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Landmine Impact Survey: Measurement and Display of Suspected Areas

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Mineseeker is not the panacea for landmines; it’s a tool, it’s something that can be used. We’re not going to replace the manual deminer with a stick in the ground, but what we hope to do is give him a smaller area to search. Landmines are a problem that we can solve. They’re not going to go away, but I think that if we work together and we find resources, it is a thing unlike anything else, that can be solved within our lifetimes. And if we get together, we can do it.”

Kendrick recognizes the potential positive impact of Rotary involvement and is eager to partner with them. “The hope to get the foundation adopted by the Rotary movement in order to raise cash on a global basis. Several clubs have shown their interest in this project already and the newly formed “Fellowship of Rotarians for Mine Action” may lead to further support.

**The Future of the Mineseeker**

The Mineseeker Foundation’s goal is to develop and deploy several systems to countries with severe landmine problems. The organizations aim to provide the system at no cost to the host nation. Mr. Kendrick explains, “We don’t want to differentiate just by money; in other words, we shall go to the area of the most need.”

Once Mineseeker has acquired the necessary funding, the organization will use a closed tender bid process to determine which suppliers will develop the prototype into the customized system they plan to deploy, and the Mineseeker advisory board will decide which suppliers to contract for the project. As a leading company in its field, QinetiQ, Britain’s largest independent research and technology company, is the leading contender for providing these services. From development through to the deployment of the first system will take about one year. According to Mr. Kendrick, the first Mineseeker system will go to “an area of outstanding need yet to be defined.”

Many countries have a great need for better wide-area mine-detection tools and are interested in receiving the system. If funds permit, they hope to deploy five ships to mine-affected parts of South America, Africa, Asia and central Europe.

**Conclusion**

Through real implementation, the prototype Mineseeker system has proven its viability as an aerial survey tool. It is gaining support from many people, and has already been endorsed by Nelson Mandela, Sir Richard Branson and Queen Noor of Jordan. With hopeful prospects for funding and growing visibility worldwide, the Mineseeker Foundation will soon be able to go forward with the momentum it gained through its successful trials. With the Mineseeker in the toolbox, the mine action community will be one large step closer to making the world safe from landmines.

**Footnotes**

1. All photos courtesy of the Mineseeker Foundation.


3. E-mail correspondence with Mike Kendrick, October 22, 2003.

4. BBC Documentary: Mineseeker.

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**Landmine Impact Survey: Measurement and Display of Suspected Hazard Areas**

The purpose of a Landmine Impact Survey (LIS) is "to facilitate the prioritisation of human, material and financial resources supporting humanitarian mine action at the national, regional and global level. The LIS process provides a different approach by measuring the socio-economic impact of landmines on affected communities. The global application of the LIS has successfully refocused attention away from a purely quantitative measurement of a mine and UXO threat to a qualitative assessment of impact on mine-affected communities.

**by Hemli Morete, Programme Officer, CMA**

**Introduction**

The planning of safe, effective and efficient mine action requires accurate, appropriate and timely information. During the early stages of a mine action programme, the availability of such information may be limited. Once time, however, systems are established to collect, collate and evaluate information on the landmine threat and its impact. Such information is needed for planning at the strategic and operational levels and should be made available in a timely manner to planners at the national level (normally the staff of a mine action centre), to implementing partners such as demining non-governmental organisations (NGOs) and to other stakeholders such as the donor community.

Prior to the development of the LIS process, the scope and nature of the landmine problem was generally expressed in terms of the number of mines, the total area of land contaminated, or a combination of the two. The LIS process provides a different approach by measuring the socio-economic impact of mines on affected communities. The Survey Working Group (SWG) defines the purpose of LIS is to "facilitate the prioritisation of humanitarian material and financial resources supporting humanitarian mine action at the national, regional and global level."

The global application of the LIS has successfully refocused attention away from a purely quantitative measurement of the mine and UXO threat to a qualitative assessment of impact on mine-affected communities.

**Information Needs**

An LIS forms part of a much wider information-gathering process within a mine action programme. In order to assist with the planning process, information is required on such issues as the scale and impact of the landmine problem; suspected areas of mine and UXO contamination; quantities of metals, and types of explosive hazard and general information such as the security situation, terrain, soil characteristics, climate, routes, infrastructure and local support facilities. The name given to this process within International Mine Action Standards (IMAS) is General Mine Action Assessment (GMAA). The purpose of a GMAA is to continually gather, evaluate, analyse and make available sufficient information to assist and update the strategic planning of a national mine action programme.

