

DDAS Accident Report

Accident details

Report date: 15/03/2004	Accident number: 327
Accident time: 10:43	Accident Date: 18/09/2000
Where it occurred: Morina village, MNB West, VJ MF 3501	Country: Kosovo
Primary cause: Field control inadequacy (?)	Secondary cause: Inadequate training (?)
Class: Excavation accident	Date of main report: 18/04/2001
ID original source: MD/EW/LH/JF	Name of source: KMACC
Organisation: Name removed	
Mine/device: PMA-2 AP blast	Ground condition: bushes/scrub grass/grazing area
Date record created: 20/02/2004	Date last modified: 20/02/2004
No of victims: 1	No of documents: 3

Map details

Longitude:	Latitude:
Alt. coord. system: GR: DM 391 961	Coordinates fixed by:
Map east:	Map north:
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate training (?)
handtool may have increased injury (?)
visor not worn or worn raised (?)
use of pick (?)
squatting/kneeling to excavate (?)
inadequate medical provision (?)
inadequate metal-detector (?)
metal-detector not used (?)

Accident report

The following is the MACC accident report, edited for anonymity. Several photographs have been omitted.

Introduction

1. In accordance with the MACC Standard Working Procedure #4, the MACC Programme Manager issued a Convening Order for an accident investigation Board of Inquiry (a copy of the Convening Order is attached at Annex A).
2. This is a comprehensive report by the Board of Inquiry on the mine accident that occurred on the 18 September 2000. Based on the investigation, the statements from the personnel involved in the accident (see attached statements in Annex B appendix 1 to 8), visits to the accident site and the photos from the accident site, this accident can be considered as a preventable mine accident. This finding is qualified by the fact that the accident was not only caused by a non-adherence to approved Standard Operating Procedures, but also a combination of unusually difficult circumstances at the work site and the relative inexperience of personnel supervising the task.
3. The information provided by [Demining group] to the MACC Headquarters in the "Accident Report" is confirmed. A copy of the "Accident Report" is attached as Annex C. The accident occurred at approximately 10.43 am on 18 September 2000, when [the Victim] activated a PMA-2 mine at GR: DM 391 961 during the sapping drill in a row of PMA-2 and TMA-3 mines. The casualty suffered minor blast trauma to both hands and inner legs. The blast from the explosion was funnelled inside his visor, burnt his face and caused serious damage to both eyes. After the explosion the visor was found approximately one meter in the uncleared area to the left of the casualty's original sapping position. At this stage it is not known what the long term affect on his vision will be, however the prognosis is not encouraging. There were no other personnel injured in the accident and there was no property damage.



The picture above shows the visor and blast "crater".

4. [The Victim] is a deminer who has six months experience with [the Demining group] and he is considered by his colleagues and supervisors as an experienced deminer. The section commander had one-year experience with [Demining group] and has completed the section commander course. The team leader on site has been working with [Demining group] since October 1999.
5. The accident site is a MACC task dossier #W02-57 containing a VJ recorded minefield #3501. This clearance task was given to [the Demining group] by the MACC four months ago.

Sequence, Documentation and Procedure of Tasking

6. Since the [Demining group] has started working on this minefield, over 250 mines have been removed from the minefield. The mines found in the minefield are in accordance with the VJ record #3501. The pattern is one TMA-3 anti-tank mine protected with two PMA-2 approximately 1 meter from the anti-tank mine at the 12 and 6 o'clock positions.

Geography and Weather

7. The task site is located close to the village of Morina at GR: DM 389 960. Access to the site is by the dirt road. The weather was sunny with a temperature of approximately 20 Celsius with a light breeze.

Site Layout and Marking

8. The site layout and marking was in accordance with the [Demining group] SOPs. The access lane from the Admin Area was a two to three metres cleared and marked lane marked with a 1-meter picket every 5 metres and with mine tape. (See attached sketch in Annex C)

Management Supervision and Discipline

9. The [Demining group] has two different ways of conducting minefield clearance:

The first technique is the one-man one lane (OMOL) drill where a single deminer is working in each clearance lane for a period of 30 minutes with 10 minutes break in between.

The second technique is two men one lane (TMOL) drill, where each pair of deminers is responsible for one clearance lane. Each deminer alternately spends half an hour demining and then half an hour observing his partner at work from a distance of 25 metres.

The technique used on the day of the accident was the one-man (OMOL) drill, supervised by the section commander who is directly responsible for the control of the deminers in his section.

10. The last MACC QA visit was on the day of the accident. The QA Supervisor was getting his briefing from the site team Leader at the time of the accident. The previous visits (total of 8 since 12 May 2000) were good evaluations.

Quality assurance and Quality Control

11. [Demining group] internal Quality Control and Quality Assurance is obtained through a system of adherence to [Demining group] SOPs, an international or local Demining Supervisor on site, training standards and very strict discipline in the danger area.

12. External Quality Assurance is conducted by the MACC QA visits (see paragraph 10).

Communications and Reporting

13. Communications on each of the [Demining group] task sites is provided by VHF hand held and vehicle mounted HF radios. In accordance with [Demining group]'s SOP, no clearance operations are to be performed without effective communications. On the day of the accident, the mine/UXO clearance team had proper and appropriate communication on site.

