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Quality Assurance for Mined and Survey Areas

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Some years ago the major issue in mine action was about safety and quality versus productivity. Now is the time to take a more pragmatic approach and look at all three subjects in a balanced manner. A foundation built on standards has now been accepted by the international community as essential to maintaining quality and safety. However, control must be exercised by donors not to fund studies and improvements that fail to provide a noticeable improvement in the quality of life of those whose daily struggle is one of survival.

What is critical is the need to modify the present IMAs and the other documents in order to conduct strategic planning in a systematic manner. Policies concentrating on local aspects need to take a broader view and a recognition of the importance of prioritization is needed, which must be initiated at the earliest possible opportunity. Even with the best intentions, a system that is less effective in some places than it is in others is simply demeaning in the wrong place and is an ineffectual use of time, effort and limited financial resources. Currently the documentation presented does not complete the picture or provide a coherent approach; there is now an urgent need to “close the circle” by providing and utilizing the missing information.

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Quality Assurance for Mined and Survey Areas

Mechanical demining is an important and essential part of any demining process, and quality-assurance methods must constantly be revised to address the balance between safety and efficiency. Based on experience from the MineWolf mechanical demining experience, the tiler system would improve the demining process significantly, thereby increasing speed and reducing the costs of demining operations.

by Heinz Rath and Dieter Schröder [Safety Technology Systems]

Conclusion

It is common knowledge that mechanical demining has to be part of the complete demining process to improve the speed of operations, defeat major obstacles for manual deminers, reduce costs and simplify quality assurance. It is also common knowledge that the car and aircraft industry that quality must be continuous and cannot be guaranteed by inspection alone.

Modern quality-assurance programs (such as the Failure Mode and Effect Analysis) have to be used to ensure a capable process. The FMEA is a method for failure-prevention and should be used for the design, system, assembly, production and, of course, demining process.

Mechanical demining is an important and essential part of any demining process. In 2005, the MineWolf mechanical demining process was introduced to the field and showed promise for increased speed and reduced costs. By the end of the year, the company had successfully completed several projects using this system, including a large-scale operation in the Democratic Republic of Congo.

Important Requirements

A Total Quality Control system—a management tool for improving, performing and assessing services for a defined process—is required and includes the demining-organization, equipment, standard operating procedures, training programs and the following essential requirements:

1. Ground-penetration depth up to 30 centimeters (12 inches).
2. Multiple operations with the tiler, to break up partially deno- mined or remaining mines and explosives components not com- pletely destroyed by the tiler.
3. Effective depth control for both the tiler and tiler system.
4. Monitoring of drive control to be displayed inside the cabin for all relevant technical data such as distance, depth, rate of revolution for tiler and flail, vehicle speed, engine temperature and vehicle position.
5. Global-positioning-system navigation for directional control.
6. Driver on board to intervene if needed with difficult topogra- phy and obstacles.
7. Quality track-record for all relevant data to be printed from data loggers.

The tiler process has the potential to be capable of destroying all mines, provided the tiler rotates clockwise with a rotation speed of at least 300–400 revolutions per minute and is fitted with special cutting tools to destroy all mines, avoiding slipstreaming, burying and low waves. In general, a Total Quality Assurance program as used in the aircraft and car industry is required because it will analyze all aspects of quality on a continuous basis. In general, a TQA program provides a modern, overall quality concept of a company or system. It is easy to see if the process is capable or not by looking at the area after the demining process. The area has to be homogeneous after a uniform process as this is the basis for a capable process.
Proposed Quality-assurance Process for Mined and Survey Areas

While the MineWolf tiller system provides a capable process with control of demining depth, tiller rotation and vehicle speed, which is the basis for hitting every mine without fail, mines can be destroyed without being detonated. Consequently, mine pieces such as TNT, fuses, or steel bodies of fragmentation mines will be left and might pose a limited risk. There is a capable technology to find the steel bodies using Forester MultiCAT or the Ebinger large-loop detector UPEX 740. Experience has shown that most mine pieces are thrown onto the surface by the force of the tiller. Visible control of the cleared area would identify the areas requiring an additional quality measure.

There remains the risk that a small number of parts and fuses located in the ground, either ferrous or non-ferrous, will not be detected. We believe that the limited risk has to be taken. If there are records or signs of fragmentation mines or items of UXO, the Foerster MultiCAT or the Ebinger large-loop detector UPEX 740 can be used. The search is focused on steel bodies greater than 0.7 kilograms (1.5 pounds) because fragmentation mines have steel bodies that cannot be fully destroyed by mechanical domining (only the fuses are cut). Forester and Ebinger equipment is proposed to find the remaining bodies because they are specialized to locate steel objects within this range. The equipment can be fitted to an armed tractor to locate the steel bodies or items of UXO. Supplement the search for fuses and explosives with a handheld device around the steel bodies to evacuate fuses and explosives. The area can then be declared mine safe.

Summary

The tiller-demining process, combined with total quality-control methods, strives to move from the ground-preparation process currently used, to a “mine free” process. By using the follow-up verification system, additional quality control after mechanical domining will be minimal, fast and more cost-effective without reducing aspects of safety.

For additional references for this article, please visit http://mgnet.com/25v8

Figure 1: Proposed quality-assurance methods.

News Brief

Taliban Suspects Killed Emplacing Mines

Pour suspected Taliban terrorists died while emplacing land mines along roads in southern Afghanistan in late July. Three Taliban members reportedly blew themselves up in one incident as the landmines they were laying on a road in the Arghistan district of Kandahar province exploded.

In a separate and apparently unrelated incident, another suspected Taliban member died when a mine being emplaced in Shah Wali Kot, a district north of Kandahar city, exploded unexpectedly.

While the former hard-line Islamic regime was deposed by Coalition Forces in 2003, supporters of the Taliban have recently increased attacks in southern regions of the country.

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