It's a Bird, It's a Plane—It's the Mineseeker Airborne Mine Detector!

Partnering with QinetiQ and The Lightship Group, the Mineseeker Foundation is developing a system to revolutionize mine detection. By deploying the first operational airborne landmine survey system, the foundation aims to provide the mine action community with a quicker and more efficient survey tool. Additionally, the Mineseeker has the potential to be useful in a number of other areas necessary for development in mine-affected countries.

by Nicole Kreger, *MAIC*

Background: A Need for Improved Mine Detection Techniques

The Mineseeker Airship hopes to fulfill current demining and survey needs. This airborne mine detector makes use of radar technology and an airborne platform to quickly scan an area for mines. One of the most effective uses of this technology would be for area reduction. Distinguishing mined areas from clear areas is extremely important, because people in mine-affected countries will often avoid using clear land for fear that it is contaminated. Effective area reduction helps return land to these people quickly and also allows mine action agencies to mark land that is contaminated so that civilians avoid danger until the mines can be cleared.

The Mineseeker Platform

The Mineseeker makes use of Ultra Wideband Synthetic Aperture Radar (UWB SAR), which is able to penetrate objects such as foliage and can detect objects buried in the ground. UWB SAR is able to produce the highest resolution images of any radar of its kind. Use of this radar requires as little vibration as possible in an environment that is nearly free of metal. Other aircraft cannot fly steadily and slowly enough over an area to use UWB SAR or are not big enough to accommodate UWB SAR. Thus, the Mineseeker Airship is perfect for the job as it "provides a mobile, stable platform that has long endurance, low noise and vibration, no propeller downwash [downward air pressure, possibly strong enough to trigger a mine] ... exceptionally low risk of critical failure, a large payload capacity and a good operator environment...."[1]

Mineseeker Trials

In January 2000, the Mineseeker underwent trial usage at the Defence Evaluation and Research Agency (DERA). This marked the first airborne trial using UWB SAR of this type in the world. The trial determined that the airborne system was at least as effective as previously conducted ground-based trials and led to further development of the Mineseeker system.

The United Nations Mine Action Coordination Center (UN MACC) in Kosovo requested that the Mineseeker be deployed there as a simple aerial reconnaissance and survey tool. A prototype was sent to Kosovo in the fall of 2000, which enabled the Mineseeker to be used in a real mine-affected environment. It marked the world's first use of an airship in a humanitarian role and in a post-conflict environment.

The trials in 2000 showed that the Mineseeker is able to detect mines and UXO that are laid on the surface, hidden by foliage and buried in the ground. The UWB SAR scans areas at a rate of 100 sq m per second, and it records an overwhelming amount of information. As Mineseeker Founder Mike Kendrick puts it, "in that second, it transmits as much data as is encased in the entire British Library."[2] Such information would be useful to any number of organizations and government ministries

From left to right, Mike Kendrick of the Mineseeker Foundation, Col. Alistair McAslan of Cranfield Mine Action and David Partridge of QinetiQ stand in front of the Mineseeker Airship.

Footprint left by a cluster bomb strike, as viewed from the Mineseeker Airship.

in areas ranging from agriculture to transportation. Thus, the Mineseeker proved its effectiveness in mine action applications as well as a multitude of other areas.

Current Status of the Project

Currently, the Mineseeker Foundation is attempting to acquire funding for the project. The foundation's current goal is $20 million (U.S.). They have approached several foundations regarding funding and are currently waiting for responses. According to Mr. Kendrick, the foundation is also "involved is discussion with several groups, including a government who has reacted positively to the funding proposal."[3] The foundation is also preparing a major drive in the United States as well as discussions with the UK government for funding assistance.

The Mineseeker Foundation has also attracted the interest of Rotary groups around the world. The organization attended the Rotary International Convention in June 2003 with the hopes of increasing awareness about the mine problem and about the foundation and acquiring the support of Rotarians. Mr. Kendrick recognizes the potential positive impact of Rotarian involvement and is eager to partner with them: "[We] hope to get the foundation adopted by the Rotarian movement in order to raise cash on a global basis."[3] 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.

"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 almost anything else, that can be solved within our lifetimes. And if we get together, we can do it."[4]

The Future of the Mineseeker

The Mineseeker Foundation's goal is to develop and deploy several systems to countries with severe landmine problems. The organization aims 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...."[2] 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 science 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."[2] Many countries have a great need for better wide-area mine-detection tools and are interested in receiving the system. The foundation hopes to deploy five ships to mine-affected parts of South America, Africa, Asia and central Europe.

Conclusion

Through trial 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.

**All photos courtesy of the Mineseeker Foundation.*

Endnotes

1. "Mineseeker: Airship." Mineseeker. Online Document. http://www.mineseeker.com/html/content/airship/airship.html. October 23, 2003.

2. Telephone Interview with Mike Kendrick. October 23, 2003.

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

4. BBC Documentary: *Mineseeker*. 2001.

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