

# DDAS Accident Report

## Accident details

<b>Report date:</b> 19/05/2006	<b>Accident number:</b> 349
<b>Accident time:</b> 09:45	<b>Accident Date:</b> 11/07/1999
<b>Where it occurred:</b> Sizje village, Lukavac municipality	<b>Country:</b> Bosnia Herzegovina
<b>Primary cause:</b> Field control inadequacy (?)	<b>Secondary cause:</b> Management/control inadequacy (?)
<b>Class:</b> Missed-mine accident	<b>Date of main report:</b> 15/07/1999
<b>ID original source:</b> RB/JG/NK/MB/VMM	<b>Name of source:</b> BiH MAC
<b>Organisation:</b> Name removed	
<b>Mine/device:</b> PROM-1 AP Bfrag	<b>Ground condition:</b> building rubble bushes/scrub metal scrap
<b>Date record created:</b> 21/02/2004	<b>Date last modified:</b> 21/02/2004
<b>No of victims:</b> 4	<b>No of documents:</b> 1

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b> GR: BQ 97603735	<b>Coordinates fixed by:</b>
<b>Map east:</b>	<b>Map north:</b>
<b>Map scale:</b>	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b>
<b>Map name:</b>	

## Accident Notes

protective equipment not worn (?)  
safety distances ignored (?)  
inadequate equipment (?)  
inappropriate vegetation cutting tool (?)  
visor not worn or worn raised (?)

## Accident report

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

### INTRODUCTION

As a result of a mine accident on 11 July 1999, the Bosnia and Herzegovina Mine Action Center convened a Board of Inquiry to conduct an investigation on behalf of the State and Entity Government, in accordance with the BiH National Technical Guidelines. The written report of this accident received on 12 July, is attached as Annex A. This accident included a demining team from [commercial demining groups – two working together, one international, one local] who were clearing an area as requested by Lukavac municipality. The teams worked in the village of Sije, Lukavac municipality.

The Board of Inquiry comprised of:

- a. Chairman: Operations officer, Coordination Department, BH MAC
- b. Member: Technical Advisor, Fed MAC Operations
- c. Member: Chief of Operations, RO Tuzla, Fed MAC
- d. Observer: Fed PIU
- e. Observer: Coord Department, BH MAC

The Board of Inquiry has conducted a thorough investigation, which shall be presented to the Director of BH MAC in its written form on Monday, 19 July 1999 by 14,00 hrs.

A Lesson Learned from this accident will be distributed at the next meeting of the TWG that is to be held on Wednesday, 4 August.

1.1 Organisation that was carrying out demining at the site mentioned is [Demining group], a commercial organisation that has been carrying out humanitarian demining since 1996. Sije site was opened 8 July 1999. Contact person to the Investigation Board on behalf of the organisation involved was the field manager to this site.

1.2 The personnel employed in the organisation have been insured by the "H.M.T Insurance Brokers Ltd." company (Annex A2 – Insurance company contracts). [Not made available.]

### SEQUENCE, DOCUMENTATION AND THE PROCEDURES OF TASKING

2.1 The deminers were on an authorized task assigned to them through the Federal PIU, according to Tuzla Canton List of Priorities.

2.2 The task number for their duties is 'ID 10186'.

2.3 Deminers were carrying out manual demining operations as well as the preparation of the ground for the use of dogs.

### GEOGRAPHY AND WEATHER

3.1 Site is located at the village of Sije, 9 km to the NORTH/EAST from Lukavac municipality, Tuzla Canton, Federation of BiH.

3.2 The site is located at Grid Reference BQ 97603735. The width of the task site is approximately 150m from the main road Tuzla – Doboje, situated on the former zone of separation of military units of ABiH and VRS. This is very obvious from the existing bunkers and trenches in the very vicinity of the task site.

The ground is covered with bushes, with a deep forest to the NORTH/EAST, by the road Tuzla – Doboje. The soil is contaminated with metal debris at places. There is a demolished rest house at the site with a large amount of metal debris around it. It can be concluded that the area is suitable for the prodding method, while most of it could be checked with the mine detector.

