

# Airborne detection of minefields:

## Preliminary results Mameme & Bandua, Mozambique

### Mameme.

This area was used as an old Frelimo camp near Mameme, about 55 km. from Tete airport. The site is high on the priority list of the province / NPA for mine clearance as an accident happened about a year ago, killing 2 children and wounding another one when playing with an AP mine (PMD-6) found in the area. The site was mined to prevent access to the military camp.

No detailed level 2 survey has been executed to determine the precise boundary of the minefield. The minefield is believed to form a half circle surrounding the camp. The present area cleared is two meters off the road.

Expected type of mines: As Frelimo mostly used Russian type of mines: PMD-6 (box mine), PMN and POMZ-2. Also UXO's are believed to be present. The place is full with old equipment, metal contamination, etc. The remainders of the camp buildings could be seen at about 150 metre from the road.

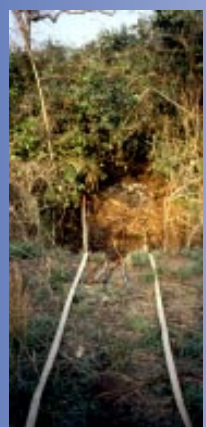
Type of terrain: The area is affected by burning, it is half-open terrain and spacing between the trees is generally more than 10 metres. Patches with very dense grass (dry) up to 50 cm high. Frequent appearance of stones, up to very big core boulders of more than 1 metre in diameter. The terrain is flat, internal relief less than a few metres. This vegetation and terrain type is typical for larger areas in central Mozambique.

### Bandua.

Close to Buzi is the town called Bandua (about 25 km in SW direction) and the mined area is situated on the western side of this village. The minefield is limited on the north-eastern side by the local primary school, just 6 metre off the school playground.

The mined area surrounds an old military base camp (Frelimo). The edge of the camp is still visible by the trenches and embankments constructed, which surround the camp. The minefield is likely to be situated at the outside of this embankment. The camp was used until 1992. There is a high level of metal contamination.

The area is also very flat. The military camp deviates from the surrounding area. Along both sides of the entrance road to Bandua a plantation with rows of cashew nuts mixed with coconut trees is found. Also rice is grown between the trees. This pattern stops near the former base camp at the edge of the village. It could have been possible that this plantation continued till the village prior to the construction of the military camp. The suspected minefield transformed into a dense bush – shrub – grass vegetation cover contrasting in use with the surrounding area.



