

7. MINEFIELD SURVEYS and MINED AREA MARKING

1. Minefield Surveys

The purpose of a mine survey is to establish the scope of the mine problem, affecting an area, in sufficient detail to enable a Mine Action program to plan and conduct mine clearance operations.

Reporting formats have been standardized for all levels of survey, so that the information can be easily transferred into a database for analysis. Mine Surveys are divided into the following categories:

- a) General Area Survey (Level 1 survey);
- b) Minefield Technical Survey (Level 2 survey);
- c) Completion Report (Level 3 survey).
 - **General Area Survey** is the investigation of suspected areas to collect information on the general locations of suspected contamination and Mine Victims. This information gathering process is intended to identify general details about the extent of contamination. Information gathering should also indicate any requirement for Mine Victim Assistance and Mine Risk Education.
 - **Minefield Technical Survey** (Minefield Perimeter Determination and Marking) is the detailed investigation of suspected contaminated areas, identified during the earlier conducted General Area Survey. This process is intended to identify specific details on contamination. This will involve the probing of the suspected area to establish and mark accurate boundaries of the contaminated area. This requires the skills of specially trained clearance personnel with survey skills. The start line for future clearance operations will be on part of the marked perimeter, established by the Technical Survey team.
 - **Completion Report** is a record of a completed UXO or mine clearance task. The Completion Report, of which the Quality Assurance and Quality Control procedures is a part, is intended to accurately record areas, cleared by clearance teams. The Clearance Report will also provide a permanent record of clearance activities in an area after it has been cleared of contamination. This report is written at the completion of demining or EOD activity and formalizes the termination of the clearance contract in that area. The original version of this report is to be delivered to ANAMA HQ for inclusion into the national database and archive.

General Area Surveys, Technical Surveys and Completion Reports will be submitted, using the form contained in ANAMA SOPs. The records of all surveyed areas will be stored in the ANAMA database.

2. Information Sources

Information gathering should be carried out at all governmental levels, both local and national. This will include military, police, hospitals, prosthesis centers, aid agencies and non-governmental organizations.

3. Types of Information

- *Azerbaijan Armed Forces.* As the army of Azerbaijan was one of the Former Warring Factions who were using landmines, they will be the most valuable source of information. Every effort should be made and supported by relevant agencies to obtain records where available as soon as possible, because the clarity will be lost over time. It is also important to collect information on former confrontation lines and battlefields, as this will assist in producing an overall picture of the potential mine problem.
- *Civil.* The collection process is to be applied to the government structure and must extend down to the provincial and district level, with the same intensity of investigation. Sources should include hospital data on mine casualties, population data, transportation data, etc. Once the picture of the affected areas is located, further investigation can proceed to the village/hamlet level to collect first-hand information on mined areas.
- *Geographic.* All forms of geographic and topographical data are vital to the planning and analysis process. The incorporation of this data in the survey process is required to plan survey operations and subsequent mine clearance operations. Soil maps, hydrology, road, bridge and agricultural features are some examples of data, which must be included in the survey plan, to establish priority areas and methods to be used in clearing landmines.
- *Socio - economic.* In the conduct of mine survey, the social and economical impact of mines and UXOs must be evaluated. The collection of information on numbers of casualties, the loss of livestock, vital life-saving necessities, such as water and firewood, are keys to determine priority of clearance operations.
- *Mine/UXO Technical Data.* Technical information on mines and munitions, collected from sources in the field, must be centralized in the mine database for further effective use. This information is vital to establish the level of the mine threat and the related terrain threat, all of which will create the direction for the development of mine clearance procedures and the selection of the appropriate mine clearance equipment.

4. Information Reliability

All information obtained, regardless of the source, will be assessed for accuracy and completeness. This procedure is to be implemented at all levels. Any information, received on the probable location of land mines, must be taken seriously, investigated accordingly and reflected in a task-orders.

5. Standards

Standards have been set for the recording of information, so that it will be dispensed in a usable format for analysis. Records must be kept in written, graphic, and digital formats, so both digital and traditional paper mediums can transfer information to operators in the field and planners at the central level.

- *Reference Sources.* Maps are the key element in providing geographic data. Therefore, the most detailed and accurate maps will be used as the standard for recording of areas. The map series, date of production, scale and coordinate system must be clearly identified. It is important to remember that a number of different map series were used and referred to in previous surveys and mapping reports. This is particularly so in the case of the armed forces of the Former Warring Factions and there must be no confusion in cross-referencing.
- *Measurement.* All measurements, used in ANAMA operations, will be Systems International (metric) measurements.

- **Coordinate systems.** All coordinates should be reported in Latitude and Longitude. Minefield perimeters should be reported in magnetic bearings (0-360 Deg) and distances in meters.
- **Measurement equipment.** A variety of measurement equipment can be used to accurately record area data. These include compasses, protractors, GPS, DGPS, range finders, binoculars, cameras, etc. In each case, the equipment selected must provide the greatest degree of accuracy and reliability to the field operator and must ensure accuracy for its application. Personnel, tasked to conduct surveys, must have a good working knowledge of map reading and be able to operate and calibrate their own equipment.

6. Marking of contaminated areas

Contaminated area marking is a vital component of a survey or clearance operation and is to be conducted at the same time as Level 2 survey operations by the Technical Survey team.

7. Levels of contaminated area marking

Mined area marking has been categorized into three basic levels, from which a variety of situations can be effectively addressed:

- a) Emergency marking;
- b) Temporary marking;
- c) Long-Term marking.

Emergency marking of a suspected contaminated area is appropriately marked to provide an immediate visual warning of a presence of contamination. This type of marking will, whenever possible, use the standard “mine” sign that clearly indicates the danger. Emergency marking should be clearly recognizable from a distance of at least fifty meters and have features, resistant to weather conditions for at least three to six months. Local type mine marking, such as crossed sticks and stone piles, will always be recognized as a form of marking. It is often installed by people, who do not have the resources to install a formal mine-marking boundary. The location of all types of emergency marking must be reported as soon as possible to ANAMA HQ to facilitate follow-up survey and contaminated area marking activities.

Temporary marking is a more permanent and visual barrier, surrounding a mined area. The marking will be the “mine” danger sign. These signs should be visible from a distance of at least 50 meters and be visible sign-to-sign in heavily vegetated or undulating ground. The barrier must be in accordance with the specifications, detailed in the section on mine clearance marking systems. Temporary marking should have features, resistant to weather conditions for at least six to twelve months. This is normally the marking, used in Level 2-survey process.

Long-term marking is for areas, where it is not possible to conduct clearance operations in the immediate future. Permanent marking will be either a visual barrier or a physical/visual barrier, surrounding a contaminated area, to prevent the movement of humans and livestock and will as a minimum consist of either:

- Metal pickets with “mine danger signs” 25 meters apart, visible from a distance of at least 50 meters;
- Fence barriers with metal pickets, a minimum of 2 strands of wire and mine warning signs.

Long-term marking should have features, resistant to weather conditions for at least one to five years.

8. Standards

The standards for mine marking and fence barriers are contained in the chapter Mine Clearance Marking Systems of these standards.

9. Logistic support

Communication. Survey teams are to be equipped with mobile radio equipment to maintain contact with each other and Survey coordinators and to be able to call for medical assistance, should the need arise.

Medical. Team members must be trained in standard first aid. A paramedic with a vehicle, that can be utilized as an ambulance, and a driver will be allocated to the survey team. The paramedic will be equipped with a comprehensive medical kit, containing the appropriate treatment equipment to sustain a traumatic casualty over an extended period of time.

Survey teams are to have a workable casualty evacuation plan, which is practiced regularly.