

DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 346
Accident time: 13:25	Accident Date: 09/03/2000
Where it occurred: Kopanice village, Nr Vidovice	Country: Bosnia Herzegovina
Primary cause: Field control inadequacy (?)	Secondary cause: Inadequate training (?)
Class: Missed-mine accident	Date of main report: 13/03/2000
ID original source: 1002 RB/NK/MM/VMM	Name of source: BiH MAC
Organisation: Name removed	
Mine/device: PROM-1 AP Bfrag	Ground condition: bushes/scrub grass/grazing area sparse trees
Date record created: 21/02/2004	Date last modified: 21/02/2004
No of victims: 1	No of documents: 1

Map details

Longitude:	Latitude:
Alt. coord. system: GR 983325 559540	Coordinates fixed by:
Map east:	Map north:
Map scale: cadastral map	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate area marking (?)
inadequate training (?)
mine/device found in "cleared" area (?)
protective equipment not worn (?)

Accident report

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

INTRODUCTION

As a result of a deminer's accident that happened March 9 2000 at 13,25 hrs in the village of Kopanice near Vidovice, at [Demining group] company demining site, BH MAC Director had convened a Board of Inquiry. Initial report on the accident was received into BHM MAC on March 9 2000 at 16:57 hrs. According to BH Standard, Board of Inquiry left Sarajevo March 10 2000 at 09:00 hrs and arrived at Orašje at 12:00 hrs the same day. Board of Inquiry met with the ops officer of the [Demining] company. Bol was at the site of the accident at 13:00 hrs the same day.

The accident involved one deminer who suffered from very severe injuries of his lower limbs. His both legs were amputated above knee in Slavonski Brod Hospital. Police had conducted their own investigation immediately after the accident. Results of their investigation are attached to this report. [Not made available.]

The demining operation is conducted by [Demining group], as a re-clearance of the 'cleared' task on the riverbank Kopanice. Additional tasking of re-clearance in order to hand over the Vidovice – Kopanice project, ID 10125 (Annex D)

Members of the Board of Inquiry were as follows:

Chairman – Coordination Department BH MAC

Member - RU Tuzla

Member – Sub-office RU Mostar, Orašje

Member – Coordination Department BH MAC

Board of Inquiry had met '[Demining group]' supervisor. [Demining group Ops Officer] was present at the site Kopanice as well.

SEQUENCE, DOCUMENTATION AND TASKING PROCEDURES

[The Demining group] is tasked with re-clearance of the ID No 10125, that has been submitted to Entity MAC as finished September 19 1999. The task was not accepted as finished by Entity MAC. October 26 1999 a civilian had activated a PROM – 1 mine on a 'cleared' area. Based on the recommendation of the Board of Inquiry, the [Demining group] was tasked with re-clearance of 50% of the area previously cleared on 26 of October 1999. Regional Office Mostar set the exact re-clearance area.

February 17 2000 the task Kopanice riverbank is opened for re-clearance.

March 9 2000, after morning briefing and tasking done by the operational officer, work began at 08:00. Working lanes were cut at every 30 metres. The lanes were cut from the top of the riverbank in order to make a safe lane on the other side of the suspect area. The lanes were led down the slope, which was supposed to increase the deminer's safety in his working lane.

GEOGRAPHY AND WEATHER

Accident occurred at the distance of 310 metres from the place of the accident where the mentioned civilian activated a PROM – 1 mine (Vukovica Swig-Gate) towards Vidovice. The exact location of the accident is drawn on a cadastral map with grid references x=983325 y=559540 (near the place where the new and the old riverbank are amassing).

Annex B – Cadastral map with the spot of the accident and the defined task. [Not made available.]

Access to the site is very good, following the asphalt road through the Vidovice village, about a hundred metres towards the bank itself. There is a good road track towards and on the bank itself. Access and the control of the site are very satisfactory.

Re-clearance of the task includes the clearance of the parts of the site (entire area) while the lanes are to be cut through the rest of the task at every 10 metres. Area to be cleared is 41 577 square metres. According to the statement of the supervisor, the width of the task is 18,5 metres from the edge of the top of the bank. Stakes have been put at 18,7 metres from the edge, while the rope is put at the ground surface. Vegetation is a very rare, bush low, with sparse trees starting to grow. Vegetation in working lanes is cut correctly under 5 cms.