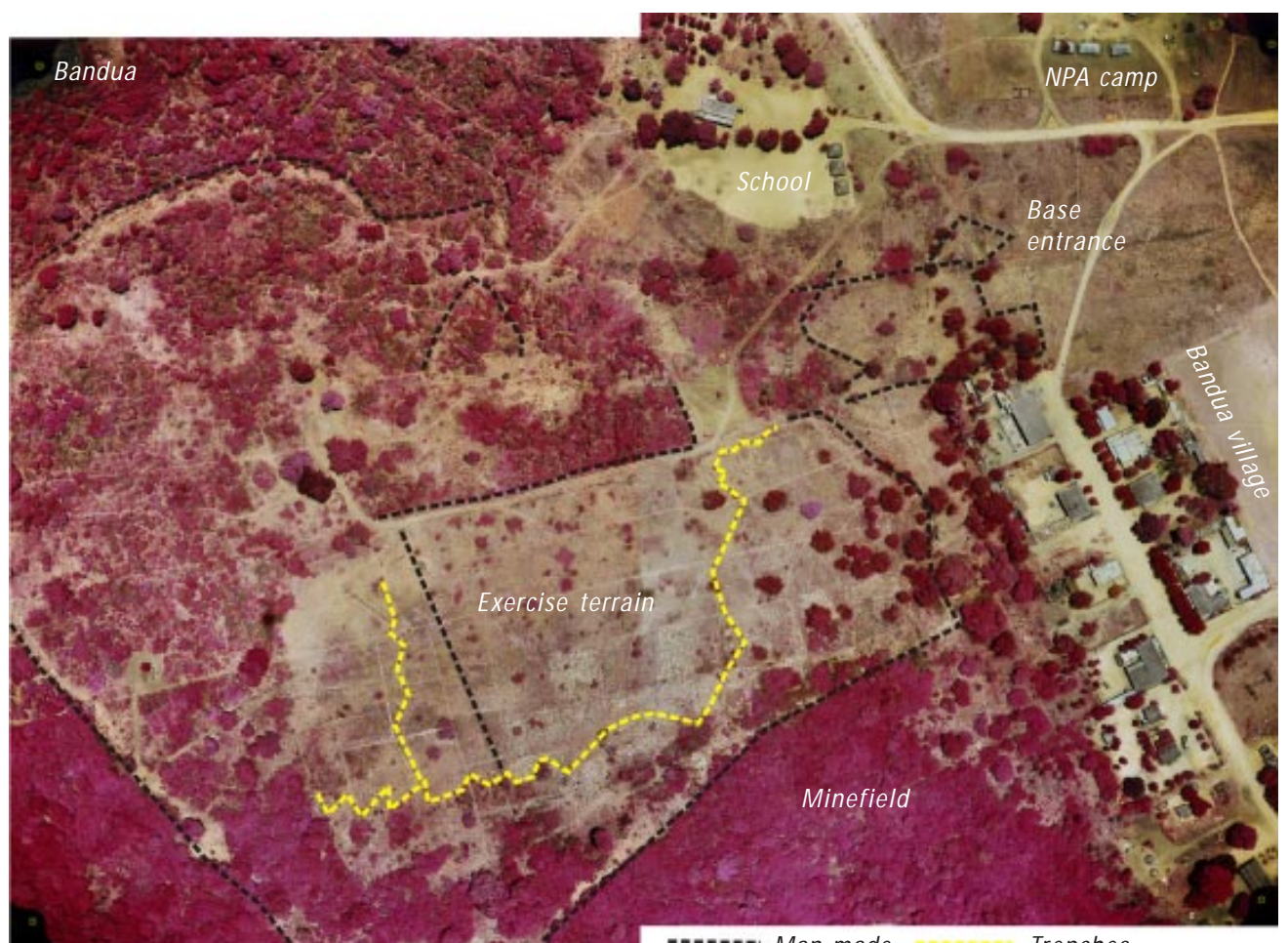
Also for manual demining dense vegetation is a major problem.



As indicated by the interpretation remnants of likely military objects are still remaining in the field, forming indicators in Mameme.



----- man made embankment    X X X possible location minefield    ◻ abandoned military related objects    ◻ slit trenches / foxholes



----- Man made embankment    - - - - - Trenches

It is expected that the area between the south man made embankment and the arable land currently used, still further south, has gradually transformed into the present day dense shrub and tree cover. Although the airborne imagery used is not able to penetrate this dense cover, through the incorporation of change analysis using historical satellite images, this process can be validated. This gradual transformation of arable land into shrub / forest is a typical indicator for a potential minefield.

### References:

#### Final Project Proposal:

Pilot project for airborne minefield detection (May 1997).

or

<http://www.itc.nl/ags/conference>  
<http://www.itc.nl/ags/projects>

### For more information:

#### Airborne minefield detection pilot project coordinator

ITC,  
P.O.Box 6, 7500 AA Enschede,  
The Netherlands,  
Tel: +31-53-4874 534  
Fax: +31-53-4874 466  
E-mail: [colenbrander@itc.nl](mailto:colenbrander@itc.nl)

### In collaboration with:

CAE Aviation (L)  
CND (Moz)  
Earth Observation Sciences LTD (UK)  
Eurosense (B)  
Free University of Brussels (B)  
Geograf (P)  
I.G.I. Ltd (G)  
Norwegian People's Aid (N)  
RECON Optical (UK)  
Royal Military Academy (B)  
Swedish Space Corporation-Satellitbild (S)  
Zeiss Eltro Optronic (G)