There is an urban area at the very vicinity of the site, on the opposite side of the road that was used as a start line for the site.

## **PRIORITY OF THE TASK**

4.0 Lukavac municipality claimed this area to be the priority because of the frequent mine accidents (two killed civilians, one deminer killed and one wounded during the demining operations in 1997). The request for demining has been proceeded to the Tuzla Canton Government. Tuzla Canton Government proceeded the request further to the Federal PIU and then to the Federation Mine Action Centre for approval.



[The photograph above shows the accident site after the detonation.]

## **SITE LAYOUT AND MARKING**

5.0 The site is organized and marked in accordance with the SOP of [the Demining group], which had been previously approved by BH MAC.

5.1 The existing local road has been set as a datum line, separated with 1.2m high red top pickets. Access lanes and the lane for casualty evacuation were set vertically to the road.

5.2 There were no mines found since the site was opened. We can state that the site task is set in accordance with the BH MAC Technical and Safety Guidelines.

5.3 There is a part of this site that was not treated by [Demining group], where 0.5m red top pickets were found. These were left by [an International commercial demining company] that was carrying out demining at the same site in 1997.

## **SITE SUPERVISION AND DISCIPLINE**

6.0 There were two teams with their team leaders at the site. The killed team leader was [Victim No.1], and the other one is [Victim No.2].

6.1. Field manager to this site was carrying out full time supervision on behalf of the organisation.

6.2. [Name excised] was the most responsible person in [Demining group] organisation for carrying out Quality Assurance. He never visited the task site since it had been opened. (Annex C – complete list of visitors since work began)

6.3 [Name excised] was constantly present at the site carrying out monitoring on behalf of the Federal PIU.

## **QUALITY ASSURANCE**

7.0 The SOP of [Demining group] in local language was available at the task and it was presented at the Board's request.

7.1 There was no internal Quality Control to the task site.

7.2. The contractor had its monitor at the task site through all times. (Annex D – Monitor’s reports) [Not made available.]

7.3. RO Tuzla is responsible for this location on behalf of the MAC. RO Tuzla QA inspectors visited the task site on 8 July, at the very day it was opened. There is a remark in their report that vertical cutting tools (axe) were used in working lanes. (Annex D – QA Inspectors’ report). [Not made available.]

## **COMMUNICATIONS**

8.0 Communications network at the task site was based on VHF radio communications between the field manager, medic and the two team leaders. (‘Motorola’ radios).

8.1 The entire network system is the responsibility of the field manager. The communications were checked every hour. (Annex E – Table for communication check)

8.2 The accident was reported by phone to RO Tuzla by the PIU supervisor, while the written report was faxed to BH MAC from RO Tuzla.

The organisation [Demining group] was required to send the Initial report to BH MAC within 6 hours of the occurrence of this accident, which they did not send.

## **MEDICAL**

9.0 [Victim No.4] was the medic at the site. Since both teams worked at the same location, he was in position to provide all the necessary medical coverage. Ambulance with all the necessary medical equipment was located at the safe area. The driver started the vehicle as soon as he heard the explosion. (Annex F – MEDEVAC PLAN). [Not made available.]



[The photograph above shows the medic’s frag-vest.]

9.1 Accident occurred at precisely 09:45, after the field manager gave the sign for a coffee break.

9.2 The field manager, provided the immediate first aid to the injured medic who was already on the safe lane – datum line. He stopped the bleeding and put the medic into a civilian vehicle in which he was taken to the closest medical facility in Lukavac. Together with the other team leader, the field manager reached the injured deminers.

a) According to the pulse and the nature of injuries, they have both concluded that [Victim No.1] was dead.

b) They reached the deminer No. 1, Mr. [Victim No.3], and tried to stop the bleeding from his legs by strapping them. [Victim No.3] was in the ambulance within 10 minutes. He was received in hospital within a further 37 minutes.

Two other deminers reached the second injured deminer [Victim No.2], who was also injured at the datum line. They put him into the ambulance together with [Victim No.3].

