

DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 345
Accident time: 10:55	Accident Date: 17/03/2000
Where it occurred: Gluva Smokva, midway between Trebinje and Dubrovnik	Country: Bosnia Herzegovina
Primary cause: Field control inadequacy (?)	Secondary cause: Inadequate equipment (?)
Class: Missed-mine accident	Date of main report: 29/03/2000
ID original source: 1002-RB/BK/VMM/PB	Name of source: BiH MAC
Organisation: Name removed	
Mine/device: PMA-2 AP blast	Ground condition: bushes/scrub rocks/stones route (verge) soft
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: 20251 26089	Coordinates fixed by:
Map east:	Map north:
Map scale: JNA	Map series:
Map edition:	Map sheet: 625-3-2
Map name: 1:25,000	

Accident Notes

inadequate equipment (?)

inadequate metal-detector (?)

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 March 17 2000, Gluva Smokva – Trebinje, at a demining site of NGO [Demining group] (Board of Inquiry see Annex B). Initial Report was received in BHMAC at 11,57 March 17 (See Annex A). According to the BH Standard, Board of Inquiry left Sarajevo at 14,00 hrs on March 17 and reached Trebinje at the previously agreed time at 09,00 on March 18 2000. A QA inspector from RU MAC Pale was on the site when the accident occurred and he gathered the written statements of the personnel present at the moment of the accident (See Annex C). [Annexes not made available.]

Deminer's accident involved one deminer/dog-handler. [The victim] suffered from injury to his left heel bone. Casevac and medevac procedures were done properly. The injured was evacuated to Trebinje hospital where he was operated on. It has been stated in the hospital that he lost approximately 50% of his heel bone. Apart from the Board of Inquiry, there were representatives from Trebinje Civil Police (they did not leave the control point due to safety reasons). They took the basic information from present personnel and the members of the Board.

Members of the Board of Inquiry were as follows:

- Chairman – Coord Dept BH MAC
- Member – Coord Dept BH MAC
- Member - RU Pale MAC RS
- Observer

Members of the Board of Inquiry gathered March 18 2000 at 09,30, at the control point of [Demining group] NGO, location Gluva Smokva – Trebinje. Also present at the site were RS PIU monitor, ITF monitor, [Demining group] ops officer, Chairman of the [Demining group] NGO and two complete demining teams that were conducting demining on that day.

SEQUENCE, DOCUMENTATION AND TASKING PROCEDURES

NGO [Demining group] Pale was tasked with ID No 1000254 (60000 m²) at Gluva Smokva location, which is on half way from Trebinje towards Dubrovnik. The map on which the task is shown is JNA 1: 25000, sheet No 625-3-2, grid references x = 20251 and y = 26089. Task was set by MAC RS and financed through International Trust Fund. *Priority to this task was given due to widen the safe area along the road Trebinje – Dubrovnik, IEBL area.* Request for the Red folder was submitted December 13, since the area has already been surveyed in the period from December 07 to December 10 1999. (Annex D – Survey report and the sketch of the area) BH MAC made a set of information while the RS MAC issued the Red Folder on February 16 2000.

The task was opened on February 16 2000, by breaking a safe access lane from the left side of the asphalt road, by the devastated house into the depth.

GEOGRAPHY AND WEATHER

Weather was very convenient for demining operations since it was raining the day before (Wednesday, March 16). It was raining previously as well, as stated by CER-1 team leader. After six days leave, first day at the site Gluva Smokva is March 17 2000. Exact place where the accident occurred is a smaller part of soil-covered area, while the rest is rocky. The period when this part was cleared is between February 18 – February 20 2000, as stated by team leader.

The accident occurred at approximately 120th metre of two metres wide safe lane (it is not possible to state is exactly since the safe lane is cut at places with big rocks and stone

plates), 2 metres to the left. The safe lane has been cut to the left side of the main road Trebinje – Dubrovnik.

The terrain is mostly rocky with sparse soil areas not larger than 40 m², with thorny bushes up to 1.8 m high and hard to go through, which makes the area very hard to work through. There are few slopes as well, though not too steep.

Access to the site is from the road. There is a devastated house on the road, to the right side of the safe lane. On the opposite side of the main road there are designated areas: control point / safe area, rest area, medical area, area for checking metal detectors, and an area for EDDs. Cleared and marked access lane is however hard to walk through because of the rock and a few stony slopes.

There are yellow-tipped pickets in the lane where the previous mines were found (21 mines, 9 PMA-2 and 12 PMR-2A until the day of the accident. Accident happened up to two metres from the left edge of the safe lane, on the cleared area (missed mine).

Photographs of the accident given in Annex E. [Annex not made available although some pictures were.]

SITE LAYOUT AND MARKING

The site layout and demining methods were dictated with the specific geography of the ground. The site layout is in compliance with BH Standard and [Demining group] Pale SOP.



[The accident site is shown above.]

