

# DDAS Accident Report

## Accident details

<b>Report date:</b> 19/04/2006	<b>Accident number:</b> 54
<b>Accident time:</b> 10:30	<b>Accident Date:</b> 21/11/1997
<b>Where it occurred:</b> Road from Luena to Lucesse	<b>Country:</b> Angola
<b>Primary cause:</b> Unavoidable (?)	<b>Secondary cause:</b> Management/control inadequacy (?)
<b>Class:</b> Detection accident	<b>Date of main report:</b> 05/12/1997
<b>ID original source:</b> JM/PGC/GP/MB	<b>Name of source:</b> INAROOE
<b>Organisation:</b> [Name removed]	
<b>Mine/device:</b> not known	<b>Ground condition:</b> clay route/path sandy
<b>Date record created:</b> 23/01/2004	<b>Date last modified:</b> 23/01/2004
<b>No of victims:</b> 2	<b>No of documents:</b> 2

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b>	<b>Coordinates fixed by:</b>
<b>Map east:</b>	<b>Map north:</b>
<b>Map scale:</b> Map SD-34	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b> Sheet 41
<b>Map name:</b>	

## Accident Notes

inadequate metal-detector (?)  
request for machine to assist (?)

## Accident report

An internal Accident report written by the demining group was on file at the country MAC. The following summarises its content. [See also "Related papers" under the "Other documents" tab.]

The road where the accident occurred had been extensively mined and booby-trapped by "rebel" forces. It was a "sealed" (presumably tarred) road with extensive potholes, badly damaged bridges and was straddled by dense minefields. The road was occasionally blocked

by vehicle wrecks obliging traffic to pass on the verges. The demining group had cleared 60k of this road and had found AT mines "connected to TNT booster charges"; South African pressure switches (PRANCK) connected to AT, AP mines or explosives; UXO linked to mines; stacked AT mines; a single "combination magnetic/light sensitive switch (flat battery) connected" to an AT mine; and various UXO.

The team started work at 07:30 and was working in a crater on the road when the accident occurred at 10:30. The soil in the crater was "a friable sandy clay" that allowed detectors to be used. There was a UXO (specified only as "rocket") lying against the side of the crater. The team had cleared and marked two one metre wide lanes across the large crater. Shortly before the accident Victim No.1 was seen to raise and re-tune his Ebinger detector. Victim No.2 was 25 metres away but reported that he heard Victim No.1's detector bleep immediately before the explosion. He was certain that Victim No.1 did not move his feet between the sound and the blast. The crater created by the explosive accident measured 3x1.5 metres. The demining group calculated that this implied a charge of 25-30 kg, and that "the combined explosive charge of two anti-tank mines would be sufficient". Victim No.2 was knocked off his feet by the blast and suffered a loss of hearing.

The severity of the blast meant that they were only able to recover "fragments of the victim's body". Both deminers involved were wearing "fragmentation vests and ballistic visors". The ragged back panel of the deceased's frag-jacket was found and photographed. No trace of the helmet, visor or front panel was found.

## Conclusion

The investigators concluded that the accident was caused by the deminer standing on a PRANCK pressure switch or by his detector initiating a magnetic switch. They thought the latter more likely despite the fact that the only magnetic switch found had a flat battery [the "rebel" group estimated battery life at 3 months to 2 years, others say 3 months maximum: the battery is not removable or rechargeable]. Ebinger were asked to comment and did not deny that the detector could set off a device but said that the 420 model was designed to "minimise the effects on the fuses of explosive devices". A second investigation decided that the victim "did not step on a pressure switch". No criticism of the demining group's procedures or the actions of the victims was made. [See Other documents.]

## Recommendations

The investigators recommended that the demining group explore modified detection equipment and methods and that the country MAC should use connections with the rebels to get information about the types of device used and their locations. They also said that the demining group should tell all demining groups of the "dangers of this type of device". Meanwhile the demining group suspended operations because "prudence" dictated that they get a means of detecting the device suspected of causing the accident before continuing. The group decided to formalise its "on the job" training into revision courses and were considering issuing a ballistic helmet with hearing protection. They said that equipment "with similar capabilities to the CASSPIR clearance vehicle" would be considered to clear the road.

