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Colonel Vosburgh, OASD (SO/LIC): The Successes of Technology

Colonel Allen Vosburgh discusses the success of the Department of Defense (DoD) Research and Development (R&D) Program, the challenges of meeting user needs and the role of the military in humanitarian demining operations.

by Margaret Busé, Editor

Margaret Busé (MB): What do you feel is the biggest challenge facing humanitarian demining programs?

Colonel Vosburgh (V): In terms of technology, I find that determining technology requirements is the hardest part. Until somebody clearly states their requirements, no one can begin to tackle the problem. Many times it is hard to get good requirements out of the people doing the work.

MB: Why is that a challenge for users?

V: If you ask a mine deminer how many requirements he or she has written up and submitted, stating a need for technology, the answer would be "too many." Most users are not very good at doing that because they are too busy carrying out their jobs and do not have the time or the expertise to sit down to document their needs. Also, the system can be ponderous with long and involved paperwork documenting operational needs. That is why we conduct our annual Demining Requirements Workshops, to make the effort to say, "Come sit us down about your demining program and tell us what you are doing." We can then draw our technical deficiencies and determine how DoD might help find a technical solution to some of the problems. This process seems to work very well.

MB: What is the mechanism where users can state their technical requirements or needs to your office?

V: We welcome unsolicited inputs to our Ft. Belvoir Night Vision Electronic Sensors Directorate (NYVESD) Program Office, but it is the annual Demining Requirements Workshop that provides opportunities to state problems and provide information we need to develop technical solutions.

We have done some very quick turn-around times once we have been approached for a solution to an humanitarian demining (HD) problem. For example, in August 2002, the Organization of American States sponsored Honduras to come see us to talk about their HD problem. In September, Mr. Ben Garcia, one of our Ft. Belvoir engineers, and I, went to Honduras to look at the HD situation first hand. We came back and presented the problem to our engineers saying, "What can technology do to fix this and help them solve the problem?"

Essentially, their problem was an area flooded by Hurricane Mitch along the border with Nicaragua where mines had been buried under 50 centimeters of silt. Their mine dogs could not locate mines at that depth and it was beyond the capabilities of their detection equipment. The Hondurans were frustrated because they had no one to turn to that was able to help.

Our Fort Belvoir engineers developed a novel technique to mechanically excavate deeply buried mines that we hope will provide Honduras a rapid solution to their problem. The equipment is espoused as one that be begins to field trials in November 2003. That is not a bad turn-around considering we were first approached with their problem in August 2002.

We developed a new piece of equipment, a set of procedures and safety certification in just over a year. Hopefully, this equipment will solve their problem while adding to our knowledge base.

MB: The result is cross-cut: the country will have another area cleared and you will have a new piece of equipment that aids demining efforts and can be deployed elsewhere.

V: Exactly! Other areas of the world have deeply buried mine problems. Jordan, for example, has an area along the Jordan River Valley that flooded, followed by drying and cracking of the soil. First the mines surfaced, then fell down into these cracks as the earth dried. We really have not addressed the deeply buried mine problem so we are hoping for an effective new technology that will be successful and that we can use in other places.

MB: Do U.S. policy changes affect where and how equipment can be deployed? Have the goals of the Special Operations and Low Intensity Conflict (SOLIC) Program changed or evolved because of U.S. policy adjustments abroad?

V: I do not think our policy has changed. Our goal for the humanitarian demining technology program is to try to reduce suffering and help people in mine-affected areas by leveraging effective demining, Special Operations and Counterinsurgency Programs. For a long time, the counterinsurgency movement was focused on military superiority. The United States wanted a machine that could do through the Defense Security Cooperation Agency and ASD (SOLIC)...

MB: We are looking for better and more effective solutions, one of the things we have seen is a much closer relationship with the military Counterinsurgency Program. For a long time, the counterinsurgency movement was focused on military superiority. The United States wanted a machine that could do...
GB: How can the community foster the information sharing of these technologies?

COIL VI: The key is continuous communication. Publications like this are great for information sharing and communication. We can't be afraid to disagree as long as we recognize that we are all focused on getting mines out of the ground. This effort is not always easy. For example, our International Pilot Project for Technology (IPTP) effort to technically evaluate off-the-shelf metal detectors for humanitarian demining was a project where we worked with international partners testing a selection of available detection equipment against established standards. The goal was to provide a consumer report-type publication providing specific performance information for use by the international demining community. The United States funded the purchase of detectors and other countries conducted some of the testing. The project was difficult because you have to work with all the different stakeholders. This does not mean it cannot be done, it is just harder and takes longer. I believe we have to continue pushing for that type of effort.

The U.S. cannot, nor should we, fund everything because that is not our role. However, we have to make an effort to be an active participant. Other countries have a lot of good ideas to offer and a lot of great experience in these areas. For example, if you look at the International Trust Fund (ITF) in Slovenia, and all of the things they are doing in underwater demining, mine dog training and other technologies, they have a lot to share with the worldwide community. Should there be a formal effort? I guess so, but I wouldn't presume to suggest what it might be. Should it be under the auspices of an international organization like the UN/ITPF (the International Test and Evaluation Program)? Other countries and entities that are not identified international group? I don't know. As long as the effort supports our program goals and is not counter to United States interests, we will continue to provide support. We are currently working on or planning projects in Afghanistan, Rwanda, Honduras, Thailand, Mozambique and Angola the program is definitely expanding and I am very pleased to see that expansion.

MB: Who has been contacting you—countries or NGOs?

COIL VI: NGOs and national demining organizations have been in conversations with us in contacting us and trying to develop solutions. Occasionally, countries approach us through the embassies. We just deployed a new piece of equipment called MAXX to Rwanda. They have the Mine Action Center (MAC) shown with a field trial. Rwanda has done a good job of demining, but manual demining has gone as far as it could go and now they have an opportunity to consider a mechanical solution.

