THE USE OF MINE PROTECTED VEHICLES AS SAFE PLATFORM FOR REMOTE CONTROLLED FLAILS: ERITREA CASE STUDY

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INTRODUCTION

MECHEM was awarded an UNOPS contract for an "Integrated Demining Capacity" in Eritrea from December 2004 to June 2008. The contract entailed a manual capacity supplied by the Kenyan Army, a mine detection dog capacity and a mechanical capacity consisting of 4 Bozena-4 mini flails and 4 Tapir mine protected vehicles (MPVs) fitted with steel wheels provided by MECHEM.

INTRODUCTION

In the past Mechem had utilized mini flails on various contracts, but mainly as single machines. This was the first contract on which the company was tasked to have 3 mini flails operational and one for training purposes. Furthermore, it was the first time the company operated flails in a dry, semi-dessert region. The contract was executed in the Shilalo and Tserona areas of Eritrea, along the border with Ethiopia.

INTRODUCTION

This presentation will demonstrate the advantages of using mine protected vehicles as safe platform for operating remote controlled flails from.

PROBLEMS ENCOUNTERED

Initially the flails were operated from the ground. The areas of operation are very arid and problems were encountered with the dust which made control of the flails very difficult at distances greater than 50m. This obviously created safety problems with operators moving closer to the machines so as to have better sight and control. Furthermore the machines could easily be damaged by falling into obstacles such as tank and erosion ditches that were not visible to the operator on the ground.

<u>Photo 1</u>: Eritrea is a dry arid country.
The town of Shilalo is in the background.

<u>Photo 2</u>: The mini flail at 10m.

This also brought down production substantially since the operators had to stop regularly to let the dust settle so that they could get the machines visual whilst still trying to adhere to safety distances. The machines also had to be pulled out to the maintenance area for their hourly check and clean service. This further reduced the productive time of the machines.

Initially the machines were averaging approximately 2,500m² per day; far below their production potential.

<u>Photo 3</u>: Machine undergoing hourly service; see the amount of dust in filters.

<u>Photo 4</u>: “Sekel” bush entangled on flail axle; had to be removed hourly or sooner.

SOLUTION OFFERED

The low production rate initially maintained with the mini flails placed the MECHEM contract in jeopardy and a solution had to be found. An obvious solution would have been the procuring of the Way Industry operator monitoring cabin, but the UN did not have additional funding for the procurement.

SOLUTION OFFERED

The Tapir mine protected vehicles' role on the contract was that of draw vehicles for the Bozena trailers and general purpose cargo vehicles. This meant that these vehicles were standing most of the time. It was thus decided, in conjunction with the UNMACC, to utilize the Tapirs as control vehicles for the mini flails.

<u>Photo 5</u>: The Tapir mine protected vehicle.

Utilizing the Tapir, or any other MPV for that matter, had the following advantages:

- **The operator had greater protection and could move 5 to 10m behind the machine.**
- **The height of the vehicle gave the operator excellent sight and control of the machine.**
- **The team medical orderly could move with the operator.**
- **The MPV driver acts as the assistant to the operator and assists with the hourly services.**
- **All tools and equipment needed for the hourly service could be on the vehicle, thus saving the time needed to return to the maintenance site.**
- **The MPV could also be used as a recovery vehicle in the case where the flail needed to be recovered.**

Once the MPVs had been introduced into the team, the productivity of the machines increased to an average of 7,000m² per day. This was an increase of approximately 250%.

Utilizing MPVs as control vehicles for remotely operated flails does however have the following disadvantages:

- **MPVs are fairly expensive. This can however still be overcome by using remanufactured vehicles which are a fraction of the price of new MRAP vehicles.**
- **Additional running costs for the MPVs. Although maintenance, especially in this role, is fairly low, the vehicles are heavy on fuel.**

<u>Photo's 6&7</u>: Tapir MPV utilized as control vehicle for Bozena-4 mini flail.

CONCLUSION

Flails are arguably the most expensive asset any commercial demining company deploys on contract. It is thus logical that one needs to get the maximum production from the machines. However one has to balance production with the safety of the operator as well as unnecessary damage to the machine. Utilizing MPVs as safe platform to control the machine will increase the production rate of the machine and enhance the safety of not only the operator, but entire mechanical team. The greater productivity will also quite easily offset the additional costs involved with the MPV.