Medical Details

14. The two [Demining group] Medics provided medical coverage on site. They were equipped with a medical trauma pack, medical stretcher and a proper [Demining group] ambulance. The ambulance is correctly fitted out as an ambulance, and is capable of transporting a casualty to a medical facility. Both Medics provided immediate first aid to the casualty less than three minutes after the accident. The casualty was immediately stabilised and transported by road to the Italian KFOR field hospital in Peje. The CASEVAC to the Italian KFOR field hospital was completed in approximately one hour. On arrival in Italian KFOR field hospital, [the Victim] had some x-rays, blood testing and the military surgeon operated on his right hand. Because the Italian KFOR field hospital doesn't have an eye specialist, the MACC Chief of Operations requested assistance from the InterSOS doctor who is an eye specialist. [The eye specialist] from InterSOS examined his eyes and she recommended that the casualty should be transferred to an eye specialist clinic for operation as soon as possible. Four and a half hours from the time of arrival at the Italian KFOR field hospital, the decision was taken to send the casualty by ambulance to the Pristina University Hospital for eye surgery. On arrival to the Pristina Hospital, the doctors at the emergency room examined the casualty and x-ray had to be taken again because the Italian KFOR field hospital didn't send them with the casualty. The MACC organized for a Russian KFOR eye specialist to be present to assist the Albanian eye specialist. After a few delays the casualty was taken to operating theatre at 2000 hrs. (See MACC Medical QA Officer report at Annex D).

Personnel

15. A list of the team personnel and their duties is attached at Annex B. Written Preliminary accident Report from the [Demining group Programme Manager] and the statements from [Demining group] staff who assisted in the CASEVAC are attached as appendices to Annex B.

Dress and Personal Protective Equipment

16. At the time of the accident [the Victim] was wearing the proper uniform and personnel protective equipment (PPE) according to the [Demining group] SOPs. However the facial and eyes injuries indicate that the visor was worn incorrectly and that the deminer was almost over the top of the mine when it detonated. According to the [Demining group] the full-face visor they use is designed to withstand the effects of blast and fragmentation mine at close range. The Body Armour used by [Demining group] is a lightweight, one piece, protective vest that is designed to withstand the effects of low velocity ballistic fragmentation at very close ranges. Even if the equipment is worn properly there is always a small gap between the Body Armour and the bottom part of the visor.



[Pictures of the victim are in the Medical report. The picture above shows the Victim's minimal frontal body protection with no collar to interface with the visor.]

Tools and Equipment

17. The equipment used by [the Victim] at the time of the accident was the appropriate equipment issued by [Demining group] for the sapping drill [metal-detectors were apparently not in use.]. The metal front part of the sapping tool has not been found yet.



The picture above shows the recovered parts of the sapping tool (shards of wood) and a complete tool showing the missing metal head.

Details of Mine Involved and evidence of Minefield

18. The mine was a PMA-2 anti-personnel blast mine. It contains a friction-sensitive chemical fuze and a detonator. A minimum pressure of approximately 5kg is required to initiate the mine. The VJ records indicate that 106 anti-tank mines (TMA-3) and 212 anti-personnel mines (PMA-2) were laid at that site.

Account of Activities

19. The following is the description of the events that lead up to the accident. (The statements used for the description of events are attached in Annex B as appendix 1 to 8):

06h30 Both Morina Teams depart [Demining group] compound in Dubrava.

07h15 Morina Teams arrived Morina #2&5. Team at Morina #5 was able to deploy, team at Morina #2 was unable to deploy because the KFOR Italian troops had setup a checkpoint in the admin area of Morina #2 minefield. The KFOR Italian troops refuse to move and said they were there all morning to check the papers of Albanian entering in Kosovo.

07h20 Morina #5 minefield starts working.

07h30 BRZ QA Team arrived at Morina #5 to carry out external quality assurance.

08h00 The demolition of 1 AP mine had to be delayed due to intrusion of 5 civilian personnel into Morina #5 mined area, trying to avoid the Italian KFOR checkpoint by sneaking past on foot.

08h00 – 10h00 Approximately 25 civilians were seen moving through Morina #2 minefield avoiding Italian KFOR soldiers.

08h25 [Demining group] base contacted [demining group Programme Manager] by HF radio to inform him of problem at Morina #2. [Demining group Programme Manager] tasked [Demining Supervisor] to go to Morina #2 and sort out the problem.

08h30 [Demining group Programme Manager] contacted MACC Operations Pristina asking for the assistance of MNB (W) liaison officer to resolve the problem at Morina #2 minefield. MACC Chief of Operations promises assistance.

08h30 – 09h30 BRZ QA evaluation visit of Morina #5 took place. A total of 3 evaluations were conducted: Command and Control, Demolition drills and Minefield marking.

09h30 [Demining Supervisor] arrived at minefield Morina #2.

09h45 [Demining Supervisor] and Site Team Leader Morina #2 move to Morina #5 and meet with BRZ QA team.

10h00 [Demining Supervisor] tasked a deminer from Morina #5, on sentry duty to prevent civilians encroaching on demining area and positioned accordingly.

10h10 BRZ QA Team, [Demining Supervisor] and Site Team Leader Morina #2 move from Morina #5 to Morina #2.

10h20 Italian KFOR finally persuaded to move their vehicles to allow [demining group] safety vehicles to be properly positioned.

