8-23-2000

DDASaccident342

Humanitarian Demining Accident and Incident Database
AID

DDAS Accident Report

Accident details

Report date:	16/03/2004	**Accident number:**	342
Accident time:	13:05	**Accident Date:**	23/08/2000
Where it occurred:	Jahorina, Palosevina	**Country:**	Bosnia Herzegovina
Primary cause:	Field control inadequacy (?)	**Secondary cause:**	Field control inadequacy (?)
Class:	Missed-mine accident	**Date of main report:**	28/08/2000
ID original source:	NH/AA/ZV	**Name of source:**	BiH MAC
Organisation:	Name removed		
Mine/device:	PMA-3 AP blast	**Ground condition:**	grass/grazing area metal fragments rocks/stones soft
Date record created:	21/02/2004	**Date last modified:**	21/02/2004
No of victims:	1	**No of documents:**	2

Map details

Longitude:		**Latitude:**	
Alt. coord. system:	GR: 42525 44805	**Coordinates fixed by:**	
Map east:		**Map north:**	
Map scale:		**Map series:**	
Map edition:		**Map sheet:**	526-3-1
Map name:			

Accident Notes

inadequate investigation (?)

mine/device found in "cleared" area (?)

metal-detector not used (?)

Accident report

The following is the MAC's Accident report, edited for anonymity.

INTRODUCTION

A Board of Inquiry was convened by BH MAC Director to investigate the circumstances of deminer's accident that happened August 23th, on mountain Jahorina, location Palosevina, at a demining site of [Demining group] organisation, where deminer [the Victim] had suffered injuries.

Members of the Board of Inquiry were as follows:

BHMAC Chairman
F MAC Member
RS MAC Member

BHMAC received information about deminer's accident by phone from [the Demining goup] organisation on August 23rd at 14,00 hrs, while the initial report was provided August 24th at 08,30 hrs.

In compliance with the BH Standard, BoI visited the site where the accident happened the very same day at 15,38 hrs. Members of the BoI had immediately talked with the director of the organisation, team leader, monitor and deminer No. 2. BoI took the written statements of the personnel that were present at the site.

SEQUENCE, DOCUMENTATION AND TASKING PROCEDURES

[The Demining group] organization was tasked with the ID 1000277 Palosevina, Jahorina, starting work July 18th 2000. Map used for the task was a JNA one, sheet 526-3-1, grid references x=42525 and y=44805. Task was set by RS MAC and financed through the International Trust Fund (ITF). Priority to this task was given on request of the Olympic Committee Jahorina in order to reconstruct the powerlines from the direction of Dvoriste location. Integral demining methods where used while demining: use of EDD teams, mechanical preparation of the ground along with the manual demining operations. Three teams were involved in demining operations for this task.

Red Folder for this task contains the sketch of the minefield and an interview with war activities participant, [name excised], who was a member of the RS Army engineering unit that took part in mining this part of Jahorina. This participant confirmed the mined area.

The minefield was set by RS Army in order to protect military radar facilities referred in JNA documentation as object No 5.

SITE LAYOUT AND MARKING

Site layout is done in compliance with BH Standard and the [Demining group] organisation SOP.

Marking of the site was done properly. Pickets of a proper height for setting the border between the safe lane and the suspect area are flushed into the ground at a proper distance from each other, connected with the mine tape at ground level. Designated areas are properly marked as well.

QUALITY ASSURANCE

No faults were found by the inspectors of Regional Office Pale in their work prior to accident. Safe lane is two metres wide, with a proper 10 cm overlap from each side, marked as properly as the terrain conditions allowed.

The BH MAC approved SOP was available at the site.

There were 10 RO Pale inspections conducted on this site since the task is opened on July 18 2000.

GEOGRAPHY AND WEATHER

Since the site is location very high in the mountains, the weather was very suitable for demining operations regardless of the fact that it is summer. Team C in which the accident happened has worked on this site since August 20th. The exact location where the accident happen is of a very soft soil and very suitable for the use of the prodder. Location of the site itself was partially contaminated with metal fragments due to NATO attacks few years ago which made the use of metal detector hard. About 600m^2 were cleared on this site for the period of three to four days. Vegetation contains of very dense grass and the terrain is partially rocky. (Rocks and stones scattered over the site due to NATO attacks.)

