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J.J van der Merwe
United Nations Office for Project Services

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Application of the Technical Survey in the Demining Process

The author proposes a way that Technical Surveys can be used as a step in the process to eliminate the negative socio-economic impact of mines/UXO in the most productive, cost-effective, efficient manner and to guarantee that the best technology for the task is applied.

by J. van der Merwe, UNOPS

The opinion expressed in this paper is that of the author and do not necessarily reflect those of the United Nations Office for Project Services (UNOPS).

Introduction

The mine action industry has grown out of one very specific technical area of interest related to the physical destruction of mines and UXO. From there it has become necessary to look at the broad implications of what it does and to encompass peripheral activities that fall under the same general heading of mines, including survey, awareness and prioritization. It is also true that mine clearance resources are typically scarce and should be effectively utilized. This calls for correct application of available clearance technologies and careful targeting of these resources in order to have a critical impact on the problem.

Many mine clearance organizations have traditionally publicized their efforts by focusing on the number of UXO and unexploded munitions that have been found. This is in reality as meaningless as assessing the effectiveness of the clearance operation based purely on its size. It is becoming better understood that mine clearance is as much or more about the elimination of the negative socio-economic impact on communities as it is about clearance of the actual contamination.

Experience over the past few years has indicated that within a zone of probability for mine contamination in the majority of mine-affected countries, the majority of the ground is not mined. In addition, most of the areas contain few mines. Out of the 18,000 mine records received from the former warring factions in Bosnia and Herzegovina, 60 percent of the records indicated that the mined areas contained less than 10 mines, and in Yemen, the Level One Impact Survey concluded that there was approximately a 40 percent exaggeration of the actual size of the contaminated area. Therefore, by focusing the ground that is not mined, ruled out, the greater productivity and the impact of the clearance efforts will be linked to the need to rapidly rule out mine-free ground is the need to decide which ground needs to be freed up first. The size of these areas is a function of the subsequent users' requirements. Defining the minimum areas ensures that mine clearance resources are committed to clearing any more ground than what is actually required at the time. The Technical Survey, if applied in the correct manner, should provide answers to the issues raised above.

Mine Free vs. Free From the Effects

Recently, there have been a number of technical surveys and other mine action documents which would suggest that the desired end-state for all mine action programs is to make mine contaminated countries "mine-free." This implies that all mines in the entire country are to be removed from the land and therefore all possible risk related to mine and UXO contamination is to be removed as well. While such an idealistic end state may be desired, many realistic assessment indicates that it is not achievable, nor would pursuing it in this end be a good use of limited resources. The laws of diminishing returns, limitations on available donor resources and simple cost-benefit analysis all highlight that a mine free state is practically unobtainable. The cost of removing the last mine in a country would be considered prohibitive high and offers very little (if any) benefit as compared to the other possible uses for the same amount of money.

Free from the Effects of Mines: During the planning process, consideration should be given to adopt a risk manage-
New Technical Survey: The purpose of the old Level Two Survey was to order rear area reduction work in order to accurately mine and delineate the perimeter of possible, with mine awareness and victim assistance personnel deploy to the community and commence collecting the information required to develop a specific mine action plan for the community. To make the project a success, the mine awareness personnel should begin educating the community on the dangers and remedies. After selected communities have been surveyed, the information is verified and an annual workplan is developed. Depending on the nature of the program, this will be done on a national, regional or district level. This annual workplan should include operational activities for demining awareness and victim support.

Information to Be Collected During the Technical Survey

The Technical Survey is the primary source of planning information for mine and UXO operations and usually involves gathering specific information, entering the contaminated area and mapping the suspect area. In doing so, the survey process will:

- Provide essential information for regional and local planning.
- Provide information to assist in defining training or control areas.
- Provide planning information for subsequent area reduction, clearance and management operations.
- Provide the basis for scheduling demining assets to limit down time.
- Expedite demining activities through the provision of accurate and up-to-date information on the particular site.

