



Focus on Machine Assisted Demining

THE COMPACT 230 MINECAT, J. Barry Middlesmass
Lockwood Beck LTD.

Reinventing the Wheel Lighter, More Powerful and Better Than Before

By Margaret S. Busé

Issue 3.2 | June 1999

Information in this issue may be out of date. [Click here](#) to link to the most recent issue.

J. Barry Middlesmass, Managing Director of Lockwood Beck Limited, has considerable experience in the field of mechanical mine clearance and mine clearance equipment. Before embarking on a career in mine clearance, He served in the military, including reserves, for a total of twenty-nine years, specializing in mines, explosives and improvised explosive devices. When he resigned his commission, he devoted himself fulltime to mechanical demining. As a director of Aardvark for ten years, he had a key role and made a significant contribution to the company's success. Currently, JBM runs his own consulting company, Lockwood Beck, advising a variety of clients on mechanical mine equipment. One of the projects he has been recently involved with is the development of the COMPACT 230 MINECAT.



The COMPACT 230 MINECAT

Currently completing the final mobility and live explosives trial is a new piece of equipment, the COMPACT 230-MINECAT. It is unique and supercedes previous type of equipment in the field because it is smaller and more versatile.

Designed as a platform from which other devices are added, the MINECAT may be used for a multitude of tasks. It can be fitted with a flail for mechanical mine clearance, it can be converted back to a skid steer vehicle, or equipped for armored reconnaissance, ground penetrating radar, and other mine clearance and detection mechanisms. Unlike earlier models of its type, the COMPACT 230 MINECAT has more

power and versatility because it is not completely dedicated to one mine clearance system.

The MINECAT's size is also a considerable advantage. It is small enough that it can be easily transported. It can be loaded in an ISO container for shipment, easily moved by small trailers or airlifted by a twin-rotor helicopter.



Middlemass states, " The vehicle, with its various mine clearance attachments, was designed specifically as a safe platform for use in a hazardous environment. It is designed as a single operator (automatic or manual), versatile, all year round machine and may be returned to its original skid steer configuration in a very short time."

Maximum safety, maximum efficiency, and cost effectiveness are the key priorities Middlemass looks for from this type of equipment. Although he is not in favor of remote operating, because of lack of visibility, this ability is available on the COMPACT 230.

The COMPACT 230's ease of service, maintainability plus easy access to spare parts will also make this a desirable and cost effective machine for mechanical mine clearance. "This is a highly valuable tool for the tool box and a valuable tool for the military, particularly in special operations."

On June 2, 1999, Middlemass had two MINECATS tested in Norway. A recognized authority conducted the tests. The vehicles were put through explosive tests starting at a charge of 250 grams. No damage was received at a 5 kilogram charge. A 7-kilogram charge was placed directly under the cab of the vehicle which was on a stationary frame. There was no significant damage. A 10-kilogram charge was placed slightly left of center, resulting in the loss of a single flail chain. "We only took 6 g's in the cab and that is incredibly good." stated Middlemass.



The next three to four weeks will be spent conducting further mobility trials using the vehicles 6 to 7 hours a day. The tests push the vehicles to their limits by putting them through every possible scenario.

"I have great faith in the team that produced this and I expect it will be a success." The COMPACT 230 MINECAT will be launched this July

onto the world market.

Middlesmass feels that mechanical mine clearance has an important role to play in landmine removal, but you do not need to "reinvent the wheel" to come up with a successful piece of mechanical mine clearance equipment.

Hand and mechanical clearance can provide a complementary relationship in landmine removal. Middlesmass feels hand removal allows for quality assurance, but is hazardous by its very nature. He feels the terrain of mine afflicted areas plays an important part in the use of mechanical mine clearance. Often these areas are highly overgrown making trip wires and landmines impossible to detect.

Mechanical mine clearance equipment has the benefit of being fully armored and thereby protected. "Mechanical equipment can be first used in densely covered areas and other methods of demining can then follow-up," states Middlesmass.

"No method will give you complete clearance," states Middlesmass, but he does feel that the United Nations should have equipment standards, "like they have standards for personnel." Middlesmass believes that the responsibility for equipment standards lies with the contractor. "We should have by now, after a decade of Humanitarian Demining, a center of excellence to look at equipment and set standards of efficiency. One set standard should be the effectiveness of equipment in different scenarios and how well it moves in various terrains."



"Mines are like stones in the ground, stones that explode, so in the same way farm equipment is used to till the soil, so the same pieces of equipment may possibly be modified to detect and harvest landmines."

"The Aardvark is a redesigned Ford tractor with the attachment of a flail. The flail was designed during the Second World War for demining purposes. We have methods around us that are very efficient. These efficient efforts are already proven; we just have to bring these ideas up to the technology of the 21st century. We do not have to reinvent the wheel. We need to use modern technology to improve that wheel. We need to take what we have and improve it with engineering."

Environmental issues are also a consideration when using mechanical mine clearance. "There can be run off problems caused by destroying the topsoil

of the land that is being cleared. It is ridiculous to go down 20 or 30 centimeters because it opens up environmental problems. AT mines are just below ground level, 10-15 centimeters. AP mines are on top of the ground."

Middlemass feels that one of the most important factors of mechanical mine clearance is the role it plays in improving the lives of the people directly affected by landmines. "By using mechanical mine clearance methods, the whole operation is speeded up, quickly returning the land to a usable state and improving the lives of the people directly affected by landmines. "We have to do something for the people so they can get on with life." He illuminates this idea with a concept he refers to as "hearts and minds."

"When a farmer believes there are mines in his field, he wants to see the land physically being dug over for mines, even if none are found. Only this will give him the confidence to go back and cultivate his land"



SPECIFICATIONS for the COMPACT 230 MINECAT

Series Name: COMPACT

Current Vehicle: COMPACT 230 "MINECAT"

General Dimensions:

Total, including Flail and Cab: 6 metres

With Flail: 3 metres

Without Flail: 5.5 metres

Flail clear path: 2.3 metres

Overall weight: approx. 5,000 kilograms

Height to cab top in high position: 2.4 metres

Height to cab top in low position: 2.2 metres

Flailing speed: 0 to operational requirements

Vehicle Platform:

- Skidsteer "Bobcat" 78 Diesel
- Tracked over solid rubber tires
- Maximum speed 12 kph
- Auxiliary power unit for attachments - 150hp Perkins Diesel
- Hypostatic gearbox
- Operator or Remote Control
- Easy access to service/maintenance

Armored Cab: (operator safety 5m from blast)

- Attach/Detach armored cab with single operator control. Can be used as a control point when not on vehicle
- Clip on/off remote harness
- Armored for A/P S.A ammo at 13mm
- Glass armored A/P 72mm
- Air conditioning
- Roof emergency hatch/alternation demining position
- Raise and lower positions for loading/transporting (air/sea/land)
- Capable of applique armour (upgrade)

Attachment: (Currently)

- Flail, capable of sustaining a blast form both AP and medium AT mines
- Counter rotational
- Scrub clearer

Optional Vehicle Attachments:

- Flail, complete clear width 2.3 metres