MB: Is there any particular equipment that you feel has been more successful than others?

COIL VI: With the TEMPEST remotely operated vehicle clearance system has been extremely successful. TEMPEST is manufactured by DTW in Cambodia and successfully used in Cambodia, Thailand and the most recently funded Countermine Demining Program (ADP) in Mozambique. Like many systems, there have been incremental improvements. We had problems with the TEMPEST's wheels getting stuck in the mud during the test. We are now adding tracks as a modification to solve that mobility problem. The Dutch-produced ROTAR bubble-clearing device has also developed as a very useful system via a partnership with MMG in Namibia and Angola. We are also field-testing a new mine clearing sifter and cultivator with MMG in Angola. We are working to improve detection systems and partnering with the Army Countermine Program to improve those technologies. We are working with HALO Trust to field trial special expansion-wrench tools for demining equipment. We have had some real success developing disposal and neutralization equipment and we continue to develop flaps and torch systems to burn mines out instead of denaturing them. Hopefully this will help eliminate problems with contamination and the very difficult regeneration common to explosive solutions.

MB: What about the remote-controlled systems?

COIL VI: We continue to believe in the superior safety of remotely operated systems. We would like the field like Dr. Herman at Carnegie Mellon University, constantly improving our remote control capabilities. I would like to see us develop a common austere for remotely controlled ground systems. Our needs are clearly different from military tactical requirements, but it would be useful if we all gravitated toward using a common system.

MB: How does your office determine what type of equipment and manufacturer you will be working with?

COIL VI: We use competitive solicitations to industry and academia, and conduct continuous market investigations to remain abreast of emerging technologies. We like to work closely with our foreign counterparts. Believe NVESD Project Office are experts in their field and bring a lot of experience to the table. Again, you start with the requirement and then begin to narrow the different systems down. Also, we try to leverage previous testing done by countermeasures program or international agencies that may have done similar testing to help us narrow our prospects. Of course that does not mean it will work off the shelf, and in many cases we have to modify the system to make it fit our needs.

MB: What other criteria do you use besides user needs and test evaluation in making your decision?

COIL VI: I would be less candid if I ignored political considerations, but a major strength of this program is that we are able to work all over the world in areas with mine problems.

My goal is to support Department of Defense and Department of State humanitarian demining programs through application of technology solutions to humanitarian demining problems. We support regional Combintational Commanders and United States Embassy Country Teams by providing low-profile, humanitarian-oriented programs. We frequently work in places with limited U.S. presence, providing engagement and visible U.S. humanitarian assistance that might otherwise not be possible.

MB: Overall, what has been the feedback that you have received from the NGOs, NGOs or host countries?

COIL VI: They have been largely complimentary on our efforts, whether we can help them or not. They understand we cannot solve all problems, but they also are beginning to know that we are ready to make an effort and with a solution to help them. In the last couple of years, more NGOs are contacting us, I think the word is getting around that we are straightforward in our approach and that we are out there trying to do good things. We are willing to work with them to make things happen, to support their goals and fulfill our mission. We are now doing projects with Mines Advisory Group (MAG) in northern Angola and MMG ADP and HALO Trust in a variety of other areas.

MB: How are you promoting this program to the mine action community?

COIL VI: Through our website at https://www.humanitariandemining.org, the annual Requirements Workshops and by opportunities like this to tell our story. Our best advertising is probably word of mouth and that seems to be happening. I believe this is particularly true as a result of our efforts in Asia, Africa and rapid response in Honduras. Our friends at the Department of State have been quite helpful making introductions and helping get the word out. Sadly, demining is a growing industry that seems only limited by our funding. The U.S. Department of Defense has spent over $120 million (U.S.) developing technology solutions to humanitarian demining problems. I think we have been extremely successful so far and hope we can continue developing new solutions to this worldwide problem.

*All photos courtesy of the author.

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NVESD recently completed comparative testing of South African and U.S. systems using different mechanisms to capture air samples. These samples are then analyzed both by machine and by dog for trace amounts of explosives. As with all good research, these efforts have identified additional interesting questions that will require answers.

The potential for biological systems to aid us in demining may be great. Remember, we started demining technology with dogs and some very rudimentary mechanical systems, which were improved. A number of genomet­

Modern technologies are developing a fast­

growing, self-limiting plant that can detect explosives leeking from mines or UXO. You may see some new trees and they turn color in the presence of mines or explosives. If it doesn't work, it doesn't work, but at least you tried. If we don't find one to work, to explore new technologies, all we will do is continue product impotence.

MB: How does your office determine what technologies are worthy of future funding?

COIL VI: It always goes back to the requirements process. We look at the needs and try to determine if we can match an off­the­shelf technology to the specific requirement. If not, we have to look for a new approach.

One dear friend I heard during the last requirements workshop was the need for better area reduction. "If we only had something that could reduce the areas that we have to demolize." If you have 1,000 acres you believe are mined, then people will consider them mined until you prove otherwise. If you can reduce that area down to 10 acres, that is more manageable.

If we could use a biological approach to enhance area reduction, this would be a great benefit. For example, if it can be validated as a reliable tool, genetically modified plants may be very useful in a place like the U.K. Railway. You could broadcast the seeds from a safe area, let them grow and reduce the area using color change or lack of change as an indicator.

The people working these biological technologies are very enthusiastic about trying different approaches and working on new problems in new ways. While I am not able to help fund these emerging technologies right now, I am interested in seeing where they go. Our program is limited to rapid prototyping and demonstration. We are not funded to participate in basic or applied research areas. Many of the emerging technologies are still in these research categories, but we will continue monitoring them closely.

Rotary Mine Combs at last site in England.