

DDAS Accident Report

Accident details

Report date: 18/05/2006	Accident number: 257
Accident time: 08:32	Accident Date: 24/05/1999
Where it occurred: Plowshare minefield, Cordon Sanitaire	Country: Zimbabwe
Primary cause: Unavoidable (?)	Secondary cause: Inadequate equipment (?)
Class: Excavation accident	Date of main report: [No date recorded]
ID original source: none	Name of source: KMS
Organisation: Name removed	
Mine/device: R2M2 AP blast	Ground condition: woodland (bush)
Date record created: 18/02/2004	Date last modified: 18/02/2004
No of victims: 1	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system:	Coordinates fixed by:
Map east:	Map north:
Map scale: not recorded	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

no independent investigation available (?)
handtool may have increased injury (?)
request for long handtool (?)
squatting/kneeling to excavate (?)

Accident report

At the time of this accident the demining company operated in two-man teams using a one-man drill. One deminer looked for tripwires, cut undergrowth, used the detector and excavated finds while the other watched from a safe distance and "controlled" him. The group issued frontal protection and their drills assumed that the deminer would kneel or squat while excavating.

An internal Accident report was made available by the demining group in December 1999. The following summarises its content.

The victim was wearing his protective equipment correctly and excavating a detector signal using excavation drill when a "suspected R2M2" detonated at 08:32.

The victim was "treated on the spot" by the medic and doctor (who was present on site), then taken to the field medical unit and from there to Karanda hospital accompanied by the doctor. The site ambulance was 50 metres from the accident site when it happened.

Because the doctor was no longer on site, work stopped "and the remaining mines were destroyed".

A site investigation was carried out immediately. The victim's detector was found to be switched on and "functioning". His prodder was 60cm from the excavation and undamaged. A "part of" his trowel was found 20 metres away in another cleared area. His visor was visible two metres away in an uncleared area and the head-frame was visibly broken. His water-bottle used for softening the ground was 1.5 metres away from the accident site.

Conclusion

The investigators concluded that the victim was carrying out an excavation drill correctly. A high "gravel" content in the soil made excavation the correct drill to use. His blast apron was covered with mud, which was taken as proof that he was using water to soften the ground. The investigators thought it likely that the mine was unusually sensitive due to having spent "more than 20 years in the ground". They thought it possible that the spring firing mechanism was already partly depressed.

The investigators decided that the victim was saved from "more serious injury due to the fact that he was wearing the PPE correctly".

Recommendations

The investigators recommended that a period of re-training be started concentrating on "signal investigation" and "prodding/excavating drills". Deminers must be instructed not to continue uncovering any mine that appears to be damaged. The investigators also called for "more research and development of excavation tools".

Victim Report

Victim number: 331	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: yes
Compensation: not made available	Time to hospital: 2 hours 38 minutes
Protection issued: Frontal apron Long visor	Protection used: Frontal apron, Long visor

Summary of injuries:

INJURIES

severe Hand

AMPUTATION/LOSS

Finger

COMMENT

See medical report.

Medical report

A brief field "Medical Injury report" was made available in December 1999. It stated that the victim arrived at Karanda hospital at 11:10 having been taken by road (using two vehicles).

The victim had sustained:

"near total amputation (L) Mid, 4,5, fingers; deep laceration (L) hypthenar eminence. Surgical amputation (L) minimi digit with preservation of 4, mid finger".

The report ended by stating that the victim was recovering in hospital with the medical "outcome still to be determined".

A medical report dated 28th September 1999 was also made available in December 1999. It stated that the victim was injured in a "grenade blast" and had suffered amputation of his "left little finger". Marked "stiffness" in the "remaining ulnar two fingers" was noticed and physiotherapy and continued dressing recommended. An "X" ray of the hand revealed "an impacted fracture of the proximal phalanx of the left ring finger".

The patient was later assessed by a specialist who noted "very stiff proximal inter phalangeal joint of the middle finger...and... very stiff joint of the distal inter phalangeal joint and proximal inter phalangeal joint of the ring finger". The specialist concluded, "I do not think that one can get any functional movement of these very stiff joints which are frozen and also the mal union can be ignored because correcting by an osteotomy will only appear nice on the x-ray but functionally useless".

The doctor concluded that the victim could no longer work as a deminer.

Analysis

The primary cause of this accident is listed as "*Unavoidable*" because the victim appears to have been working properly in accordance with his SOPs when the accident occurred. The damage to his hand was almost certainly a consequence of using an inappropriate tool. The secondary cause is listed as "*Inadequate equipment*".

However, the management of this group is to be applauded for having recognised that the tool was a contributory factor and identifying a need to change. This self-critical willingness to change is rare. Many groups use an excavating trowel of even less appropriate design than that used in this accident.



A picture of one of the group's excavation trowels after an accident is shown above. This example did not break entirely in two.

Although the use of tools like this (when straight) is easy – it is difficult to use them at the correct angle and the user's hand is unacceptably close to any detonation.

Related papers

In January 2000 the researcher was told that the victim had been re-employed after recovering from a finger amputation. The visor that the victim had been wearing is shown below.



The visor was marked with a short cut (circled in the photograph) that penetrated the 5mm polycarbonate fully at its central point. The cut was made by the edge of the victim's trowel and the force required to cut the visor implies that the victim's face would have been severely injured if the visor had not been in place. (The visor had been written on and was used in training as a warning to deminers to keep the visor down.)