During the Technical Survey, the following information should be collected:

- Confirmation of the blockage data that was collected during the National Survey.
- Assessment of the ground in terms of the soil, metal contamination, vegetation and slope.
- Presence of mines and UXO.
- Definition of the area in terms of its size, described by angles and bearings. Area measurements should be more accurate than those calculated during the national survey and should be within 10 percent of the actual area.
- Suggestion of the depth to which clearance should be conducted. This suggestion does not replace the requirement to clear to a depth determined by the future intended use of the land; it is rather a suggestion based upon actual information collected in the hazard area.
- Resources required to carry out demining activities per identified area and the estimated time for manual teams, mechanical teams, mine detection dog.
teams and EOD teams as appropriate. In addition to the information mentioned above, a detailed site sketch must also be prepared, as this will be provided to the demining organization that will eventually carry out the task. The following information should be noted on the sketch of the area:

- **Exploratory lanes and safe access routes** as applicable.
- **Benchmarks and turning points** as applicable.
- **Distances and bearings from the benchmarks and turning points.**
- **Location of visible mines/UXO and the pattern of mines (if known).**
- **Location(s) of any accidents in or around the contaminated area.**
- **Natural prominent features such as hills, contours, creeks, bushy areas, etc.**
- **Pasture land, one should clear the area of 12,500 m² is blocked for grazing.**

### Sequence for Carrying Out the Technical Survey

After impacted communities have been ranked in priority order and a selection has been made, the Technical Survey should be carried out to collect sufficient information to enable the demining requirement to be more accurately defined. These demining activities include areas that need to be reduced, cleared and/or marked. Sketch Map 1 shows an example of a village and six suspect mined areas within the village boundary. These hazardous areas were identified by interviewing the inhabitants of the village during the National Survey. The identified suspect areas have impact on the villagers or prevent them from living a normal life free from the danger of mines and UXO. Sketch Map 2 shows one of the suspect areas and indicates the blockages caused by the presence of mines. The suspect area is blocking access to:

- **Pasture land for grazing.** The identified suspect area is right in the middle of agricultural land and at the moment an area of 12,500 m² is blocked for grazing.
- **Drinking water.** The villagers have to walk around the hazardous area, instead of through it, to the spring that supplies the village with drinking water.
- **Powerline.** The powerline was damaged in the war, and the area underneath the line would have to be cleared to reconstruct the line and pylons.

The next step in the process should be to plan, prepare for and execute the Technical Survey. As previously stated, the aim of the survey is "to collect sufficient information to enable the clearance requirement to be more accurately defined and for the subsequent clearance operation to be conducted in a safe, effective and efficient manner." Using the road and the already defined benchmark as the starting point, one should analyze the blockages caused by the mines, and then propose solutions to address how these blockages can be eliminated through marking, reducing and/or clearing the areas concerned. This initial planning is done before carrying out the Technical Survey, and it is done by analyzing all available information and preparing an initial plan. The survey is then focused on collecting the correct information that would allow such a final plan to be devised. Exploratory blocking lanes into the suspect area should also be planned. The purpose of these lanes is to allow safe access into the suspect area in order to collect specific information that can be used to develop a detailed plan for the site. The number and location of these lanes will depend on the information requirements. There could be a number of solutions to remove the impact in this particular case. One possibility would be to treat the areas as follows:

- **Powerline.** Depending on the terrain, vegetation and mine threat, the area could be covered using mechanical systems or mine detection dogs. The terrain feature in the bottom right hand corner of the suspect area could either be fenced off or cleared manually.

- **Drinking water.** As a first step, a safe lane could be made through the suspect area to provide villagers access to the spring.

- **Powerline.** Due to the fact that the power line is part of the area required for pasture land, one should clear the area around the power line and pylons at the same time when the pasture land is being cleared; however, a different method might be applied due to the presence of scrap metal and power cables on the ground.

Once the plan has been completed and the information has been entered into the mine information database, a final plan should be developed for this particular site. The same process has to be carried out for each one of the six other identified suspect areas. These areas could eventually become one cluster, and resources should be shared and moved among the six different sites to prepare the ground, reduce the suspect area and/or clear and mark contaminated areas.

As a result of analyzing the information collected through the Technical Survey, a plan to manage the mine problem is developed. The main focus of the plan is to address the impact of the mines and UXO on the community where they are found. One of many solutions is shown graphically in Sketch Map 4. The plan should ensure that the whole area identified in the GMAA process is taken care of and as a result is accounted for.

### Conclusion

In the absence of effective new technologies, better resource allocation can reduce demining costs and increase the rate of land release and clearance. Technical Surveys will provide the planners of demining activities with crucial information to plan area reduction, clearance and marking activities. It will also ensure that the resources on a particular site are used with the highest efficiency and that these resources are targeted to provide the identified relief. Finally, the Technical Survey will provide the necessary milestones to estimate and later gauge the progress of operational activities.

### Contact Information

- J. J. van der Merwe
- UNOPS Mine Action Advisor
- The Chyderly Building
- 405 Lexington Avenue
- New York, NY 10174
- Tel: (212) 457-1283
- Fax: (212) 457-4049
- E-mail: johnnn@unops.org