## Victim Report

<b>Victim number:</b> 73	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> DECEASED
<b>Compensation:</b> not made available	<b>Time to hospital:</b> not applicable
<b>Protection issued:</b> Frag jacket	<b>Protection used:</b> Frag jacket, Helmet, Short visor

Helmet  
Short visor

**Summary of injuries:**

INJURIES

severe Body  
severe Chest  
severe Head

FATAL

COMMENT

No medical report was made available. The victim's injuries were not detailed but the group could find no major body parts after the accident.

**Victim Report**

<b>Victim number:</b> 74	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> yes
<b>Compensation:</b> not made available	<b>Time to hospital:</b> not recorded
<b>Protection issued:</b> Frag jacket Helmet Short visor	<b>Protection used:</b> Frag jacket, Helmet, Short visor

**Summary of injuries:**

INJURIES

minor Body  
severe Hearing

COMMENT

No medical report was made available.

**Analysis**

The primary cause of this accident is listed as "*Unavoidable*" because it appears that the victim was working properly when it occurred.

If the device was deliberately set to injure deminers, [see Related papers] that would imply a serious "Management/control inadequacy" because full agreement for demining the area should have been negotiated with all combatants before work started. Other sources in Angola report that there was not universal agreement among fighting factions that the road being cleared should be made safe. This makes it possible that the group was driven-off deliberately. The fact that the demining group involved asked the country MAC to liaise with the "rebels" rather than did so themselves implies that they did not have contact with the appropriate parties before clearing the area.

It should have been possible for the demining group to source the type of switch they suspected was used, and to use an Ebinger 420 to try to activate it in a controlled experiment. The outcome of such empirical testing would carry more weight than the vague uncertainty of the Ebinger handbook, or Ebinger's own test on a known defunct example, and could have confirmed their favoured explanation of the cause of this accident.

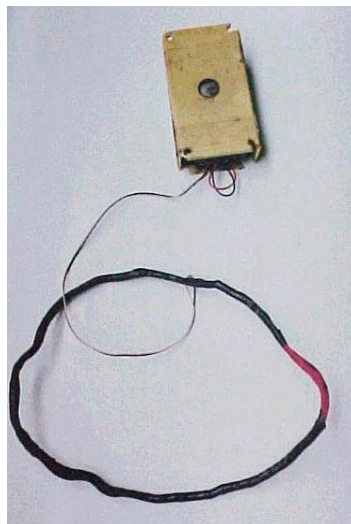
Given that pressure switches have been found that could be initiated by simply changing weight distribution without moving a foot, this seems most likely to have been the device used – unless the deminer group was the target of a command detonation.



The picture above shows an RSA "PRANK" or "toe-popper" pressure switch found in Angola. It is attached to det-cord that is then wrapped around an improvised charge or mine.

## Related papers

A letter from the demining group to the relevant National authority was on file. It asked for permission to take a South African made light-sensitive trigger device they found a month before to Ebinger in Germany to find out whether the detector could be enhanced in order to locate it without initiating it. Ebinger was later reported to have carried out this analysis and found that the battery was very old and that their detector could not influence a device in that condition at all. [It is not clear whether they thought it could have influenced the same device with a new battery.]



The picture above shows the switch sent for analysis to Ebinger. The unit was manufactured in South Africa.

Named the "Sweep Spy", the device is designed to be activated by the presence of the "Soviet stick" detector used by the Cubans during the early years of the Angolan conflict. It also incorporates a "light-sensitive eye" as an anti-disturbance device.

The electronics and battery are "potted" in resin, so replacing a battery is practically impossible. The original battery was intended to remain operative for 12 months after the device was activated.

The device fires a detonator electronically – the detonator being attached to two wires (tucked under the device in the picture).

It was claimed that only eight "Sweep-Spy" devices were manufactured, and the makers believe that it is extremely unlikely that any would be functional now.

An analysis of the accident by an ex-pat Technical Advisor on behalf of the country MAC decided that the accident was an example of a "missed-mine accident" and that the operator stepped onto uncleared ground.

Two representatives from other demining groups operating in the country tended towards the opinion that the demining group were operating in an area that was of military value without having received adequate permission from the warring parties, and so the accident was an example of deliberate targeting. [Members of the demining group involved have accepted this possibility in discussion with the researcher.] They thought it likely that the device had been deliberately detonated (command-detonation) when the victim was close to it.