The marking itself was done properly, having in consideration very hard conditions for work and marking. Where possible, marking stakes for bordering the safe lane from the suspect area are flushed into ground at a prescribed distance of 2 metres, where not possible, stakes were put among big stones. They are connected with mine tape at ground level or tape is put under the rocks. Designated areas are properly marked as well.

SUPERVISION AND DISCIPLINE ON SITE

Chief of the project on behalf of the PIU was [Name excised].

ITF monitor visited the site, while PIU monitor and [Demining group] ops officer were on site at all times. According to all reports, there were no faults noticed at the site. There was a medic with an ambulance at a site at all time for medical support.

Inspectors' reports are attached in Annex F, [not made available] also saying there were no mistakes and breaching procedures. Three QA inspections were done before the accident happened, with a separate report for each team.

Medical support was at the control point so the medic could reach the accident site very quickly. Medical evacuation was conducted on a satisfied level in a very short time. When the explosion happened, (10:55) medic was on the control point. He reached for his medical bag

and forwarded to the place of the detonation. One deminer waited for him in the safe lane and detected the area once again in order to make him a safe entrance towards [the Victim]. The deminer re-checked the area with the detector to make it safe for the medical to approach the wounded. [The Victim] was taken care at the spot and was transferred to Trebinje hospital at 11:10 hrs.

Productivity on sight before the accident was the approximate of 70-80 m² per deminer, which is, considering the type of area, quite high except for the days when the dogs were used.

Daily monitors' reports are attached in Annex G.

Daily ops officers' reports are attached in Annex H. [Annexes not made available.]

QUALITY ASSURANCE

Daily progress in demining and the compliance to procedure in total are taken from inspectors' reports, daily reports, monitors' reports and attached quality control inspections' reports.

RO inspectors found no mistakes in the work of the organisation so far, though the Board of Inquiry was not able to see the inspector's reports. Safe lane is two metres wide, with 10 cm overlap on each side. The lane is correctly marked as much as the conditions on the ground allowed.

According to the report of both inspectors and The Board, the approved SOP was on site.

Internal quality control checks have been conducted and are attached in Annex I. Accident happened during planning of the internal quality control by two EDD teams.

Since the site is opened on February 16 2000, RO MAC Pale had conducted 3 + 1 inspections on this particular site.

TASKING, REPORTING AND COMMUNICATIONS

In coordination with MAC RO Pale [Demining group] organisation had opened the task ID 1000254 on February 16 2000. The works on the site started the same day by making a safe lane to the left of the main road.

(Sketch of the task / place of the accident attached in Annex D.) [Not made available.]

The work on demining usually starts at 08.00 hrs.

First break is from 09.00 until 09.30. After the break the team leader is usually deploying deminers and tasking them.

PIU monitor provided his regular daily reports.

Communication on site is conducted through hand held radio stations for each team leader, the medic and the ops officer. Immediate communication is conducted through the HF communication with the ops room at Pale.

MEDICAL COVERAGE

Dog handler / deminer [the Victim] who was involved in the accident had activated a mine by pressure in the cleared area. Due to the nature of the injury he remained conscious all the time. Medic arrived immediately after the explosion with a deminer in front checking the area again. He was stabilised at the spot and transferred to Trebinje hospital for further treatment. As for what we know so far [the Victim] had lost about 50% of his heel bone, but is generally feeling good. He is transferred to the specialised medical facility for further treatment. The entire medical treatment has been conducted very efficiently.

PERSONNEL INVOLVED

The Ops officer for this site during the accident. There were also the PIU RS monitor, as well as CER team leader. The rest of the personnel are as follows:

- The team leader
- Another dog handler
- [The Victim]
- The medic

At the site ID 1000254 – road Trebinje - Dubrovnik the teams worked the way it has been presented in the daily reports.

TOOLS AND EQUIPMENT

The tools and equipment the teams used contained of Ebinger metal detectors, prodders, spades, shears, helmets with visors and protective jackets. During the Board of Inquiry visit the detectors were tested since the deminers have re-cleared the area both with detectors and prodders in order for the Board to approach the crater. Place of the accident was not disturbed until the Board of Inquiry arrived.

The prodders used by these demining teams were not adequate to the terrain where the demining was conducted. They are locally produced, 10 mm in diameter, with a part banded for the hand and a short sharpened end.

At the day of the accident it took a lot of force to prod into the depth of 8 cm, though it rained a day before and the ground was softened due to rain.

The area where accident happened was manually cleared with prodder. The mine was 'missed'.

DETAILS ON EXPLOSIVE DEVICE INVOLVED

The item that led to the accident is, as supposed by the Bol members, an AP mine PMA-2 set to be pressure activated by stepping on its prong. Leftovers of the mine were not found. As stated by the Bol members, mine was buried into the ground at the depth of 11-12 cm measured from the top of the crater (there is a 5 cm high pile of grass cut long time ago). Crater itself is of the oval shape, 22 cm wide, 40 cm long and 15 cm deep. Two stones of the size of an egg were found inside the crater, where the explosion occurred.

Trebinje Police was notified the same day at 11.30 and had conducted their own investigation a day after the accident (March 18 2000). They only collected the statements of the personnel present at the site, including the Bol.

