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# DDAS Accident Report

## Accident details

<b>Report date:</b> 15/03/2004	<b>Accident number:</b> 373
<b>Accident time:</b> 13:20	<b>Accident Date:</b> 30/09/2001
<b>Where it occurred:</b> MNB West, Kurvala region, Albania/Kosovo border	<b>Country:</b> Kosovo
<b>Primary cause:</b> Field control inadequacy (?)	<b>Secondary cause:</b> Inadequate training (?)
<b>Class:</b> Missed-mine accident	<b>Date of main report:</b> 09/10/2001
<b>ID original source:</b> BOI: No 016/2001	<b>Name of source:</b> KMACC
<b>Organisation:</b> Name removed	
<b>Mine/device:</b> PMA-3 AP blast	<b>Ground condition:</b> grass/grazing area rocks/stones
<b>Date record created:</b> 22/02/2004	<b>Date last modified:</b> 22/02/2004
<b>No of victims:</b> 1	<b>No of documents:</b> 2

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b> DN 2944 0742	<b>Coordinates fixed by:</b>
<b>Map east:</b> GR 34T	<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

inadequate training (?)  
inadequate metal-detector (?)  
pressure to work quickly (?)  
mine/device found in "cleared" area (?)  
inadequate area marking (?)

## Accident report

What follows is the report of a Board of Inquiry investigation that was made available in January 2002. It has been edited for anonymity.

REPORT FOR ACCIDENT INVESTIGATION BOARD OF INQUIRY – No 016/2001

Mine Accident that occurred in MNB West on Sunday 30 September 2001.

### Introduction

- 1) In accordance with the Mine Action Co-ordination Centre (MACC) Standard Working Procedure No 4, the MACC Programme Manager issued a Convening Order on Sunday 30 September 2001 for an Accident Investigation Board of Inquiry. Annex A details the Convening Order.
- 2) This is a comprehensive report by the Board of Inquiry into the mine accident that occurred on Sunday 30 September 2001. Based on the investigation, interviews, statements from [the Demining group] personnel involved in the accident, visits and photos of the accident site, this accident is considered preventable.
- 3) This finding is based on the fact that at the time of the accident the Team Leader [the Victim] was about to remove a PMA3 blast mine located by deminer [name excised]. This mine was approximately 10cm past the base stick. As [the Victim] was getting into the prone position to remove this mine he knelt on another PMA3 mine that was in the cleared lane.
- 4) The accident occurred at minefield number 431, Task Dossier number W01-43, GR 34T DN 2944 0742 on 30 September 2001 at 1320 hours.

### Events leading up to the Accident

- 5) The [Demining group] team's call sign 13M and 56B1 have been conducting manual clearance in the Kurvala region along the Albanian border for the past three weeks and have been living on site in a field camp. The location is very remote and mountainous, and requires a 40-minute walk up to the site from the nearest road. There are four minefields within the Task Dossier W01-43. The minefield number 431 contains PMR2A fragmentation mines with PMA3 blast mines as keepers. Within the vicinity of the accident site approximately 50 PMA3 blast mines and five PMR2A fragmentation mines have been removed and destroyed.
- 6) This is the third mine accident in six days at this minefield involving the team 13M. Due to the previous accident at this site the team had re-commenced clearance on Saturday 29 September 2001. At approximately 1320hrs on the day of the accident, the team leader of 13M [the Victim] was called forward by one of his deminers [name excised] to remove a PMA3 blast mine that he had located approximately 10cm beyond his base stick. [The Victim] instructed the deminer to return to the rest area and wait until he had completed removing the mine. As [the Victim] got into the prone position to remove the mine he knelt on another PMA3 mine that was in the cleared lane. The resulting explosion was so severe as to almost completely amputate his left leg above the knee.
- 7) The Victim fell face forward onto the ground and Deminer [two names removed] raced forward, rolled him over and then proceeded to assist him. By this time the team medic arrived and commenced first aid. A call was made to [another Demining group] to report the mine accident and to request a helicopter CASEVAC. The MACC Programme Manager (PM) and MACC Chief of Operations (COO) happened to be approaching the CP at the time of the accident to visit the team, and they were able to assist with the CASEVAC. The CASEVAC by helicopter of [the Victim] occurred with no problems.
- 8) Work on Sunday 30 October 2001 commenced for this team at 0745hrs. The team was using the two man drill, with deminers (Deminer T) and (Deminer A) conducting clearance in the lane of the accident. Deminer T was the first to commence clearance for the day in the

lane, with deminer A in the rest area. Deminer T worked until the tea break, which was at approximately 1000hrs. He has stated that he tested the metal detector prior to commencing work in the lane. During his time of clearance he did not locate any mines. After the tea break it was the turn of deminer A to conduct clearance in the lane. He has stated that he tested the detector after the tea break prior to commencing work. Within 15 minutes of starting clearance he located his first mine (PMA3). In accordance with the [Demining group's] procedure he called his team leader [who then] instructed Deminer A to wait in the rest area whilst he removed the mine. This mine was removed without accident and Deminer A then continued with his clearance. He then found a second and third PMA3 and these mines were dealt with in the same manner. When Deminer A had located his fourth PMA3 he again called [the Victim] forward. As with the previous three mines Deminer A returned to the rest area and it was then that [the Victim] knelt on the undetected mine whilst in the process of removing the fourth mine located by Deminer A.