The information from an LIS addresses several of these issues, but it has its limitations. Accurate temporal and topographical information on a threat at a given location, a technical survey is required. A technical survey is a specific operation conducted to gather the detailed technical and topographical information of known or suspected hazardous areas. It is the usual pre-cursor to clearance, with the primary aim being to collect sufficient information to enable the clearance requirement to be more accurately defined, including the area(s) to be cleared, the depth of clearance, local soil conditions and vegetation characteristics. The LIS process is not designed to gather such information, but that is not to say an LIS should not define the extents of Suspected Hazard Areas (SHA) as accurately as possible. As it will be shown later in this article, even small inaccuracies can have significant cost implications further along in the demining process.

The status of information gathered during an LIS must not only be as accurate as possible, but it must also be placed in context. For some reason, once a polygon is drawn on a map, it tends to gain a certain status use of proportion in the method used to put it there in the first place. Such information becomes very difficult to alter.
The key stakeholders in a national mine action programme have different needs and expectations for an LIS. Mine-affected communities who provide information to survey teams expect that their participation in the LIS will lead to timely and effective mine clearance activities in line with their own priorities and needs. Clearance organisations expect the LIS to provide information to assist them with their own management decisions. In particular, they require information in sufficient detail to enable them to conduct technical surveys and other follow-up activities effectively and safely.

The information includes:

- The boundaries of suspected contaminated areas and technical details of the threat
- The proximity of settlements to SHAs
- The type of terrain and vegetation cover
- The number of SHAs (Mini) and the proximity of medical facilities and other relevant infrastructure
- The numbers, frequency and types of accidents that have occurred recently

There is an expectation from clearance organisations that the LIS will lead to an enhanced ability to prepare mine action authorisations—including a logical and transparent prioritisation system and annual work plans. National mine action authorities may also use the LIS for the planning and preparation of operations by a number of different actors, including mine clearance operators, technical survey teams, MRE and victim support organisations, national mine action authorities, and numerous bodies and organisations from outside the mine action sector.

The measurement of socio-economic impact enables a ranking of communities to be based on the level of impact on mine action programmes. The information can then be used in the development of a national mine action strategic plan, which in turn assists with prioritisation, resource management, coordination and resource mobilisation. Information on the general extent of contamination is used to determine the physical resources required to deal with the problem. This includes the number of technical survey teams that will be required to define the area required for clearance and estimates as to the clearance resources required.

**Accuracy of Delineation of SHAs**

There is a tendency to overestimate the size of SHAs. Impact surveys rarely use experienced deminers or technical surveyors, and safety margins are often included in the survey. The problem is that such margins become subsumed into their parent SHA and as such exaggerate the scale of the problem. And, in some instances, they also have to be demarcated at a cost.

To illustrate this point, data from the SHAs corresponding to 495 high-impact communities recorded in the Cambodia impact survey were examined to assess the effect of small changes in the accuracy of the units of measurement of the SHA. For example, if the dimensions of each SHA are reduced by just 25 m, the overall size of contaminated land is reduced by 76 million m².

Assuming a cost of $1 (US) per square meter to conduct technical surveys on this area, the potential savings are significant. It was calculated that, if all of this additional land will need to be cleared and much may be released through area reclassification during technical surveying. However, even if just 10 percent of this land remains to be cleared after technical surveying, there are still potential savings of some $7.6 million in the programme.

Finally, the defacto standard, the Information Management System Mine Action (IMAS) programme, used the estimated affected area as an indicative circle centered on either a point in the village/community or a viewing point, rather than considering the extent of the problem from the ground. This has the effect of confining the true location of the SHA and the mine action effort. Additionally, and perhaps more importantly, there are no guidelines on the minimum amount of time or level of effort that should be invested in the information collection process. The only technical guidance for such work is contained within a number of field manuals. The LIS allows for superficial assessments to be made and important detail on the extent of SHAs to be overlooked. Due to the type of work involved, technical survey and clearance represent two of the most expensive activities in mine action. When the results of an survey or survey is not accurately defined, then large areas of uncontaminated land can be dealt with unnecessarily.

**Review**

The general mine action assessment is not an end in itself. As was noted earlier, it should normally be subject to a continuous review with new information being added and the implications of new information being adequately addressed. In particular, changes to assumptions and to the reliability of sources of information should be examined on a regular basis and the implication(s) of these changes examined fully.

**National Mine Action Authority Responsibilities and Obligations**

The national mine action authority is responsible for the regulation, management and coordination of mine action in a mine-affected country and for ensuring the national and local conditions that will enable the development of a national mine action programme. The national mine action authority is ultimately responsible for all phases of a mine action programme within its national boundaries, including the general mine action assessment. In particular, the national mine action authority shall establish and maintain a system and procedures for the collection, collation, analysis and dissemination of information on the mine and UXO threat and its impact.

