

DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 309
Accident time: 10:45	Accident Date: 13/09/2000
Where it occurred: Nr Haji Mamand village, Barzinja Sharbazher district, Suleimaniyah Governorate	Country: Iraq
Primary cause: Other (?)	Secondary cause: Management/control inadequacy (?)
Class: Excavation accident	Date of main report: 20/09/2000
ID original source: JW/JDG/BK	Name of source: UN/JJ/ELS
Organisation: Name removed	
Mine/device: Type 72 AP blast	Ground condition: rocks/stones route (verge)
Date record created: 19/02/2004	Date last modified: 19/02/2004
No of victims: 3	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: MAG/S/0442 MF	Coordinates fixed by:
Map east:	Map north:
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

squatting/kneeling to excavate (?)
safety distances ignored (?)
inadequate equipment (?)
disciplinary action against victim (?)
visor not worn or worn raised (?)
inadequate training (?)

Accident report

A UNOPS MAP Board of Inquiry was instigated and the following restricted BOI report provided. For unexplained "political" reasons, the report provided had been heavily censored. The original report was located elsewhere and is reproduced under "Related papers". The following edited UNOPS report has been edited to allow it to read smoothly. See also Related papers.

The BOI visited the site on 14 September 2000.

The periods of previous employment and recent re-training of the victims was not recorded.

The accident occurred at a work area "approximately two metres from the edge of the dirt road, next to a rock embankment supporting the road". The soil surface at the site was flat but there were "some rocks" that had fallen down the embankment. The rest-areas were approximately 70 metres from the accident site, partly shielded from it by rocks and the embankment.

On the day of the accident the site-log recorded that work started at 06:30 and a change-over took place every 30 minutes thereafter. A full-excavation clearance method was being used. Deminers worked in two man teams with a one-man drill. One rested and one worked at any one time. The accident occurred during a change-over period. All of the injured were reported to be wearing Long visor (30cm) and a "Vest procured from The Trading Force".

While standing up from a kneeling position at 10:45, Victim No.1 lost his balance and fell forwards detonating a Type-72 antipersonnel blast mine [probably with his hand]. Victim No.1's partner and Section Leader were standing too close to him at the time.

Directly after the detonation, Victim No.1 was still at the front of the clearance lane in a crouching position holding his face with his hands. His partner, Victim No.2 went forward and helped him withdraw to a cleared area. Victim No.3 also assisted.

Victim No.1 suffered "facial burn/blast injuries (superficial) as well as fragment (Plastic) to his right eye socket which was removed by the eye doctor who treated him. The piece of plastic was probably from the Type-72 mine: Left hand thumb amputated/severed completely, index finger injured and amputated/ severed partially, middle finger second bone broken and injured badly, lacerations on back of hand and multiple cuts on inside (Palm)."

Victim No.2 suffered "facial perforation / blast marks around the eyes and forehead area (superficial, not serious)."

Victim No.3 (Section leader) suffered "perforation / blast injuries superficial on both his arms, more towards the inside and much more to his left arm than to his right one. Also 2/3 perforation on his right, upper leg, facing front. A couple blast marks on his face (superficial)."

The deputy Team Leader and medic had heard the detonation and arrived with the ambulance. They administered first-aid to the more seriously injured deminer first, then the others.

Victim No.1's trowel was damaged in the accident. "The trowel handle and bigger piece of the excavation blade were not found." There was also damage "to the front and towards the top of the apron protection pieces of" Victims No.1 and No.3. The "overalls" of all three victims were reported to have been damaged.

Conclusion

The BOI found that the victims were "trying to hide possible mistakes and therefore gave falsified and mutually agreed - upon evidence unfortunately not corresponding to the hard facts found and observed according to the site log and evidence given". Work started at 06:30hrs that morning and changeover took place every thirty minutes thereafter. The accidental explosion took place at 10:45, exactly half way between normal change over timings. It is highly unlikely that changeover will physically take so long after 10:30 (normal time for change over) causing the change over to be delayed until the mine detonated at 10:45.

Recommendations

The BOI made the following recommendations:

- Victims No.2 and 3 to have their contract terminated immediately.
- Victim No.1 is treated until fully recovered at the cost of Manual Clearance Contractor.
- Deputy team leader, be demoted to section leader.
- All demining personnel must be revised again on wearing visors correctly.
- TL, DTL and SLs must be more vigilant and energetic in the execution of their responsibilities they have to ensure demining personnel wear their personal protective equipment correctly and constantly.
- All the rocks and foreign object encountered in the clearance need to be removed to the rear of the working position, immediately after being encountered.
- The changeover procedures should again be looked at closely, amended and implemented.
- Signalling of the changeover drill needs to use a whistle (referee type).
- Assemble all the demining tools to the rear of the working position, in a safe area.
- Verbal hand-over and instruction information will take place between both deminers, 5 metres away from the front marker stick.
- Only after the section leader, deputy team and team leader insure that physical safety location of the relevant deminers back in the rest area, another defined signal has to be given for operation/work to commence again.
- The resting deminer should be located away from the demining site.
- The visors with black headbands to be examined and evaluated/tested for quality.

See Related papers for the unedited version of this report.

Appendices referenced in the report were not made available.

Summarised Statements from the Team Leader, Site Commander, Witnesses and the victim were not made available.