[The picture above shows the accident site before the investigator's arrived – it was taken by the police.]

RS Army has laid minefield at this task. Vegetation cutting machine had activated four PROM –1 mines, deminers found three of the same kind, one was activated by a civilian, and another had killed a deminer on August 5 1999.

Accident spot (the imprint of the PROM mine plate) is 45 cms outside of the task, 19,15 metres from the edge of the top of the bank. The border of the task is marked with sticks while the tape is set after the accident.



[The picture above shows the crater and the distance from the "safe" area with the new tape placed before the investigator's arrived.]

Weather conditions on the day of the accident had been cloudy and very suitable for manual demining operations. There were 28 deminers and 4 team leaders at the site.

Photographs of the site, the environment and the photographs and report by Orasje Police are attached in Annex C. [Not made available.]

SITE LAYOUT AND MARKING

It was the geography that dictated the way of demining as well as the task layout. Task site layout is done in accordance to BH Standard and [Demining group] SOP.

The marking of the site required lots of pickets since they were left in the area through which working lanes were coming at every 10 metres. Areas for metal and other garbage as well as areas where demining finished have been correctly fenced and marked with a mine tape.

A large number of working lanes have been marked with inappropriate pickets (thin cut branches 1 cm in diameter and 30 cms in height). Working lanes were not marked to the full extent (pickets at every two metres without mine tape at the ground level). Working lanes without tape shown at site photographs in Annex. [Not made available.]

SUPEVISION AND DISCIPLINE ON THE SITE

The [Demining group] supervisor and [Demining group Ops Officer] were constantly present at the site, along with the four team leaders and their deputies who supported the deminers. As additional support there was a constant presence of a proper ambulance as well as PIU monitor who was at the site all the time. Only the site supervisor was absent on March 8 2000 since he had some errands to do on Court.

RO Tuzla inspectors regularly inspected the site. Inspections were conducted on 24 and 26 of February, and again on 2, 3 and 7 of March. Inspectors' reports are attached in Annex E. [Not made available.]

Medical support was located at the control area so the medic was able to reach the accident place in time. Casevac and Medevac procedures were done very fast. The injured deminer was in a medical facility in Orasje, where his injuries were stabilised. He was then transferred to Bosanski Brod Hospital where both his legs were amputated above knees.

One deminer worked in a lane. Team leader supported four deminers, while the deputy team leader supported two deminers. Deminers worked in shifts – 30 minutes of work and then 10 minutes break. The distance between teams was 30 metres.

Productivity is acceptable for the A category of ground. According to the inspectors' reports, it can be seen that it had been worked in compliance to BH Standard on this issue.

Detectors check Diary and the site diary are attached as Annex G. [Not made available.]

QUALITY ASSURANCE

Internal Quality Control was not conducted as planned and there are no written evidences of the same, either weekly or daily QC checks that should have been conducted by the team leader, ops officer, site manager, PIU monitor. Inspection did formally inspected the site, but their reports do not refer to the quality of the cleared area, use of metal detector, prodders or else. PIU monitor has no written evidence of a single mistake within the conduct of procedures at the site.

Productivity at the site is in accordance to the real state at the terrain, which is of a category with very sparse vegetation and small branches.

Daily demining report is attached in Annex F.

RU inspectors made no comments on mistakes in marking the border between the cleared and suspect areas, though there were pickets in the working lanes without mine tape on them.

Safe lane was cleared two metres wide, since it was not possible to notice where the two one-metre lanes get into one 2 metres lanes (the progress in lanes is the same for every lane).

BH Standard was on site, while the supervisor was too confused to mention [Demining group] SOP since he was not sure if it is still valid.

TASKING, REPORTING AND THE SYSTEM OF COMMUNICATION

The [Demining group] had started the preparations for the site layout and opening planned for February 18 2000 in coordination with RO Tuzla. As defined, the task was re-clearance and cutting working lanes at every 10 metres, as shown in areas drawn on cadastral plan.

Usual work on demining started at 08,00 hrs after the supervisor's and ops officer's briefing and tasking. Team leaders organised the work for one deminer for maximum of 30 minutes of work and 10 minutes break. There is one-hour break at noon, while the work continues from 13,00 to 14,00 hrs.