10h30 Site team leader contacts [Demining group] base to inform them of the start of clearance operations.

10h35 Deminers deploy under guidance of section commanders, team leader commences site brief to QA.

10h36 MACC Chief of Operations contacted [demining group Programme Manager] to inform that the problem with KFOR was sorted out.

10h38 The [Demining group] base informed [demining group Programme Manager] that Morina #2 clearance have started.

10h40 Deminers commence work. The section commander is actually behind the deminer who was to be involved in the accident. The section commander watches the deminer lay out his tools and commence sapping drills with his excavation tool.

10h42 Section commander moves away from deminer to go check the deminer in the next lane.

10h43 Section commander sees 2 civilians outside the danger area of Morina #2 but calls a warning to the section commanders in Morina #5 in case they move in that direction.

10h43 Uncontrolled explosion occurs in Morina 2 minefield, 1 deminer injured.

10h34 All work was stopped at Morina #2 and #5 Minefields.

10h44 The section commander and two closest deminers gave immediate assistance to the casualty. The casualty was carried to end of lane and then put onto stretcher and carried to first aid point. At that location both [Demining group] medics on site were waiting for him and gave him first aid.

10h48 [Demining group Programme Manager] contacted MACC Operations to inform them work has commenced in Morina #2.

10h50 Morina #2 Team contacts [Demining group] Base to inform them that an accident has occurred.

10h51 [Demining group] Base contacted [demining group Programme Manager] and Dubrava location manager who were on their route to Morina #2.

10h53 [Demining group Programme Manager] contacted MACC Operations to inform that [Demining group] just had an accident at Morina #2.

10h55 Ambulance departs Morina 2 (apparently escorted by two Italian KFOR APC - these got lost somewhere between Junick and Pec).

11h00 [Demining group Programme Manager] requested from all stations on MNB (W) net to give 10 minutes of clear airtime to coordinate CASEVAC (with limited effect)

11h01 [Demining group Programme Manager] contacts Italian KFOR MNB (W), to inform them that there is a male casualty with blast injuries to right hand and legs being transported by road in a [Demining group] Ambulance to Pec & could they inform their military hospital to be ready for a casualty.

11h04 [Demining group Programme Manager] arrived at Morina #2 minefield.

11h05 All [Demining group] Teams stood down and told to await further instructions.

11h06 Quick radio SITREP to MACC Operations on situation and informs them a BRZ QA team is on location.

11h08 [Demining group Programme Manager] tasks a second vehicle from [Demining group] Dubrava compound to go to Pec and provide any assistance required. Programme Administrator accompanies vehicle.

11h10[Demining group Programme Manager] and BRZ QA Team Supervisor conducted a preliminary investigation of the site including photography of the crater, seat of the explosion, parts of the digging tool, and PPE.



[The picture above was taken during the investigation and shows one of the individuals (the picture is cropped for anonymity) at the accident site with parts of the victim's hoe-handle in his hand. The investigator is on his knees at the end of the lane alongside a marker for a previously located mine. He is not wearing body-armour or visor.]

11h24 All [Demining group] clearance operations in MNB (W) were stood down and return to Dubrava base location.

11h30 Initial investigation completed finding that deminer was sapping using a laterally scraping motion and a [Demining group] digging tool. This had detonated a PMA 2 mine -

small fragments found in the seat of the explosion, (regular pattern of 1 x TMA 3 with 2 x PMA 2 keepers in the row). Visor probably had been worn incorrectly or deminer was distracted and had looked up, causing blast to go underneath the visor.

11h45 [Demining group] ambulance arrived at Italian KFOR hospital.

12h00 Casualty undergoes initial treatment by Italian KFOR surgical team.

13h00 Informed non serious injuries include: cuts and minor burns to face, hands and legs although a deep wound in right hand between thumb and 1st finger. However casualty will need specialist eye surgery. Treatment of other wounds continues.

13h10 [Demining group Programme Manager] requested assistance from the MACC to find an eye specialist in Kosovo.

13h30 [Programme administrator] informed [demining group Programme Manager] that the Russians have facilities needed and Italians will arrange transfer to hospital.

14h00 [Programme administrator] informs [demining group Programme Manager] and MACC that the Russians will not treat Albanian Kosovars. MACC Chief of Operations informed [demining group Programme Manager] that InterSOS have a specialist eye doctor and that he has dispatched liaison officer to KFOR Main to try and establish location of necessary facilities.

15h30 InterSOS eye specialist looks at casualty and says he must have a retinal scan and may lose sight permanently without a specialist operation as soon as possible.

15h40 [Demining group Programme Manager] asks if MACC can arrange KFOR or Police escort to Pristina.

16h00 Casualty's wife informed and transport provided to hospital.

16h15 MACC Chief of Operations informs [demining group Programme Manager] Carabinieri escort on the way to Italian KFOR field Hospital.

16h20 Casualty loaded into [Demining group] Ambulance at the Italian KFOR field Hospital.

16h25 [Demining group] Mechanical supervisor leaves in 2nd Ambulance to RV with ambulance carrying casualty at Klina in order to provide back up in event of break down and also to assist at any check points.

16h30 No sign of Carabinieri escort, [Programme administrator] orders driver to leave for Pristina leaving message for Carabinieri to catch up.