9.3 Tuzla hospital was notified about the accident right after the injured were put into the ambulance.

9.4 [Victim No.1], one of the team leaders, was killed at the site of the accident.

9.4.1 [Victim No.3], died in the hospital during operation.(Annex G – death certificates). [Not made available.]

9.4.2 [Victim No.4], the medic, was injured in his left arm so that two arteries were cut by a splinter.

9.4.3 [Victim No.2] had less severe injuries on his left arm and both of his legs.

Both of the injured were kept in the hospital for some time, in order to prevent any kind of infection.

### **PERSONNEL, CALL-SIGNS, ID No OF THE TEAM INVOLVED**

10.0 Two teams consisting of 5 deminers each and a team leader carried out demining. (Annex H – written statements.) [Not made available.]

10.1. The methods used were the manual demining methods.

### **TOOLS AND EQUIPMENT**

11.0 The following tools were used at the site:

a) Three “Ebinger” metal detectors.

b) A prodder with its 23,6 cm working part was used and it was in accordance with standards.

c) All the other tools at the site were in accordance with BH MAC Technical and Safety standards and those were:

secateurs

shears

garden trowel

a saw

hammer for stabbing pickets into the ground

mine tape

pickets

(Annex I – Photography)[Not made available.]

axe

(Annex M – proofs of vertical cutting) [Not made available.]

d) Team leader stated that the existing mine detectors were tested at the beginning of the work and after breaks. There is a designed area 100 x 100cm with a testing pit of 60 x 60cm. The team leaders were responsible for testing.

There is no written evidence on the testing of mine detectors.

e) The soil was metal free, which enabled the use of metal detector on most of the task site.

f) According to deminers’ statements, prodding and moving forward in working lanes was done in accordance with procedures.

g) The Board did the re-test of “Ebinger” metal detector that was previously tested by [the Demining group] company.(Annex J – metal detector test). [Not made available.]

During re-testing it has been discovered that the sensitivity button was set at its minimum.

### **DETAILS OF MINE INVOLVED**

12.0 The mine involved was a PROM-1.

12.1 It was possible to recover the base plate of the mine in the crater at the depth of 25 cm.

12.2 No other mines were found on the site.

12.3 PROM-1 was in the ground with no traces of being attached to the tripwire.

12.4 The oval crater made by explosion was 35 x 20cm in dimensions. (Annex K – Photography – base plate and the copper tube). [Not made available.]

### **EVIDENCE OF RE-MINING**

13.0 There was no evidence or suspicion of re-mining of this area.

### **DRESS AND PERSONAL PROTECTIVE EQUIPMENT**

14.0 Deminers were not wearing PPE when the accident occurred. None of the deminers' vests or helmets were damaged or stained with blood. Only the injured medic was wearing his PPE, which is damaged and stained with blood, but it stopped the medic from being injured even more severely.

(Annex I – Photographs of equipment.) [Not made available.]

### **THE USE OF DOGS**

15.0 Dogs were not used at the task site.

### **DETAILED ACCOUNT OF ACTIVITIES ON DAY OF THE ACCIDENT**

16.0a. Daily demining plan. (Annex L) [Not made available.]

b. Statements of deminers indicate that the circumstances on the day of the accident were quite usual. (Annex H) [Not made available.]

c. Accident occurred at the moment when the deminers were leaving the “cleared” area, after the break sign was given by the field manager.

### **SUMMARY**

17.0 As a part of an authorized task of mine clearance at the site of [the Demining group] in the village of Sizje, a mine accident occurred on Sunday, 11 July at 09,45 hrs. As a result of this accident, two deminers were killed; one deminer was injured while the medic suffered severe injuries to his arm.

17.1 The accident occurred at a distance of 18.2m from the road – datum line, in the “cleared” area where the vegetation was very thoroughly removed by vertical cutting – using an axe. Accident happened when the sign for the break was given, while the deminers were leaving the minefield towards the Control point.

17.2 The cause of the accident is the PROM –1 mine activated with pressure.

17.3 Deminers involved in the accident were not wearing their PPE.

17.4 MEDEVAC was done according to procedures while the hospital was notified about the accident on time.

### **CONCLUSIONS**

18.1 Inspectors' remarks regarding the use of the tools for vertical cutting were corrected immediately. The work with the same tools was continued after the inspectors left the site.

