

April 2003

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Recommended Citation

Pratt, Donald (2003) "Messiah College's Minefield Simulation," *Journal of Mine Action* : Vol. 7 : Iss. 1 , Article 42.
Available at: <http://commons.lib.jmu.edu/cisr-journal/vol7/iss1/42>

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Issue 7.1, April 2003

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Messiah College's Minefield Simulation

As a part of their Mine Awareness Week, members of the Messiah College Landmine Action Project (MCLAP) built a simulated minefield to draw attention to the landmine issue and give members of the community a taste of what it might be like to live in a place where mines are a part of daily experience.

by Dr. Donald Pratt, *Messiah College*

Creating Awareness

Most Americans know very little about landmines beyond what they read in the papers or see on TV. Few have ever seen a real landmine or could identify the various types. Even fewer have ever been to a mined area and felt the fear and uncertainty of knowing that the next step could change their lives. However, students, faculty, staff and administrators at Messiah College recently had the opportunity to experience what it might be like to walk through a minefield. MCLAP, a student organization dedicated to finding a solution to the mine problem, built a simulated minefield to draw attention to the landmine issue and give people the experience of what it might be like to live in a place where mines are a daily threat.

The simulation was one of several activities during MCLAP's Mine Awareness Week, an annual event on the Messiah College campus. The students came up with the minefield idea last year while brainstorming ways to get the campus talking about landmines. "We hit upon the idea of using a simulation to raise awareness about the problem of landmines in the world today," says Brian Thompson, a sophomore engineering student and active MCLAP member. "Immediately, we began a rough design of the field and what it would look like." After many planning sessions, Mine Awareness Week started to come together. The field would be in operation during the day, with posters showing facts about the landmine problem displayed nearby and advertisements strategically placed around campus. The week would culminate with a chapel program devoted to the issue, open to all students and faculty. The team chose a site for the simulated minefield near the college's dining hall, where thousands of students pass each day.

Constructing the Minefield

Next came the design and construction of the simulated mines. This was a challenge for sophomore engineering student and MCLAP member Nathan Shaffer, who took on the responsibility of designing and building the electronic mines, but hadn't yet studied electronics. Fortunately, plenty of help was available from Messiah College engineering faculty. "Once the electronic schematics were down on paper, the rest of the design flowed pretty easily. The first step was to design the two types of landmines for the simulation. We chose to use pressure mines (AP blast mines) and



Simulated AP blast mine created from

fragmentation mines," says Shaffer, who spent many hours in the shop over the summer creating the blast mines from wooden boxes with spring-loaded electronic switches instead of explosives. He continues, "The fragmentation mines were easier to make but also took the most time. Each mine was machined from metal shafting, with grooves cut into the sides to resemble Russian mines that we had seen in books. Next, the trigger mechanism was added." The fragmentation mines were designed to use tripwires that would close a switch when the wire was pulled.

Once the mines were made, Shaffer began working on the control panel. "All the wires from the mines were brought back to two control circuits, one for the blast mines and one for the fragmentation mines. We had individual light-emitting diodes (LEDs) for each fragmentation mine so that when someone tripped one, we knew which mine to go reset," he says. Students planned to operate the control panel from just outside the field, using an airhorn to let participants know they had detonated a mine.

With the mines and controls built, the MCLAP team was ready to set up the field, but the students were unprepared for the thought-provoking, and at times, emotional experience of laying mines, even dummy mines.

Thompson puts it this way, "We found ourselves in the shoes of landmine-laying militants when, for instance, we considered the best type of terrain in order to have the landmines work most efficiently. Other times we found ourselves thinking like deminers, as we saw how difficult it was to find the mines, even when we thought we knew where they were." Shaffer agrees, "As we were laying the mines, the true horror of these devices hit me. I happened to be placing a mine in the ground when I backed up one step to have more room. As I moved my feet, I felt the plate of a pressure mine drop underneath my sneaker. I had just stepped on a mine that I did not realize was there."

None of them knew whether to be proud of their work or appalled at the ease with which they were able to come up with devious ideas for tricking their victims, like laying a blast mine just beyond a not-so-well-hidden tripwire. The idea was that people would see the tripwire and then trigger the buried blast mine when they stepped over the wire. After the mines were laid, the students roped off the area and placed signs saying "DANGER!! MINES!!" around the field. Brush and foliage were added to the site to create the effect of walking through woods. The students wired the last of the mines into the control panel and tested everything one more time. Finally, the field was ready.