17h00 [Programme administrator] RV's with [Mechanical supervisor] at Klina who provide an additional Blue light escort.

17h45 Casualty arrives at Pristina Hospital. Additional assistance on road provided by BRZ QA team Supervisor.

18h30 Russian eye surgeon recommends eye operation necessary.

20h00 Casualty goes in Operation Theatre.

Insurance Details

[The Victim] was covered by the standard [Demining group] insurance cover for all personnel involve in mine/UXO clearance activities. All insurance policies for [Demining group] are through Lloyd's of London.

Conclusions

21. Based on this investigation, the statements and visits to the site, the BOI came to the following conclusions:

This accident is considered as a preventable mine accident. This finding is qualified by the fact that the accident was not only caused by a non-adherence to approved [Demining group]

SOPs, but also a combination of the following factors that contributed an extra stress at Morina #2 minefield on the morning of September 18:

The presence of Italian KFOR troops using the [Demining group] administration area for a checkpoint.

Albanian civilians walking in the mine area and between Morina #2 and #5 to avoid the KFOR checkpoint.

The presence of the BRZ QA team conducting a QA evaluation.

Considering the above factors the supervisor on site should have closed the site and requested assistance from the MACC Liaison Officer for MNB (W).

[The Victim's] injuries indicate that he was not wearing his visor properly and therefore did not adhere to the mine/UXO clearance procedures according to [Demining group] SOPs.

After verification of the [Demining group] SOPs, with the exception of a drawing in chapter 8 "Conducting of Clearance", there are no details to explain the actual sapping procedure.

The CASEVAC procedure to the Italian KFOR field hospital was done in accordance with [Demining group] SOPs with the exception that oxygen was not given, blood pressure was not monitored and treatment given to the casualty by [Demining group] medical staff was not recorded.

The X-rays taken at the Italian KFOR field hospital were not forwarded with the casualty to the civilian University Hospital in Pristina.

[The Victim] suffered serious injuries to both eyes and at this time it is not known if he will keep his vision. The rest of his injuries are considered as minor injuries.

The total time to evacuate the casualty to the Italian KFOR field hospital was approximately one hour and five minutes. However it took over eight hours before he could get proper treatments for his eyes.

The MACC task dossier provided to [Demining group] for this task was very well documented and the VJ records coincide with the mines found in the minefield. [The Victim] should have known that he was very close to the next PMA-2.

Recommendations

22. The following are recommendations based on the Board of Inquiry conclusions:

[Demining group] management must provide better supervision with proper experience that can make good decisions in similar situation.

[Demining group] management must review their SOPs and re-write the chapter 8 "Conducting of Clearance" and conduct refresher training.

The MACC Medical QA Officer will have to maintain regular information about all KFOR and civilian medical facilities, with the type of treatment they can provide.

MACC Liaison Officer for MNB (W) and the MACC QA Medical Officer must liaise with KFOR to sort out the regulations for medical support and highlight the fact that the documentation did not follow with the casualty to the civilian hospital.

The MACC Operation will remind the proper procedure in case of a CASEVAC to all organisations using the MACC radio communication network.

Signed: UNMIK QA Officer

Annexes:

- A: MACC convening order for accident investigation Board of Inquiry
- B: List of personnel involved with attached statements as appendices.

C: IMSMA Mine/UXO accident Report
D: MACC QA Medical Officer "Medical Report"

Comments by the Chief Operations Officer

I concur with the findings and recommendations by the BOI. The recommendations mentioned in the Medical Report (Annex D) must also be taken in consideration.

Signed: Chief Operations Officer

Comments by the Programme Manager

I concur with the findings and recommendation of the Board of Inquiry.

In this instance the deminer has apparently carried out an incorrect procedure causing the mine to detonate. The reasons behind this are not able to be determined. However it would appear that the injuries were exacerbated either by the incorrect wearing of the visor, or the deminer's position and proximity to the mine as he was working. These are matters that need to be addressed through constant reinforcement and supervision.

The concern regarding the time it took for the casualty to receive the specialist treatment required for his eyes is noted. It is apparent that even though extensive medical facilities and helo capabilities exist within KFOR, in some circumstances these are not sufficient or available to support the specific requirements of each situation. In this instance immediate eye care was essential, and whilst it is not known whether this would have made a difference, it must always be assumed that time is a critical factor in every situation.

Signed: UNMIK Programme Manager

Victim Report

Victim number: 411	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: no
Compensation: insurance paid (sum unknown)	Time to hospital: 8 hours
Protection issued: Long visor Short frontal vest	Protection used: Short frontal vest

Summary of injuries:

INJURIES

minor Face

minor Hand

minor Legs

minor Shoulder

severe Eyes

severe Hand

COMMENT

See medical report.

Medical report

A left shoulder injury was noted by the Section Commander who rescued the Victim from the minefield – see Statements. The Victim's face and hands were photographed in hospital. [It is hard to understand why possible eye injury was not noted on the site.]



Annex D of the accident report is the following medical report which has been edited for anonymity.

Introduction

This report is based on interviews and statements from the [Demining group's] Medics and from their documentation of the accident.

Summary

At the time of the accident there were two qualified medics, with all their medical equipment, and one Ambulance at the site.

The medics were at a Control point approx. 300 metres from the place of the accident but they had placed a stretcher at a temporary Control point closer to the place of the accident.