**Glossary**

Extractions from IMAS 04.10 2nd Edition, January 2003

**General Mine Action Assessment**

The process by which a comprehensive inventory can be obtained of all reported and/or suspected locations of mine or UXO contamination, the quantities of anti-personnel and anti-tank mines, information on local characteristics, vegetation and climate, and an assessment of the scale and impact of the landmine problem on the individual, community and country.

These new elements of the general mine action assessment can be conducted concurrently or separately.

**Impact**

The level of social and economic suffering experienced by the community...
resulting from the harm or risk of harm caused by mine and UXO hazards and hazardous areas.

Mine Action is the product of:

1. The presence of a mine/UXO hazard in the community.
2. Inherently risk associated with the use of infrastructure such as agricultural land, water sources and distribution.
3. The number of victims of mine and UXO incidents within the last two years.

Impact Survey

An assessment of the socio-economic impact of current or potential risk or the presence of mines and UXO, in order to assist the planning and prioritization of mine action programmes and projects.

Technical Survey

The detailed topographical and technical investigation of known or suspected mine-affected areas identified during the planning phase. Such areas may have been identified during the general mine action assessment or have been otherwise reported.

Endnotes

1. DMAS 04.10
2. DMAS 08.08
3. Defined in this paper as affected communities, mine action operators, national authorities, national/international organizations and donors.

Paper 3

Assessment of the soil characteristics.

A test methodology has been developed based on the in-situ analysis of the physics of mine action mechanisms.

(i.e. Canadian Centre for Mine Action Technologies (CCMAT-US)) and standards will be developed for ITP under the umbrella of TEP.

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Moret: Landmine Impact Survey: Measurement and Display of Suspected Hazard Areas

General Diary: Report From the GICHD

The GICHD has recently published a handbook titled "Developing Mine Action Legislation." The book is intended to assist governments, mine action professionals and others to develop national legislation to coordinate and regulate mine action in a country affected by landmines. It identifies the principal elements to be included in such a law and the issues that should be considered in its preparation.

States have used various kinds of legal instruments to create a National Mine Action Authority (NMAA) and/or a mine action centre (MAC), and in most cases, these types of organizations are new to the country.

Our study collected examples from 18 countries and found that in only three of these cases had parliamentary legislation been passed. In the others, a mix of royal decrees and ministerial or administrative pronouncements were what was often found to be contradictory with existing laws or defected in important areas. Some laws, for example, have not provided adequate mandates to the NMAA or MAC has failed to comprehensively cover the range of activities comprising mine action, or have not been the result of extensive consultation with the various government ministries or departments that may be involved with mine action.

The handbook strongly encourages UXO-affected countries to adopt national legislation to coordinate and regulate mine action. National legislation refers to a public law passed by the country's legislative body (e.g. parliament or congress) and approved by the country's head of executive. National legislation is preferred because it is normally the end product of an extensive collaborative process among the government, its ministries, the national parliament and in some cases, external agencies. This process provides an opportunity for thorough consideration of the mine action issues to be addressed, the activities to be undertaken and the implications of the law being drafted.

Some specific advantages of regulating mine action through national legislation are as follows:

1. Wide involvement of the national parliament and government agencies in the development of the law will mean greater understanding of the purpose of mine action and the responsibilities and needs of the NMAA and MAC.

2. Coordination and cooperation between the government ministries and national/international committees associated with mine action will be facilitated and reinforced.

3. The NMAA and MAC will be provided with strong mandates under national law.

4. The roles and responsibilities of the NMAA and MAC can be more clearly defined (including implementation, accreditation and monitoring).

5. Close collaboration will often result in a large degree of transparency and specification in the structuring; planning; and funding of mine action.

6. There can be better accountability to donors, the country's citizens and its communities.

Mine action legislation is an important, but often overlooked, part of a country's response to UXO contamination. Consideration of the elements presented in this handbook will help support a framework to benefit and support mine action on the ground. The adoption of comprehensive legislation will help ensure that mine action can proceed efficiently and effectively, and meet the requirements of the broader MAC. This will help facilitate the rapid removal of UXO and help reduce the long-term impact of a past conflict.

The full details of the handbook are available on the GICHD website at www.gichd.ch, or hard copies can be ordered from the Centre (see contact information below). The GICHD is also in a position to provide training or arrange workshops on the development of legislation for mine-affected countries.

Other News

Just prior to the 5th Meeting of States Parties to the AP MBC, the GICHD also launched another publication, called "A Guide to Mine Action." Over the past decade, mine action has rapidly developed as a humanitarian and development discipline. For a newcomer to the subject, however, the disparate nature of the sources sometimes makes it difficult to understand the complexities and inter-relationships of the different mine action components and activities. Moreover, specialists in one area of the discipline may not be aware of developments in other areas.

"A Guide to Mine Action" has been prepared by the GICHD as a basic grounding to the diplomat, donor, lawyer,