Yellow tipped pickets are places in working lanes as a sign for previously found mines. (217 mines found up to the day of the accident, out of which there were 43 PMA -1 ; 169 PMA – 3; 2 PMR-2A ; 2 PMA-2; 1 MRUD and 1 UXO). The accident happened on previously cleared ground, 30 cm from the border of the safe lane. (missed mine).

There is a damaged water tower in the very vicinity of the site, along with two big cavities that were also a result of NATO attacks.

Site can be accessed from a non-asphalt road. All designated areas are set on this road: control point/safe area, resting area, area for the medic and the ambulance, area for the metal detector check, as well as the area for EDD teams.

MEDICAL COVERAGE

As soon as the medic approached the wounded deminer, he provided the first emergency aid and organised his transport to the Kasindol hospital for further medical treatment. As for this moment, we know that [the Victim] has lost his left foot. The entire medical treatment was conducted very efficiently.

EQUIPMENT AND TOOLS

Equipment and tools used by the team are as follows: Ebinger metal detectors, prodders, spades, shears, helmets with visor and protective jackets. Detectors have been checked during investigation as well. Deminers re-checked the cleared area prior to BoI visit with the detector and a prodder in order to enable them access the accident site.

Prodder used by the members of the team was suitable regarding to the terrain that was demined. On the very day of the accident it was possible to prod very easily to the depth of 10 cm into the ground.

[The Victim's boot is shown above. It is a Welco blast boot designed to be worn with overboots. The overboots were not worn in this instance. These pictures were not included in the original report.]

EVIDENCE OF MINING / RE-MINING

There is no evidence of re-mining at the stated location.

ADDITIONAL INFORMATION

Pale Police station was also informed about the accident. They conducted their own investigation one day after the acccident happened, on August 24th. They have asked that they are provided with the copy of the Board of Inquiry report when finished.

At the wider Jahorina area there were two [civilian] mine accidents and one demining accident.

BOARD OF INQUIRY NOTES

Board of Inquiry visited the site of the accident escorted by C-1 team leader. After the visit was finished, it was concluded that the accident was the result of the activation of PMA-3 mine (leftovers found). Mine was buried into the ground.

Demining accident involved one deminer who suffered from the injuries to his left foot. He was immediately evacuated to Kasindol hospital where he was received and operated on.

Members of the BoI have paid the injured a visit in the Kasindol hospital.

The injured [Victim] has stated the following: On the day of the accident and just after the break from 12,00 to 13,00 hrs, he finished his working lane started the same day using prodder. After he finished the lane, he started to pick out the stakes from the upper part of the working lane.

When he moved downwards in his lane, he stepped on the mine. As he states, his first thought was that he slipped and stepped on a mine under the mine tape, since the mine stepped on was quite close to the tape. However, during first aid treatment though which he was conscious all the time, he realised that the mine was in the part of the lane already cleared.

As [the Victim] states, he cannot understand how did it happen that he missed the mine, especially since there were many mines around which require very careful and cautious work.

RECCOMMENDATIONS

Because of the fact that the mine was missed, i.e activated on the cleared area, Board of Inquiry reccommended the re-clearance of the area cleared at the part of the site where accident happened (cleared by team C).

According to BH Standard, RS MAC will ask that [the Demining group] organisation conduct final quality control of the rest of the site up to 5%.

Director BHMAC is to organise a meeting to be attended by an authorised ITF representative along with the management of [the Demining group] organisation. This meeting should for its topic have the discussion about the accident mentioned and should result in adequate conclusions as well.

[The Demining group] organisation is to conduct one day re-training of deminers and management regarding the cause that lead to the accident.

ANNEXES: [Not made available: some pictures were.]

A Initial report,
B Board of Inquiry Members
C Written statements of personnel present at site
D Survey report with the sketch of the site and the sketch of the accident site.
E Photographs of the site and the location of accident.
F Inspectors' reports

Signed: members of the BOI

Victim Report

Victim number:	430	**Name:**	**Name removed**
Age:		**Gender:**	Male
Status:	deminer	**Fit for work:**	not known
Compensation:	not made available (insurance)	**Time to hospital:**	not recorded
Protection issued:	Not recorded	**Protection used:**	not recorded

Summary of injuries:

AMPUTATION/LOSS

Leg Below knee

COMMENT

See Medical Report.

Medical Report

No formal medical report was made available.

In May 2002 a MAC representative reported that the victim had been fitted with a prosthesis but remained out of work. He was reported to be “taking legal action to obtain additional compensation in a ‘continental scale’ dispute“.