Presenting the Minefield

On opening day, Aaron Dahlstrom, a senior and one of the founding members of MCLAP, addressed the crowd with some powerful statistics on the global landmine problem. Dr. Ray Norman, Dean of the School of Mathematics, Engineering and Business, joked at first about the dubious honor of being the first one through the field, but found the experience sobering. Later, he shared his reaction: "Although for a number of years I have been keenly aware of the staggering extent of the landmine problem around the globe, the act of stepping into that simulated minefield on Messiah's campus brought the true reality of the problem uncomfortably close to home—right under my feet, to be precise. The weight of the sense of insecurity and uncertainty stayed with me long after my 'trial run'—leaving me with the indelible feeling of what it must be like for the millions in our world who live with that each time they step out in their own backyards." Although he took more than five minutes to do it, Norman managed to navigate the 20-some-odd feet without detonating a mine.

Others were not so lucky. One person jumped from log to log through the minefield and then, just when he thought he was safe, stepped on a blast mine. Later, a woman made it partway through the field and then froze, unable to go on. She had to be led by hand through the rest of the field. Shaffer recalls, "Even the spectators got into it. They did their best to guide their friends through the field. In one incident, a group was watching as one of their friends stepped cautiously through the field. Suddenly, he set off a fragmentation mine. They began to laugh, but the laughter stopped when I informed them that not only

their friend but they too were all most likely dead or injured from that type of mine." Thompson agrees: "Running the field held yet another unexpected effect. It gave us an eerie feeling to watch an LED light up as one of our friends or classmates set off a simulated mine and we had to blow the air horn, signifying that they just lost a limb (or worse). This was one of the hardest tasks for any of us, and it made a big impact on our lives."

Faculty also got a chance to try negotiating the field, like Dr. Tim Van Dyke, Assistant Professor of Engineering, "[It was] just a small area, and I knew there were mines there. I was real careful, and I still blew up. I can't imagine what it must be like to live in an area where you never know when you are going to stumble across a mine." But most of the participants were students, like Jay, a sophomore, who said: "It was a really good to experience walking through a minefield. It was eye-opening to realize that many people have to step carefully wherever they go." Karen, also a sophomore, said, "The landmine project was a realistic representation of a minefield. It opened awareness on campus as to what a minefield may be like."

The event soon had the whole campus talking about mines and those who live near them. It seemed as though wherever you went, someone was talking about the field and sharing experiences about walking through it. The airhorn could be heard a good distance from the field, and it quickly became a familiar sound, a grim reminder of the plight of those who live with the fear of stepping in the wrong place and triggering not an LED, but an explosive blast.

Results of the Minefield

The success of Mine Awareness Week, particularly the simulated minefield, far exceeded the team's expectations, but MCLAP's vision goes beyond raising landmine awareness on campus. Formed in the fall of 2001, the group also sponsors and directs student research projects involving a wide range of landmine issues, including detection methods, robots, UXO disposal and even animal training. MCLAP is part of the Messiah College Collaboratory for Experiential Learning, an innovative, interdisciplinary learning laboratory within the School of Mathematics, Engineering and Business, where students and faculty from different majors come together to address complex, multifaceted problems of real significance and develop patterns of lifelong learning combined with service.

Not content to rest on the accomplishments of Mine Awareness Week, a team of MCLAP students is currently working with the U.S. Department of State and the Organization of American States (OAS) to organize a trip to Nicaragua in May to visit a minefield and interview deminers. The team will also spend several days at a landmine survivors' clinic in Leon, sponsored by the Polus Center. Students are hoping the trip will not only increase their knowledge of the landmine problem, but also open up new areas for research, perhaps in the area of adaptive equipment for landmine survivors. Like the other members of the team, Thompson is looking forward to the trip: "We are going down with open minds, excited to learn about an area of landmine action that we have never really experienced before. We realize that this part of the trip may have implications for a new direction for MCLAP."

And of course, the team plans to run the minefield simulation again and other organizations interested in building their own simulated field have already requested information. The team is eager and excited to see the idea spread to other campuses, and they have put together a website showing how to build a simulated minefield. For additional information on MCLAP, including more pictures and details on building the mines and wiring the control panel, visit the MCLAP homepage (<http://www.messiah.edu/mclap>).

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7/20/2016

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Journal of Conventional Weapons Destruction, Vol. 7, Iss. 1 [2003], Art. 42

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