PIU monitor sent daily reports. [Demining group] provided EMAC with weekly reports.

Regarding communication on site, every team leader had a radio station, as well as the medic and the ops officer. Immediate communication was also conducted with the [Demining group] Ops Office in Orasje.

MEDICAL COVERAGE

The deminer involved in the accident fell into the safe lane and was conscious. The team leader and the closest deminer did the urgent trauma dressing on his legs and took him out to the safe area (the top of the river bank). Medical with a vehicle arrived while they were pulling him out so they immediately drove him to the medical facility in Orasje. After having been stabilised, he was transferred to the Slavonski Brod Hospital. After the wounds have been stabilised in Orasje, he was transferred to Slavonski Brod Hospital, where both of his legs were amputated. Medical report is attached in Annex B. [Not made available.]

PERSONNEL INVOLVED

Following were the present when the accident occurred: [Demining group Ops Officer], PIU monitor and the team leader whose deminer had an accident. The rest of the personal are: [Names excised.]

Teams at Kopanice – Vidovice site worked as stated in daily report attached to Annex. At the moment of accident there were four teams consisting of 28 deminers working with their 4 team leaders. All the deminers are experienced and just have come to this site after a finished task in Stolac area.

EQUIPMENT AND TOOLS

Team used the following equipment and tools: metal detector (8 'Vallon' 1620 and 2 'Koncar', prodders, spades, shears, helmets with visors and protective jackets. Daily detector test attached in Annex.

DETAILS ON EXPLOSIVE ITEM INVOLVED

The item that caused the accident was an AP PROM mine intended to be activated either by release or pressure on the fuse prong. Mine was buried and, as according to the opinion of the Bol and the depth of the plate imprint, laid in a usual pattern. Mine has been in the ground for a long time. There were many roots over it that directed its detonation under the angle (along with the foot pressure) less than 40%. Members of the Board were not able to search the entire surrounding area to establish if it was ever set on a tripwire. This particular area has been burnt for several times now. The plate imprint is at the depth of 25 cms, while the outgoing direction of the mine from the ground was 45 cms towards the safe area.

Vidovice Police conducted their own investigation on the very day of the accident. Mine plate was taken out and brought away by the police before the Board of Inquiry arrived. That is why the Board members cannot state the exact type of PROM mine. Police report is attached in Annex C.

EVIDENCE OF MINING / RE-MINING

There is no evidence of re-mining in the area.

DETAILED EVENTS ON MARCH 9, 2000

07:45 arrival at the site, tasking the team leaders by the [Demining group Ops Officer].

07:50 Safety briefing and tasking deminers with their working lanes by their team leader.

08:00 teams began with work and continued for 30 minutes, while the first 10 minutes break was given. This working method was followed until the lunch break.

12:00 – 13:00 Lunch break

13:00 Start of work in the minefield. Team leader issued a task for marking the borders between the cleared and suspect areas with a mine tape. A minute before the explosion did

happen he spoke to the injured deminer, tasking him with a particular piece of border to mark. The moment he went up to the top of the riverbank explosion happened.

13:25 explosion happened 5 minutes before the break. Team leader and the closest deminer who was 30 metres apart reached the injured colleague who was thrown into safe lane and was conscious. They did the trauma amputation of both legs with bandages and pulled them to the top of the riverbank where the medic and the ambulance were already waiting.



[The picture above shows one of the Victim's boots and scraps of marking tape.]

16:57 BH MAC received the initial report from [Demining group Ops Officer].

ADDITIONAL INFORMATION REGARDING THE SITE

The [Demining group] was tasked with re-clearance of ID 10125 in which some areas were to be re-cleared completely while one metre lanes had to be cut in at every ten metres on other part (See Annex D – additional re-clearance).

Regarding organisation, task is not complicated, having a 5 metres wide safe lane at the very top of the riverbank. The site has a very good visibility, which explains the method of using one deminer per working lane, supported and supervised by either a team leader or his deputy. The clearance width of this task is 15-20 metres from the edge of the top of the riverbank. Cadastral map with defined task is given in Annex D. [Not made available.]

The site is satisfactorily organised and there were no inspectors' remarks in the last three reports. The last report even contains photographs of deminers in working lanes and marking of the site in order to show an example that there were really no remarks to the work.