Analysis

The primary cause of this accident is listed as a *“Field control inadequacy”* because the Victim stepped on a mine in an area that was supposed to be clear. Either the clearance was not done properly or the method used was inappropriate.

The accident report was unusually brief for this theatre and did not record the length of time it took for the Victim to reach a surgical facility or provide any details of the injury suffered. More importantly, no suggestions for changes so that a repetition could be avoided were made.

The use of the Welco blast boot (a donation to the region) did not reduce the Victim's injuries. A MAC representative reported that it could not be worn with the overboot (as designed) because of the uneven terrain. This full boot (with overboot) have been shown to be of some protection when stepping on a mine as small as a PMA-3. However, it has not been shown to be of any value when stepping on the PMA-1 or PMA-2 mines that are also common in the region. Source: US Army Communications - Electronics Command Night Vision Electronic Sensors Directorate, Fort Belvoir, VA 22060-5806 - Final Report of the Lower Extremity Assessment Program (LEAP - 99-2), August 2000 - carried out by the US Army Institute of Surgical Research, Extremity Trauma Study Branch, Fort Sam Houston, TX 78234-6315

The injuries resulting from stepping on a PMA-3 in ordinary footwear vary from traumatic amputation to minor bruising. The picture below shows why this happens. It shows a cut-away section through a PMA-3. The 35g Tetryl is in the top and centre of the mine. The area of pressure-plate surrounding the HE is actually larger than the area of pressure-plate over it. If a victim is fortunate, they step on the pressure plate but the explosive charge is not beneath their foot.

Related papers

The following is a MAC "lesson's learned" document made available in 2002 (edited for anonymity). The "Trial test" of the Welco blast boots referenced in Conclusion No.4 is reported by the MAC to have been no more than the free issue of the boots to a local company. No record of use, or mechanism for follow up, was in place.

September 4th 2000: MAC QA

LESSON LEARNED – DEMINING ACCIDENT AUGUST 23rd 2000

INTRODUCTION

The Board of Inquiry was convened by BH MAC to conduct the investigation of the demining accident, in compliance with BH Standard; the accident occurred August 23rd 2000, Pale municipality, location of Jahorina – Paloševina. One deminer got injured in this accident lost his left foot.

SUMMARY

Accident occurred at 12.55 hrs on August 23rd 2000, immediately after the team started to work after their lunch break. The organisation formed their deminers to work as two-men teams. Deminer in the working lane was searching the area using his prodder. When he finalised his search and finished the working lane, he started to collect the mine tape from the left side of the lane, walking the "cleared" working lane. That is where he activated with his left foot PMA-3 mine by stepping on it. PMA-3 mine was buried. The injured was evacuated to the Kasindol hospital where he was operated on.

CONCLUSIONS

Based on what is stated above, the Board of Inquiry reached the following conclusions:

1. Tasked area is covered with scattered stones (due to NATO bombing). Since the area is very much contaminated with metal fragments, it was hard to use metal detector. Only prodding was used in demining lane where the accident occurred. The prodder itself is suitable for the type of terrain and it can prod to the depth of 10 cm without too much pressure.

2. The mine mentioned is missed in the working lane.

3. Tasked area is extremely hard to clear, which resulted in its organisation in two-men teams, since the metal detector could not be used for quality control.

4. The injured deminer wore the incomplete protective boots system which was on a trial test in the demining organisation.

Tasked area is very densely mined. 217 mines were found up to the moment of the accident.

RECOMMENDATIONS

Based on what is stated above, and in order to prevent further accidents, the Board of Inquiry recommends the following:

Constant supervision of compliance with the procedures is needed in order to prevent the deminer miss a mine in the working lane (base stick, prodding at every 2.5 cm, advancing).

When working with prodder, theoretical productivity for ground category A is 6.3m^2, without missing a mine.

When mines are very densely laid in an area and if it is not possible to use the detector, the deminer's shift in the working lane should be shortened, breaks frequent and longer than usual, which will improve his concentration within the working lane.

Due to the fact that the mine is "missed", i.e. activated on the "cleared" area, the Board of Inquiry recommends re-clearance of the cleared area at the part of the site where the accident had occurred (the part of the task where C-team worked where 600m^2 were cleared).

The demining organisation is to conduct a one-day additional training for both deminers and the management of the organisation, related to procedures of work in working lanes on the very particular site that disables the use of metal detector or at least diminishes it.

Signed: AD Coordination