching equipment not effective for humanitarian clearance.
- Most humanitarian demining continues to utilise a combination of systems involving deminers with prodders and metal detectors, explosive detection dogs, and in some conditions, mechanical mine clearing systems.
MOTAPM construction

- Two key types
- Blast
  - Relies on large quantity of high explosive
  - Originally in metal casing but new systems are plastic and have low metal content
  - Hard to find
- Shaped Charge
  - High metal content
  - Easier to locate
Detection methods

- Most common remains electromagnetic induction metal detector
- Most effective is the explosive detection dog
- Many new technologies – IR, ground penetrating radar, bio-sensors, nuclear quadrupole resonance, and fused systems, but all are expensive, not in universal use nor available to humanitarian deminers
Resolving detectability

- On the detectability issue the key humanitarian issue is dealing with low detectability, low metal content mines
  - In existing minefields — if marked and monitored do we leave them there until the minefield is no longer necessary then clear them?
  - New systems— do we establish a minimum metal content by adopting the APII anti-personnel mine standard?
  - In stockpiles— do we only lay in marked and monitored minefields or retrofit to create a minimum metal content?

- The humanitarian response requires actions that
Summary

- Aim was to articulate the key issues associated with discussions on detectability.
- Highlight the ground covered by previous CCW discussions.
- Highlight those areas that may need to be considered in the future.
Questions