EVIDENCE OF MINING - REMINING

There is no evidence of remining connected to this accident. While walking over the area where the explosion occurred, the dog handlers noticed no signs of the ground having been disturbed.

DETAILED ACCOUNT OF WHAT HAPPENED ON MARCH 17 2000

08.00 hrs, arrival at the site, ops officer issued the tasks.

After first 30 minutes of work a 10 minutes break was given. This way of work continued until the breakfast break that is usually from 09.30 until 10.00 hrs.

It has been planned immediately before the accident occurred that [the Team Leader] would introduce the dog handlers with the areas where internal control by EDD teams was supposed to be carried out.

Explosion occurred at 10.55 hrs. One dog handler passed over the spot where the accident happened. Both of the handlers were going over the area they were supposed to check with

their EDDs, since it was one of the rare 'soil covered' areas within the cleared part of the site. The Victim] was following the first dog handler and activated the mine by pressure. No dogs were with them at the time.



[The crater was in soft, peaty soil as shown above.]

ADDITIONAL INFORMATION

There were 5 deminers' accidents on the wider Trebinje area, not counting this one. Two of them happened on cleared area as well. Particularity of mining in this area is frequent occurrence of AP mines PMA-2 buried beside their normal depth, between 12 – 18 cm, which itself presents a difficulty of locating the object either with the prodder or the detector.

Apart from what is just mentioned, soil on this terrain (not the very spot where this accident happened) is rich in minerals and metal content, which is an additional difficulty to the efficient work of the metal detector.

Since the organisation used the Ebex 420 PB detectors known for their narrow head, they were able to check the ground between the thick bushes, which further enabled them to use the motor cutting, saw for removing vegetation. (In accordance with BH Standard).

SUMMARY

[The Victim] had activated a PMA-2 AP mine by pressure. The other dog handler walked the same area in front of him. As stated by [the Victim] himself, he walked with the second handler into previously cleared area that was supposed to be controlled internally and which was to be presented to them by the team leader. The area was not cut in boxes yet. It is not yet clear why the handler went into the area before the team leader defined a clear task and before the task was not cut into boxes.

CONCLUSIONS

- 1) As stated in the report, the area given is very hard to deminer.
- 2) Prodder used was not adequate to this type of terrain. No one spotted the inadequacy of the tools (deminers, ops officer, monitors, inspectors). Prodder must be able to prod to the depth of the 10 cm without using force, which is not applicable for the prodder used.
- 3) If detector signalled the presence of the metal (identification of the mine), both the stones around it and inadequate prodder disabled the identification of the item (prodder most probably hit one of the stones, so the mine remained missed).
- 4) Productivity of over 100 m2 cannot guarantee the cleared area according to the BH Standard.
- 5) The site was not disturbed before the Bol arrived.
- 6) Supervision and internal Quality control were conducted in compliance to the BH Standard.

RECOMMENDATIONS

- 1) **Demining tools must NECESSARILY be adequate to the area being cleared.** The diameter and the sharpened end of the prodder must enable the deminer to prod without force in order to locate the item at the minimum depth of 10 cm.
- 2) Due to great number of demining accidents in this area, it is necessary to find out **more efficient and safer procedures** for removal of mines. It will take a separate working group of demining organisations that have experience in this area in order to reach these procedures.
- 3) Until the efficient and safer procedures are reached, the Board of Inquiry recommends the circling of the task within the borders already cleared and final marking between the suspect and the cleared area, so that the cleared area can be handed over to RS MAC according to BH Standard. The task would count as much as 30 000 m2.
- 4) Since the mine was 'missed' and activated on the cleared area, Board of Inquiry recommends re-clearance of the cleared area with four EDD teams over the same area previously boxed. Lanes between boxes are to be re-cleared with two EDD teams followed by manual methods.
- 5) Productivity is not in compliance with the conditions on the site.

ANNEXES [Not made available. Some photographs were.]

- A Initial report
- B Board of Inquiry members
- C Written reports of the personnel at the site
- D Survey report with a sketch of the site and a sketch of the place where the accident occurred.
- E Photographs of the task and the accident spot
- F Inspectors' reports
- G Daily and monitor's reports
- H Internal QC reports

Signed: all BOI members

Victim Report

Victim number: 437	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: not known
Compensation: not made available	Time to hospital: not recorded
Protection issued: Not recorded	Protection used: not recorded

Summary of injuries:

INJURIES

severe Foot

COMMENT

No medical report was made available.

Analysis

The primary cause of this accident is listed as a "*Field control inadequacy*" because the victim was walking in an area prior to confirming it as clear with dogs, and before the area was marked out for the dog QA. The procedures in place at the site appear to have been lax. The investigators also observe that the clearance may have been too quick to give confidence that it was thorough.

Pictures of the prodding tool in use were not made available, but it was believed by the investigators to have been inadequate. Neither the MAC authorities nor the demining group's management had recognised that it was inadequate prior to the accident. However, the secondary cause is listed as "*Inadequate equipment*".