The medics heard the explosion and they were immediately called on by a whistle signal from the Team leader. They brought the Ambulance and all their equipment to the temporary Control point.

Meanwhile two deminers had brought the stretcher from the temporary Control point to a safe area in the minefield.

The casualty was carried out from the place of the accident to the safe area, where he was placed on the stretcher. He was then carried on the stretcher to the temporary Control point where the medics were waiting for him.

The Medics removed his clothes and examined all of his body, he had injuries in his face, hands and legs but he was fully conscious.

His face and hands were slightly burned but he didn't have any pain and there was no large bleeding.

The casualty immediately got an intravenous cannula and an infusion of Ringer Lactate 500 ml was connected. His face was cleaned and his hands and legs were bandaged. He also got Penicillin 600 mg.

He was then loaded into the ambulance for transportation to the KFOR-hospital in Peja.

The Medics accompanied the casualty in the ambulance.

During transportation he got another bag of Ringer Lactate 250 ml infusion, but he didn't get any oxygen or any other medical treatment in the ambulance.

During the whole CASEVAC procedure the blood pressure was never controlled, due to the fact that the Medics didn't have any blood-pressure gauge.

KFOR-hospital in Peja was contacted from the [Demining group] HQ by radio and they were ready and waiting for the ambulance when it arrived.

The time of accident was 10.43, and the time of arrival at hospital was 11.45.

The casualty was taken care of immediately and examined at the hospital.

He had x-ray, blood tests and his hands were operated by the KFOR surgeon.

His eyes were badly injured but there is no eye specialist doctor at the Italian KFOR hospital in Peja.

At 15.30 his eyes were examined by eye specialist Dr Louisa Berretta from InterSos, who recommended that the casualty should be transferred to an eye specialist clinic for operation as soon as possible.

4,5 hours after arrival at KFOR hospital in Peja the KFOR surgeon decided to send the casualty by a [Demining group] Ambulance to Pristina University Hospital for eye surgery.

[Demining group] Medics accompanied the casualty in the Ambulance to Pristina. The casualty was conscious and stable all the time and he was in no pain. He didn't receive any medical treatment during transportation.

At 17.45 the casualty arrived at Pristina University Hospital where he was taken care of and examined immediately by two eye surgeons (one local doctor and one Russian KFOR doctor). It was decided to operate the casualty immediately.

There was some delay in the Emergency Ward when the casualty arrived to Pristina University Hospital due to there was no documentation of the medical treatment from the Italian KFOR hospital in Peja.

At 19.30 the casualty was taken to operating theatre.

Conclusions

The CASEVAC was performed according to S.O.P.

The [Demining group] Medics did a very good job according to the circumstances however the casualty didn't get Oxygen and they could not check the blood pressure due to lack of blood-pressure gauge.

There was no documentation of the medical treatment from the [Demining group] Medics.

Italian KFOR hospital in Peja did not perform according to KFOR regulations and they didn't send appropriate documentation of their medical treatment when the patient was transferred to Pristina University Hospital.

The time from the first surgical examination in KFOR hospital till the casualty gets to an eye specialist doctor is 6 hours!

Recommendations

Always give oxygen, in case of inhalation of explosives.

All medical treatment must be documented.

Get "Emergency journal" forms for appropriate documentation of the medical treatment.

Blood pressure must always be controlled on all trauma injuries.

Get blood-pressure gauge in the Major Trauma Kit.

Liaise with KFOR to sort out the regulations for medical support.

Signed: QA Medical Officer

In December 2001 the MACC reported that the Victim was totally blind and no longer employed. The demining group had paid for further medical tests and insurance was paid [an unspecified amount].

Analysis

The primary cause of this accident is listed as a "*Field control inadequacy*" because the victim was apparently working with his visor raised and his error was not corrected. The secondary cause is listed as a "*Inadequate training*" because the demining group's management had failed to adequately document the "sapping" procedure in use and (with inexperienced supervision) it is hard to see how training could have been appropriate when there was no documentation to refer to.

A failure to identify the Victim's severe eye injury in the field implies that the medics may not have been adequately trained. The eight hour delay in reaching an appropriate surgical facility may have contributed to the Victim's sight loss.

Metal-detectors were apparently not in use at this site, with area-excavation of "sapping" being the preferred clearance method. (See the demining group's initial accident report under "Related papers".]

A further and significant management failing (that was not known to the investigators) is that this group use a similar wooden handled hoe and sapping technique in other countries and have suffered several similar accidents while doing so. Their management seem not to be aware how frequently their own deminers suffer hand and eye injury in these cases.

A final failing of field management was the fact that the initial investigation was conducted with the senior staff involved inspecting the point of initiation while wearing no protective equipment at all. The fact that they photographed this and included it in their report implies that they were not aware that they should have been wearing the PPE.

As with most reports from the Kosovo MACC, the accident report demonstrates an unusually thorough and critical approach to accident investigation. The Mine Action Co-ordination Centre that carried out the investigation was not engaged in demining, and this may (in part) explain the unusually objective nature of their investigations

Related papers

The available Annexes from the MACC accident report are followed by the Demining group's initial accident report.