9) The MACC QA Officer along with [the Demining group's] Programme Manager (ITF Contract) [name excised] commenced the investigation the following day. The accident site had been left untouched since the time of the accident. The blast hole was approximately 1.5m before the base stick in the cleared lane. The metal detector was severely damaged in the blast. The search head had been detached from the shaft and control box as a result of the explosion. Deminer A had left the detector next to the left side mine tape of the clearance lane when he returned to the rest area. The detector was beside [the Victim's] left knee as he knelt and was therefore caught in the blast.

10) The shape of the blast hole is not consistent with a single PMA3 explosion. Deminer A has stated that he did not conduct any excavation in the vicinity of the mine that [the Victim] knelt on. There is a possibility that there may have been two mines involved in the blast due to the shape and size of the hole. The depth of the blast hole was not indicative of a deeply laid mine.

11) The operational clearance plan for the two teams 13M and 56B1 in the mountain regions is to work everyday that there is fine and suitable weather. Therefore both teams were conducting clearance on this Sunday. However as with any mine/UXO clearance conducted there was the necessary communications, medical and CASEVAC support in place.

Views of the accident site and blast crater are reproduced below. The site is within 25 metres of the accident that occurred on 25<sup>th</sup> September 2001.





[The lane marking does not include the use of regular stakes/posts and so its precise location can be moved by wind.]

The Victim was in the process of getting into the prone position in order to remove the PMA3 located by Deminer A when he knelt on the another PMA3 in the cleared lane. This mine was not located and was therefore missed by Deminer A. The Vallon Metal Detector was next to the mine marking tape to the left of the lane. From the explosion the shaft was shattered and the detector was in two pieces with the control box part way down the hill and the search head in the lane.

Deminer A during his shift had located 4 x PMA3 mines. Two of the mines positions were marked with mine sticks, the third was knocked over during the CASEVAC. The three mines numbered 1 - 3 were all dealt with in the same manner with [the Victim] removing them and placing them in the mine collection area. The fourth mine was about to be dealt with in the same way when he knelt on the fifth mine that was undetected by Deminer A.

### **Work History of the Casualty**

12) [The Victim] has been with The Demining group since 1996.

### **Past History of the Area**

13) The accident site is Task Dossier W01-43, at minefield number 431. The minefields in this task dossier are all in the Kurvala Mountain Range and were laid by the VJ Army along the Kosovo – Albanian Border. There are a number of minefields along the border with Albania and the majority have a high density of mines. The minefields contain both anti-personnel fragmentation and blast mines.

### **Sequence, Documentation and Procedure of Tasking**

14) The Task Dossier No W01-43 was issued to [the Demining group] on 3 September 2001. There are four minefields detailed in this dossier, 418, 431, 434 and 436. Minefields 434 and 418 have been completed and work continues on 431, with 436 yet to be started.

### **Geography and Weather**

15) The Kurvala region is situated in the West of Kosovo along the Albanian border and approximately 5Km South East of the Montenegrin border. It is a remote mountainous area with heights exceeding 2600m in places. The height of this minefield is at 2300m. Access to these minefields is either by foot or helicopter with no vehicle access. The nearest road is a 40 minute walk. The local populous from both Kosovo and Albania use these high plateaus for summer grazing of their livestock. The weather at the time of the accident was slightly overcast with variable winds and a temperature of approximately 15 degrees Celsius.

### **Site Layout and Marking**

16) The site layout and marking at the site was in accordance with [the Demining group's] SOPs for mine clearance. According to the Vojska Jugoslavije (VJ) minefield record, there are three mine rows containing PMR2A fragmentation mines with PMA3 blast mines as keepers.

### **Management Supervision and Discipline**

17) [The Demining group] is a commercial mine clearance company that employs Zimbabwean Deminers, Team Leaders and Operations Officers. As such there is no local demining capability within the company in Kosovo. The Operations Officer has operational responsibility for the [Demining group's] demining teams, with the team leaders directly responsible for the day to day supervision on site of their respective teams. Each [Demining group] demining team consists of a Team Leader, four manual deminers and a team medic.