18.2 Deminers were not wearing PPE, since the state of their vests and helmets clearly indicates so (no damage done).

18.3 Since the vegetation around the activated mine was removed, there is a reasonable doubt that the procedures of humanitarian demining were not followed.

18.4 If they were, a PROM-1 mine would have been found by any of the means of manual clearance.

18.5 Because MAC QA inspectors do not carry out inspections on Saturdays and Sundays, demining companies are enabled to use unacceptable and forbidden methods in their work during weekends.

(Annex M – Photographs.) [Not made available.]

18.6 The vegetation at the site being very high and dense, the productivity shown is very high for this category of ground, if the methods of humanitarian demining were used correctly.

(Annex N- Photography) [Not made available.]

18.7 Missed mine in a “cleared” area indicates that there were gaps in carrying out Quality Assurance at the task site.

## RECOMMENDATIONS

**No one is to be allowed** to leave the Control Point or enter the minefield without a proper PPE, whether those were operating deminers or others.

**It is strictly forbidden** to use the tools for vertical cutting in removal of vegetation.

If possible and available the detector must be used although there is no suspicion of mines.

If **any organisation** wishes to carry out demining operations during Saturdays and Sundays, they are **obliged** to notify relevant Regional offices two to three days in advance, so that the QA inspector would be able to carry out necessary inspections.

Quality Assurance personnel must carry out their duties as conscientiously as possible, since their negligence frequently ends up with tragic consequences.

Since there are frequent accidents involving PROM – 1 mine in which most experienced deminers get killed or injured, a periodical re-training is recommended regardless of previous experience, to ensure that the procedure for handling the PROM – 1 mine is followed.

Signed: all BOI members

## Victim Report

<b>Victim number:</b> 441	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> supervisory	<b>Fit for work:</b> DECEASED
<b>Compensation:</b> not made available (insurance)	<b>Time to hospital:</b> not applicable
<b>Protection issued:</b> Frag jacket Helmet Short visor	<b>Protection used:</b> none

### Summary of injuries:

FATAL

COMMENT

Multiple severe injuries causing immediate death. No medical report was made available.

### Victim Report

<b>Victim number:</b> 442	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> not known
<b>Compensation:</b> not made available (insurance)	<b>Time to hospital:</b> 37 minutes
<b>Protection issued:</b> Frag jacket Helmet Short visor	<b>Protection used:</b> none

#### Summary of injuries:

INJURIES

severe Arms

severe Legs

COMMENT

No medical report was made available.

### Victim Report

<b>Victim number:</b> 443	<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 (insurance)	<b>Time to hospital:</b> 37 minutes
<b>Protection issued:</b> Frag jacket Helmet Short visor	<b>Protection used:</b> none

#### Summary of injuries:

INJURIES

severe Legs

FATAL

COMMENT

Victim died in operating theatre. No medical report was made available.



## Victim Report

<b>Victim number:</b> 444	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> medic	<b>Fit for work:</b> presumed
<b>Compensation:</b> not made available (insurance)	<b>Time to hospital:</b> 37 minutes
<b>Protection issued:</b> Frag jacket Helmet Short visor	<b>Protection used:</b> Frag-jacket

### Summary of injuries:

#### INJURIES

severe Arm

#### COMMENT

No medical report was made available.

### Analysis

The primary cause of this accident is listed as a "*Field control inadequacy*" because clearance of the area had been inadequate. The PROM-1 has a large metal signature and is a large prodder target, so it is not possible that adequate clearance methods could allow a mine to be missed. Field supervisors allowed PPE not to be worn and safety distances to be ignored in a fragmentation mine area. The secondary cause is listed as a "*Management/control inadequacy*" because the responsibility for the selection and training of field managers rests higher in the management chain.

The use of inappropriate vegetation cutting tools was noted by the investigators.

Without access to the cleared area maps, it is not clear whether the accident occurred in an area that had been cleared in 1997 by another demining group.