ANNEX A:

CONVENING ORDER FOR ACCIDENT INVESTIGATION BOARD OF INQUIRY

The Programme Manager of the Mine Action Co-ordination Centre hereby appoints the following members to form a Board of Enquiry to investigate a mine accident that

- | | |
|-----------|---------------------------|
| President | - MACC QA Officer. |
| Member | - Acting Project Manager |
| Member | - MACC Medical QA Officer |

[The Demining group] Programme Manager is requested to provide an observer and assistance to the Board.

The Board of Inquiry is to carry out a full investigation and provide a written report to the MACC by 0800hrs Tuesday 26 September 2000. The report is to be written in the English language.

The Report of the Board of Inquiry is to consider the details attached at Appendix 1.

The Board of Inquiry is to issue an information bulletin to members of the mine/UXO clearance community in Kosovo to inform them of the accident and any relevant information and actions that should be taken by them immediately.

Signed: MACC Programme Manager

Annex B:

List of Demining group personnel – omitted for anonymity.

Annex C:

IMSMA Mine/UXO accident Report – not digitised in the file.

Annex D:

Medical report. See Victims tab and click on Medical report.

Internal Demining group Accident report

- Morina 2 Minefield 18th September 2000

Outline

The accident took place in the middle row of three rows of mines running across the Morina Valley floor. The pattern of mines was clearly established as a TMA 3 anti tank mine with PMA 2 keepers planted in the 12 o'clock and 6 o'clock positions. Due to the highly ferrous soil causing constant signalling on the 420H detector, the clearance of this lane utilised the [Demining group] excavation techniques rather than detectors. The mine was part of a clearly defined pattern and was situated in the position the next mine could be expected to be located.

Initial impression at the site and from the injuries suffered and damage to equipment, is that the deminer was working in a half-kneeling position excavating with his hand tool in a scraping motion across the face of the lane. The hand tool disintegrated and pieces of the handle have been recovered. The metal head of the tool has not been located at this time.

It is thought that either the top of the mine has been struck through an incorrect sapping drill or the mine was at an angle in the ground and the sapping tool scraped onto the pressure pad on the top of the mine.

[The PMA-2 has no "pressure pad" and must have been activated by a direct blow to the plunger.]

There is dust/debris blown into the inside of the visor. Pitting/dust is present towards the base of the visor on the inside. Indicating either the visor has been worn incorrectly, the deminer was almost over the top of the mine when it detonated or the deminer was looking up and away from the mine when it detonated. The first of these options is the most likely, possibly combined with the third.

The casualty suffered the following injuries Injuries to both eyes (Extent unknown at this time). A deep penetration to the right hand between the thumb and first finger although no damage to the bone, minor cuts and burns to the left hand particularly down the fourth finger. Cuts and minor burns to area between knees and thighs on both legs. Minor abrasions and burns to the face.

His section commander had inspected the lane seconds before the accident. The section commander has been with [Demining group] for a year, and has taken the section commanders' course.



[The picture shows a sketch of the task documentation.]

The section commander indicates the deminer was working in the correct position and correctly wearing his PPE.

The team had been deployed onto the task for 4 months, over 250 mines removed to date. The deminer had been working for [Demining group] for 6 months. The team leader had been with [Demining group] since October 1999.

A more detailed investigation will be carried out on 19th September by UNMACC QA staff and [Demining group].

The team deployment was delayed through Italian KFOR setting up an immigration check point in the [Demining group] admin area, this problem was resolved at approximately 10.30 and the team commenced work at 10.40. The accident occurred with 3 minutes of work commencing. A [Demining group] expatriate supervisor was on site and a UNMACC/BRZ QA team 61B.

Sequence of events.

06.30 Morina Teams depart [Demining group] Compound Dubrava

07.15 Morina Teams arrive Morina. Team at Morina 5 able to deploy, team at Morina 2 unable to deploy due to Italian Checkpoint in the admin area of the minefield. Italian refuses to move and say they will be there all morning.

07.20 Morina 5 minefield starts work

07.30 QA Team (61 Bravo) arrive at Morina 5 to carry out external quality assurance.

08.00 Planned demolition of 1 AP mine delayed due to intrusion of 5 civilian personnel into Morina 5 mined area trying to avoid Italian checkpoint by sneaking past on foot.

08.00 - 10.00 Approximately 25 civilian personnel seen moving through Morina 2 minefield avoiding KFOR personnel.

08.25 [Demining group] Delta (VHF call sign 54) - [Demining group] Base location, contacts [Demining group] 1 (54 Alpha - [Demining group] Programme Manager) by HF to inform him of problem at Morina 2. [Demining group] 1 tasks (Demining Supervisor) to go to Morina and sort out the problem.

08.30 54A contacts 63 (MACC Operations Pristina) asking for MNB (W) liaison officer to be tasked to assist with problem at Morina 2 minefield. 63 Alpha promises assistance.

08.30 - 09.30 QA of Morina 5 takes place.

09.30 (Demining supervisor) arrives Morina 2

09.45 [Demining supervisor] and Site Team Leader Morina 2 move to Morina 5 and meet with QA team.

10.00 Deminer in Morina 5 is tasked by [Demining supervisor] to become a Guard to prevent civilians encroaching on demining area and positioned accordingly.