### **Quality Assurance and Quality Control**

18) [The Demining group] Internal Quality Control (QC) is achieved through a system of on-site checks by the Team Leader to ensure adherence to the mine clearance SOPs. The normal procedure for QC is for the team leader to conduct a 10% check of the clearance lanes using the same detector that the deminer used for the clearance. The MACC QA teams conduct external Quality Assurance on a regular basis, normally each site is visited a minimum of once per week. An external QA inspection had been conducted six days prior to the accident by a MACC QA team. Prior to this a number of visits by the MACC COO, Ops Offr and QA Offr had been conducted to this site on a regular basis.

### **Communications and Reporting**

19) At the time of the accident there was effective communication by VHF hand-held Motorola radios between the team site and callsign 56 [the Demining group Gjakova] on the Kosovo wide net as well as the team site and [another Demining group] on the MNB(S) net. This team site also has effective HF communications to all other [Demining group] callsigns operating in Kosovo.

20) The MACC PM and COO had just arrived at the team CP when [the Victim] knelt on the mine, and were therefore immediately aware of the accident.

### **Medical details**

21) The initial injury that [the Victim] suffered was a very severe blast injury to his left knee. He sustained no other injuries. Upon arrival at the German KFOR hospital in Prizren his left leg was surgically amputated above the knee.

### **Personnel**

22) Written statements from the [Demining group] personnel involved in the accident are at Annex E. [Not made available.]

### **Dress and Personal Protective Equipment (PPE)**

23) At the time of the accident [the Victim] was wearing his personal protective equipment in accordance to [the Demining group's] SOPs. [The demining group confirmed separately that this was a frontal apron and a long visor.]

### **Tools and Equipment**

24) The Victim was not using any tools or equipment at the time of the accident.

## **Details of Mine Involved**

25) [A datasheet on the PME-3 mine and how to disarm it was pasted here.]

## **Account of Activities**

26) The following is a description of the events from the time of the accident until the casualty was at the hospital:

### **Sunday 30 September 2001**

0745hrs – Team 13M commence clearance operations in minefield 431 with Deminer T having the first shift in the accident lane with Deminer A in the rest area.

1015hrs – Tea break for the team.

1045hrs – Deminer A tests the metal detector prior to commencing work in the lane.

1100hrs – Deminer A locates the first PMA3 and the next four up until the time of the accident.

1320hrs – Uncontrolled detonation at minefield number 436 involving Team Leader [the Victim] whilst he was in the process of removing the fourth PMA3 located by Deminer A.

1321hrs – [name excised] notified of the accident and CASEVAC helicopter requested. [The Victim] given first aid by team medic and then stretchered to the helicopter winch area.

1409hrs – CASEVAC helicopter arrives at winch area. [The Victim] given further treatment by German Doctor before loading into helicopter.

1425hrs – Helicopter departs for German KFOR hospital in Prizren..

### **Monday 1 October 2001**

1300hrs – MACC QA Officer and [name excised] [the Demining group] Programme Manager (ITF Contract) conduct scene examination of accident site.

## **Insurance details**

27) All The Demining group staff involved in mine clearance activities in Kosovo are covered by the standard [Demining group's] insurance through Lloyds of London.

## **Conclusions**

28) Based on the investigation, interviews, the statements and visits to the site, the Board of Inquiry concludes the following:

- There was an uncontrolled detonation of a PMA3 anti-personnel mine on Sunday 30 September 2001 in [the Demining group's] minefield number 431 situated in the Kurvala region of Kosovo. [The Victim] was in the process of removing a PMA3 mine when he knelt on another PMA3 that was missed by Deminer [name excised] (Deminer A).
- As a result of the uncontrolled detonation [the Victim] suffered very serious injury to his left leg and consequently the German KFOR doctors amputated the leg above the knee.
- Deminer A had located four PMA3 blast mines during his shift up until the time of the accident. However he did not locate the PMA3 that [the Victim] knelt on and caused the accident. The blast hole indicates that this mine was not laid at an excessive depth. The mine that was missed was clearly within Deminer A's area of responsibility for clearance and ought to have been located.

- Deminer T is not at fault for the cause of the accident as his area of responsibility for clearance was not part of the area where the mine was missed.

### **Recommendations**

29) The following are recommendations based on the Board of Inquiry conclusions:

- [The Demining group] management takes the appropriate disciplinary action against Deminer A for this very serious breach of clearance standards that has caused this most unfortunate accident.
- [The Demining group] management and supervisory staff are to re-emphasize to their deminers the need to maintain concentration and due care whilst conducting manual clearance drills. The [Demining group] team leaders are to be extra vigilant to ensure their deminers are conducting their clearance drills effectively and safely.