Deminer had activated the mine by stepping on it (pressure) in the suspect area (plate imprint is 45 cm away from the tape connected to two stakes that are damaged by shrapnel.) The tape at the accident spot was attached to the stakes afterwards, additionally marking cleared and suspect area that is not within the task (the tape is not damaged by shrapnel).

As stated by injured deminer as well as noticed at the spot (a bunch of old red tape 31 metre away from the accident, used in August 1999 by [the same Demining group] for marking cleared area) Board had concluded that the deminer was rolling the old tape. (Annex C – pieces of old red tape). The tape was most likely been cut near the accident spot. Deminer probably reached for the other part of the cut tape that was in the suspect area. Thus he himself stepped into the suspect area and activated a mine. There was no working lane in the vicinity in which demining was done at the moment.

Few faults have been noticed regarding the compliance to the BH MAC procedures:

Working lanes were not marked entirely (stakes at every 2 metres with no tape on the ground level attached to them)

Safe lane was cleared 2 metres wide, not metre by metre. Safe lane is not marked entirely.

Final marking dating from August 1999 was not done according to procedures. Plastic stakes were flushed into the ground at 40-50 metres distance, with a mine tape attached to their tops. Deminer was rolling the tape during work.

The very place of the accident was disturbed and additionally marked. As stated before, the tape is not damaged by shrapnel, which can easily be seen from the photographs police have made. Lots of pieces of red tape were found near the place of the accident (used by [Demining group] in August 1999), though the bunch of the old red tape was found 31 metres away from the place of the accident.

SUMMARY

Deminer had activated a PROM-1 mine on pressure (it was not possible to state if it was tripwired). Board of Inquiry agreed that deminer was taking off and rolling old tape that was with one part in the suspect area. He was not wearing protective equipment because "he was not demining". He stepped out to fetch the other part of cut tape that was in the suspect area. It is not possible to explain why did he step from the cleared area that was (partially) marked. On the opposite side of the accident spot there were lots of pieces of red tape (used by [Demining group] company in August 1999) though the bunch of old red tape was found 31 metre away from the place of the accident.

CONCLUSIONS

Site monitor was obliged to warn about breaching the marking procedures as well as entering the suspect area without protective equipment.

Inspectors did not conduct the Quality control of the cleared area.

Deminers cleared 2 metres wide working lane while forming the safe lane.

No evidence of internal quality control.

The place of the accident have been disturbed and changed.

RECOMMENDATIONS

There is a breaching of procedures: Never to step over the border between the clear and suspect area. This safety measure is stated in BH Standard.

Protective equipment **MUST** be worn in all the procedures of humanitarian demining from the very entrance onto the access lane (100 metres towards the minefield – BH Standard)

It is stated in BH Standard that the place of the accident is to be closed and not to be touched in order to wait for the Board of Inquiry. It has to be the same as it was in the moment when the accident happened.

ANNEXES: [Not made available – some photographs were.]

- A) Initial Report
- B) Release letter from the hospital
- C) Photographs made by Orasje Police and the Board of Inquiry
- D) Tasking for re-clearance
- E) Daily progress report
- F) Inspectors' reports
- G) Board of Inquiry members

Signed: all BOI members

Victim Report

Victim number: 438

Name: Name removed

Age:

Gender: Male

Status: deminer

Fit for work: not known

Compensation: not made available
Protection issued: None

Time to hospital: not recorded
Protection used: none

Summary of injuries:

AMPUTATION/LOSS

Leg Above knee

Leg Above knee

COMMENT

The victim's legs were severely damaged and amputated when he reached hospital. No medical report was made available.

Analysis

There is some confusion over whether the Victim was in a "suspect" area or an area believed clear when he initiated the mine (and the demining group's placement of marking tape after the accident did not fool the investigators). Given that the entire area had previously been declared clear by the same demining group, this was a "Missed mine accident" wherever the Victim was standing.

The primary cause of this accident is listed as a "*Field control inadequacy*" because the team was marking without adequate safe lanes or wearing PPE. The secondary cause is listed as "*Inadequate training*" because the Field Supervisor was uncertain whether the demining group's own SOPs were current, which implies both poor training and a poor command and control system.