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Focus on Machine Assisted Demining

The Swedish Mine Fighter, An Interview with Mattias Willersjo

By Catherine E. Harrigan

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The "Toolbox" Approach to the Problem of Mine Clearance

While mechanical mine clearance machines are regarded as an important part of the mine clearance effort, most experts agree that there is no one machine capable of clearing land mines and other unexploded ordnance (UXO) to the 99.6% clearance standard recommended by the United Nations. Acknowledging this problem, but still recognizing the potential benefits of mechanical mine clearance machines, many field experts advocate a "toolbox" approach to mine clearance, using various mechanical mine clearance machines in tandem with manual mine clearance to achieve the 99.6% clearance standard.

Increasing numbers of design and engineering companies that produce mechanical mine clearance machines are adopting the "toolbox" approach as they develop new equipment. The emphasis is shifting from trying to design the magic panacea of mine clearance to designing and producing machines that excel in one specialized area of mine clearance. Design and engineering companies are also beginning to pay special attention to the pleas of field experts, and produce equipment that meets the realistic standards required to cope with the conditions of the areas in which the field experts work.

New Swede Construction Company Responds to the Problem

One design and engineering company that believes in the "toolbox" approach to mechanical mine clearance is the New Swede Construction Company, based in Skovde, Sweden. With the help of personnel at the Swedish Army Mine Clearance Centre, New Swede Construction is currently testing a new tool for the "toolbox," the Swedish Mine Fighter (SMF).

The SMF is designed to destroy Anti-Personnel (AP) mines. It consists of modules of closely set, hardened steel spikes that are driven into the ground with enough pressure to destroy or detonate the AP mines buried below. The modules can operate independently, or be fitted together to cover a wider surface area. The modules come in two different sizes, and can be mounted onto most working machines, including construction equipment such as bulldozers and excavators. For especially dangerous areas, the modules can be fitted to a remote-controlled mine clearance robot.



New Swede Construction reports in tests that the SMF was able to destroy or detonate all DM11 mines buried at various depths from 0-30 centimeters. The close proximity of the steel spikes allows the SMF to destroy or detonate even AP mines buried on their side, which are notoriously hard to detect. The SMF is constructed to disperse the explosive forces of detonation, minimizing the damage to the equipment, and cutting down on damage to the ground in which the mine is buried.

New Swede Construction Discusses the Role of the SMF in Mechanical Mine Clearance Efforts

In an email interview, project manager Mattias Willersjo answered questions about the special strengths of the SMF, and the role that New Swede Construction believes the SMF will play in mechanical mine clearance efforts.

How do you see the role of mechanical mine clearance equipment?

"The mechanical mine clearance equipment's role is...still in its development phase, there are no demining equipment today that can deal with all the mines and UXOs laid out all over the world. The SMF's biggest advantage is its light weight and flexibility, and the fact that any blacksmith or mechanic can service it. I know for a fact that some other demining equipment needs an entire camp to run it."

Where do you feel that mechanical mine clearance is appropriate?

"Mechanical mine clearance is appropriate in areas where you can assure the safety and the fact that all of the mines have been cleared, and that I feel is one of the most difficult tasks with mechanical demining."

Do you believe that mechanical mine clearance can ever be efficient?

"I believe mechanical mine clearance can be efficient, but since two minefields are never alike you need a number of tools to deal with that problem. Just like a carpenter has his toolbox, the deminers should have a 'toolbox' with different demining equipment in it, like manual mine pickers, mine dogs, and mechanical deminers. According to some demining experts I've talked to the best and safest way to clear mines still is by manual demining, mine piking. The SMF is only one way of clearing mines, we have chosen a different way to deal with the problem with mines and we believe that we can contribute with one of the tools in the 'toolbox.'"

Do you think that the UN should set standards for mechanical mine clearance equipment?

"I think it would be extremely difficult for the UN set standards when the technique is so widely different between constructions. It would be a good idea if the UN with their expertise and long experience of humanitarian aid could assist the different mechanical demining constructors with advice or refer to experts within the field of mine clearance."

What environmental considerations must be taken in mind when using mechanical

demining equipment, and how does the SMF address those considerations?

"One very important environmental consideration to bear in mind is the different depth of the soil in the countries which need mine clearance. There are countries in Africa where the soil is only inches thick. If you would use a tank based demining equipment there you would destroy the possibilities for planting seed for a number of years and literally rip the food out of their mouths. One other aspect is weight, the bridges in for example Yugoslavia (the ones that are left) cannot carry more than 10-15 tons. Several mine clearance equipments weigh a lot more than that.

The SMF has no problem with either of these since it only leaves small holes in the ground when it is finished (except upon detonation when it leaves a bigger hole) where they could almost put their seed in, and the weight is way below the capabilities of most remaining bridges. Since the SMF is mounted on a carrier which is normally used for road construction or farming, the drivers and service personnel already exist in the countries."

What are the future design considerations for the SMF?

"The future design considerations for the SMF will be the same as now, a simple and 'clean' construction with as little advanced technology as possible to keep it easy to handle and service without compromising the effectiveness and safety."

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