Signed: UNMIK Mine Action Co-ordination Centre  
Quality Assurance Officer

### **Annexes:** [Not made available]

- A. MACC convening order for accident investigation Board of Inquiry.
- B. Map of the general area.
- C. Schematic diagram of the general accident area.
- D. IMSMA Mine Accident Report.
- E. Witness Statements.
- F. Medical report from the MACC QA Officer.
- G. The Demining group Internal Investigation Report

### **Comments by the MACC Chief Operations Officer**

Reference:

Accident Report, 25 Sep 01

Accident Report, 27 Sep 01

Accident Report, 30 Sep 01

- 1) Three separate mine clearance accidents occurred over a 5 day period in the same minefield and involving the same mine clearance team. Whilst the technical cause of each accident is different and is addressed in three separate Mine Accident Investigation Reports, they are all inter-linked with the underlying origins of increased hazard, due to density and location of minefield, and subsequent requirement for more vigilant supervision and pro-active management support.
- 2) Therefore, for ease of reference and objective conclusions, they will all be grouped together and commented on below.
- 3) The first accident, as detailed at Reference A, may be clearly attributed to a lack of attention on the part of Deminer [name excised]. He had either failed to detect a PMA-3 and unknowingly moved his base stick close to or on top of it, or he was so distracted by the proximity of the PMR-2 that he inadvertently moved his base stick further forward than normal. This in a confined area that a significant number of mines had already been located in.
- 4) The initial Medevac request was for the wrong location and the resulting confusion and time delays may have proved critical if the casualty had sustained a more serious injury.
- 5) This accident should have indicated a definite requirement for closer management supervision of this technically difficult and remote site.
- 6) The second accident, as detailed at Reference B, following on as it did from the first, should not have been allowed to cause such an injury. If the injured deminer, [name excised], had been paying the necessary attention to detail, wearing his visor correctly and adopting the prone position whilst prodding onto a probable PMA-3 mine, it is likely that, should the



accident still have occurred, he would have sustained only slight injuries as he would have been offered the full protection of his facial PPE.

7) The fact that he was not should have, again, highlighted an urgent requirement to review the supervisory and management oversight of this remote and technically difficult site. Additionally, once again, incorrect and critical information was passed during the Medevac request.

8) The third accident, detailed at Reference C, is clearly attributable to negligence on the part of deminer [name excised]. At the time of writing, at least another two PMA-3 mines have been located in adjacent cleared areas and this conclusively underlines the lack of close supervision and management support required to operate at this location.

9) [The demining group] have built a reputation, in Kosovo, based on professional competency, operational effectiveness and the sheer hard work of their deminers. This reputation is fully justified and endorsed by the MACC; it was for precisely this reason that [the demining group] were selected to work on this demanding site. These accidents, coming as they do at the end of a long two years of sustained operations and nearly 4000 mines safely found and destroyed, should not detract from the credit due to the [Demining group] deminers or [the demining group] as an organisation. Rather they should serve as an unfortunate reminder of the constant need to remain vigilant and to sustain supervisory and management oversight during this final, intense, stage of the mine clearance programme in Kosovo.

10) The Conclusions of the Board of Inquiry are fully concurred with. The Recommendations are also endorsed and are to be implemented immediately. Whilst future accidents may be a probability, one attributed to the same, or similar, causes is unacceptable.

## Victim Report

<b>Victim number:</b> 478	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> supervisory	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> More than 1 hour 15 minutes
<b>Protection issued:</b> Frontal apron Long visor	<b>Protection used:</b> Frontal apron, Long visor

### Summary of injuries:

AMPUTATION/LOSS

Leg Above knee

COMMENT

No medical report was made available.

### Analysis

The primary cause of this accident is listed as a "Field Control Inadequacy" because the investigators concluded that the deminer carelessly missed the mine that his supervisor knelt on. It is possible that his training was inadequate, and also that his detector may have been unable to detect the mine reliably in those conditions. However, if the investigators were right, the deminer was not being supervised adequately.

This accident was one of several involving the same demining group in the same mined area over a very short time. Under "Related papers" is a document produced by the MACC following this rash of accidents in which they emphasised the need for better supervision by the demining group Management.

The accidents raise questions over the competency of the field supervisors, and so cast some doubt over their training and selection – both of which are the responsibility of more senior management. The Secondary cause is listed as "Inadequate training", which may apply to the deminer who missed the mine, his supervisor, or senior management.

Although the investigator did not identify it as a cause, the photographs he took during the investigation show that lane marking was potentially imprecise and used a method that would not have been acceptable to many demining groups, and is not as recommended in the IMAS.

## **Related papers**

As a result of a rash of accidents involving this demining group, the MACC issued combined conclusions of those accidents stressing the need for improved site management. This paper is reproduced below, edited for anonymity.

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