10.10 QA Team 61 Bravo, Jack and Fisnik move from Morina 5 to Morina 2.

10.20 Italians persuaded to move their vehicles to allow [Demining group] safety vehicles to be properly positioned.

10.25 Vehicles parked and deminers unload demining equipment.

10.30 Team leader contacts [Demining group] base location stating work commenced

10.35 Deminers deploy under guidance of section commanders, team leader commences site brief to QA team.

10.36 63 Alpha (Chief Operations) contacts 54 Alpha to say problem with KFOR sorted out

10.38 54 contacts 54 Alpha to say Morina team commenced work

10.40 Deminers commence work. The section commander is actually behind the deminer who was to be involved in the accident. The section commander watches the deminer lay out his tools and commence sapping drills with his excavation tool.

10.42 Section commander moves away from deminer.

10.43 Section commander sees 2 civilians outside the danger area of Morina 2 but calls a warning to the section commanders in Morina 5 in case they move in that direction.

10.43 Uncontrolled explosion occurs in Morina 2 minefield, 1 deminer injured.

10.43 All work stops in Morina 2 and 5 Minefields.

10.44 Immediate assistance given by section commander and two closest deminers. Casualty carried to end of lane and then put onto stretcher and carried to first aid point.

10.45 [Demining group] medics commence first aid. Casualty has injuries to legs, hands and face.

10.48 54 Alpha contacts 63 Alpha to inform them work has commenced in Morina thanks for the assist.

10.50 Morina Team contacts [Demining group] Base location informing them a accident has occurred.

10.51 [Demining group] Base location contact 54 Alpha and 54 Bravo (Dubrava location manager) who are coincidentally on route to Morina 2 of accident.

10.53 54 Alpha contacts 63 and informs them of accident at Morina - "more details to follow"

10.55 Ambulance departs Morina 2 (apparently escorted by two Italian KFOR APC - this got lost somewhere between Junick and Pec).

10.58 Ambulance meets 54 Alpha and 54 Bravo en route into Morina. Morina team leader gets out of ambulance and 54B jumps into the Ambulance that then proceeds to Italian Military Hospital in Pec.

11.00 54 Alpha asks all stations on MNB (W) net to give 10 minutes of clear airtime to coordinate CASEVAC (with limited effect)

11.01 54 Alpha contacts Kilo Foxtrot (Italian KFOR MNB (W)) And informs them that there is a male casualty with blast injuries to right hand and legs being transported by road in a [Demining group] Ambulance to Pec & could they inform their military hospital to be ready for a casualty.

11.04 54 Alpha and team leader arrive Morina

11.05 All [Demining group] Teams stood down and told to await further instructions.

11.06 Quick sitrep to 63 on situation and inform them a QA call sign is on location.

11.08 54 Alpha tasks a second vehicle from Dubrava compound to go to Pec to provide any assistance required. 54 Charlie (programme administrator) accompanies vehicle.

11.10 54 Alpha and 61 Bravo conduct a preliminary investigation of the site including photography of the crater, seat of the explosion, parts of the digging tool, and PPE.

11.24 All [Demining group] call signs in MNB (W) stood down and return to Dubrava base location.

11.30 Initial investigation completed finding that deminer was sapping using a laterally scraping motion and a [Demining group] digging tool. This had detonated a PMA 2 mine - small fragments found in the seat of the explosion, (regular pattern of 1 x TMA 3 with 2 x PMA 2 keepers in the row). Visor probably had been worn incorrectly or deminer was distracted and had looked up, causing blast to go underneath the visor.

11.45 Ambulance arrives Pec hospital

12.00 Casualty undergoes initial treatment by Italian surgical team.

13.00 Informed non serious injuries include: cuts and minor burns to face, hands and legs although a deep wound in right hand between thumb and 1st finger. However casualty will need specialist eye surgery. Treatment of other wounds continues.

13.10 54 Alpha contact 63 and asks for assistance on establishing location of specialist eye hospital in country.

13.30 54 Charlie informs 54 Alpha Russians have facilities needed and Italians will arrange transfer to hospital.

14.00 54 Charlie Informs 54 Alpha and 63 Alpha Russians will not treat Albanian Kosovars. 63 Alpha informs 54 Alpha InterSOS have a specialist eye doctor. 63 have dispatched liaison officer to KFOR Main to try and establish location of necessary facilities.

15.30 InterSOS eye specialist looks at casualty and says he must have a retinal scan and may lose sight permanently without a specialist operation.

15.40 54 Alpha asks 63 if they can arrange KFOR or Police escort to Pristina.

16.00 Casualty wife informed and transport provided to hospital.

16.15 63 Alpha informs 54 Alpha Carabinieri escort on the way to Italian Hospital.

16.20 Casualty loaded into [Demining group] Ambulance Pec

16.25 54 Mike (Mechanical supervisor) leaves in 2nd Ambulance to RV with Ambulance carrying casualty at Klina in order to provide back up in event of break down and also to assist at any choke points..

16.30 No sign of Carabinieri 54 Charlie orders driver to leave for Pristina leaving message for Carabinieri to catch up.

17.00 54 Charlie RV's with 54 Mike at Klina who provide an additional Blue light escort.

17.45 Casualty arrives at Pristina Hospital. Additional assistance on road provided by 61 ECHO (facilitating move through roadwork on main Pristina to Pec road - route DOG).

18.30 Russian eye surgeon recommends eye operation necessary.

19.30 Operational procedure begins.

Signed: 18 Sept 2000, [Demining group] Programme Manager, Kosovo

Statements

The statements of six people involved in the accident are summarised below.

Deminer

Statement from the deminer working in the lane behind to the accident site

We arrived in control point of minefield Morina #2 at approximately 07h15. We then had problems with Italians KFOR soldiers who were using our control point for a checkpoint. We stay in the control point an another side of minefield.

At 10h40 [Demining group] international mine/UXO clearance supervisor insisted that we start working. At 10h43 the accident happened to our friend. Then we evacuate him .I personally take all his tolls and take in case.

At the time of the accident, I was sweeping with the metal detector. I didn't see the accident I first heard the explosion and then saw him on his back and he was screaming.

Deminer

Statement from the deminer working in the lane next to the accident site

We began our work at about 10h40. I started to operate with my metal detector. Five minutes later I heard an explosion and after this immediately I heard screaming. I turned as to know something more and realized that it was my colleague the one who screamed. I stopped my work and went to help him, to put him out of the lane and offer him first aid. My position was 30 to 35 metres from the accident site.

Medics

Statement from the two medics on site.

The accident has happen on Monday the 18 September 2000, in [Demining group] minefield Morina#2.

Time of the accident 10h45.

Accident has happen 300 metres away from control point but first aid was given to the casualty rapidly (few seconds from the deminer and section commander and 2 to 3 minutes from us).

Once we got there, we cleaned his injuries, make immobilization, and put cannily, and than we gave him IV fluids and antibiotics. The total time to evacuate the casualty to the Italian KFOR field hospital was approximately on hour.

Team leader (1)

Statement from Site team Leader at MORINA #2 (accident site)

06h30 We left Dubrava compound

07h15 Was ready to start work

07h20 Morina #5 start working.

07h30 BRZ QA team left for minefield Morina #5.

10h00 Deminer stooped because civilians, who are coming from Albanian, are passing through minefield Morina#5.

10h20 BRZ QA team Supervisor, the section commander at my site and finally agreed with Italian KFOR soldiers to let us use our control point and deployed our deminers.

10h35 I brief the BRZ QA team.

10h40 The deminers started to work. I requested from [deminer] to bring me visor and body Armour from control point.

10h43 We heard the detonation, I went to look in the minefield to see in which lane the detonation occurred. Than with [deminer] we are going in the deminer line [the Victim] were in the 25m I so [deminer] with deminers evacuating from line with [two other] deminers , with the strach [stretcher] we sent in the improvising control point and left Medics giving the First Aid.

10h50 When I have take all dates about casualty I gone to send this dates to base by radio. After order to go in Peja . After 300 m driving we have meet [names omitted] has continue driving by ambulance and I am going back in control point and wait [omitted]'s order to come back in base.

Team Leader (2)

Statement from Site team Leader at MORINA #5 minefield [a woman].

We left Dubrava compound at 06h30.

I was near the Fisnik Control point at about 10 past 7. On the way to my Morina#5 minefield I got a call through Motorola by the section commander informing me that the road was blocked by the Italian KFOR. So I drove back to the Fisnik minefield. We started our working day at about 20 past 7.

Ten minutes later the BRZ QA staff arrived, to whom I briefed and gave the report. The deminers found two PMA-2 mines during the first shift time. We prepared the demolition cable during the ten minutes brake and immediately went to demolish the already found mines. The BRZ QA staff joined me watching closely upon my operations and the procedure I followed. All this operation took me about 30 minutes. The BRZ QA staff stayed in our minefield for about two hours.

During the time I was preparing to do the demolition of the first mine, there were five people going through the minefield itself so I had to pause in carrying out the action, being that I got this information from a section commander. I did this demolition only after these people were out of the minefield. [Names omitted] came to me at about 9.30 to 10 o'clock. They wanted to know the story of the passing-by people. I informed them that being that I was busy dealing with the BRZ QA people I couldn't see them and as such I didn't know much about their route. By this time the BRZ QA people had left. [Names omitted] left as well.

Then we started our usual operations after I put a deminer acting as a sentry in the first lane, stopping this way any person to go through the minefield itself.

I heard an explosion boom at about 10.40. I was inside the control point at this time, so I put my visor on and left in the direction of the section Commander. Then I was informed that there wasn't any accident inside our minefield. At this moment we all thought that it was perhaps some Albanian passing by who had stepped in a mine.

Minutes later I got the correct information and we all left in the direction of the Compound.

Section Commander

Statement from the Section Commander of the casualty.

We left Dubrava compound at about 06h30.

We were not able to start our work on time because Italian KFOR troops were occupying out control point. We had to wait until about 10h30 to 10h40 before we could start working. The accident happened not more than five minutes after beginning of work.

Only two minutes after I had left [the Victim's] safe lane and noticed that everything was O.K, as I was continuing my inspection tour of the minefield to next deminer. I heard the explosion and the deminer calling me for help: "*come and help me or I'm gone for ever*".

I immediately turn around and saw [the Victim] and called the two nearest deminers and we all together went to help him out the lane. We put him out of the lane at a distance of about three metres away the minefield itself by which time the medics had arrived to offer him the first aid service. In the meantime I could realise that it was his face, a finger of his right hand and the little finger of his left hand then his left shoulder to have been injured. Lots of fragmentation could be realised in his both legs as well.