Victim Report

Victim number: 389	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: no
Compensation: not made available	Time to hospital: 1 hour 15 minutes
Protection issued: Frontal apron Long visor	Protection used: Frontal apron

Summary of injuries:

INJURIES

severe Eye

severe Face

severe Hand

AMPUTATION/LOSS

Fingers

COMMENT

See medical report.

Medical report

No formal medical report was made available. The BOI recorded that:

Victim No.1 suffered “facial burn/blast injuries (superficial) as well as fragment (Plastic) to his right eye socket which was removed by the eye doctor who treated him. The piece of plastic was probably from the Type-72 mine: Left hand thumb amputated/severed completely, index finger injured and amputated/ severed partially, middle finger second bone broken and injured badly, lacerations on back of hand and multiple cuts on inside (Palm).”

The picture of the victim's hand reproduced below was sourced elsewhere.



Victim Report

Victim number: 390	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: presumed
Compensation: not made available	Time to hospital: 1 hour 15 minutes
Protection issued: Frontal apron Long visor	Protection used: Frontal apron

Summary of injuries:

INJURIES
minor Face

COMMENT

See medical report.

Medical report

No formal medical report was made available. The BOI recorded that:

Victim No.2 suffered “facial perforation / blast marks around the eyes and forehead area (superficial, not serious).”

Victim Report

Victim number: 391	Name: Name removed
Age:	Gender: Male
Status: deminer	Fit for work: not known
Compensation: not made available	Time to hospital: 1 hour 15 minutes
Protection issued: Frontal apron Long visor	Protection used: Frontal apron

Summary of injuries:

INJURIES

minor Arm

minor Face

severe Arm

severe Leg

COMMENT

See medical report.

Medical report

No formal medical report was made available. The BOI recorded that:

Victim No.3 (Section leader) suffered “perforation / blast injuries superficial on both his arms, more towards the inside and much more to his left arm than to his right one. Also 2/3 perforation on his right, upper leg, facing front. A couple blast marks on his face (superficial).”

Analysis

The accident report concluded that the victims gave false statements to try to hide what really happened, but did not determine what actually had happened. Victim No.1’s injuries show that his hand was very close to the mine when it detonated. His broken trowel implies that the trowel was what actually touched the mine. Victim No.2 may have been looking over his partner’s shoulder – which would explain why he was hit in the face by debris. Victim No.3 appears to have been standing very close to the detonation and also suffered some facial injury. If Victim No.2 was looking over Victim No.1’s shoulder it seems unlikely that Victim No.1 fell (see Related papers for the investigator’s best “guess” at what occurred).

All three must have had their visors raised at the time (as is common when conversing and when visors are hinged so can be easily raised).

While the accident investigators appear to have made some effort to uncover false reporting, they did not make an adequate effort to discover the truth and appear to have limited their

aims to identifying individuals to punish. The failure of the BOI to investigate the circumstances thoroughly is a serious "*Management/control inadequacy*" meaning that an opportunity to correct dangerous practises was lost.

The primary cause of this accident is listed as "*Other*" because it is not clear what happened. The secondary cause is listed as a "*Management Control Inadequacy*" because a field supervisor was in breach of SOPs by ignoring safety distances and allowing a deminer to work while he and one other were in very close proximity, all with visors raised. Responsibility for the selection and training of field supervisors must rest with management.

Related papers

The original BOI accident report (without appendices) is reproduced below (edited for anonymity). It is followed by a related letter from UNOPS. Access to these files was refused by UNOPS and obtained via another source.

Accident report

Introduction

1. On 13 September 2000 at approximately 1045 hrs, a mine accident occurred at minefield S/0442, Haji Mamand that resulted in three deminers from Team [name excised] being injured, one more serious and two slightly.
2. A BOI was appointed by the PC, UNOPS Mine Action N/Iraq
3. The Board started with its proceedings on 14 September 2000 in Suleimaniyah.

Sequence of Investigation

4. The investigation started the afternoon of 14 September 2000 when a site visit was conducted and photos were taken. All relevant documentation was assembled and made available to the Investigation Team.
5. As it was a Thursday afternoon and all demining operations ceased for the weekend, it was decided to commence with the interviewing of witnesses on Saturday, 16 September 2000.
6. The Board took statements from all individuals who were involved at the accident site, before and after the accident occurred, as well as from the doctor who treated the injuries at the Emergency hospital in Suleimaniyah. A site sketch drawn on a whiteboard was used to aid during the interviews.
7. The Board also visited the Emergency hospital and the more seriously injured Deminer, [Victim No.1] and noted the extent and details of his injuries. The Board then also interviewed him and asked questions to the doctor who initially treated him.

The Site

8. The accident happened at minefield S/0442, in the sub-district of Barzinja Sharbazher district near the village of Haji Mamand, Suleimaniyah Governorate of N/Iraq. The minefield is located approximately 97 km from Suleimaniyah, in the direction of Penjwin /East). This minefield was a former Government of Iraq minefield, laid by their soldiers during the Iran/Iraqi War of 1980-1988.
9. The task site is located on both sides of the dirt access leading to Haji Mamand village. The road cut through the minefield on the of a wooded, rocky hill between higher mountains. Due to the road's construction on the side of the hill, rock embankments support the downward side of the road about m high. See Appendix 1 to BOI 13/00 & Attachment "C". [The height of the rock embankment is missing in the original. Appendices were not made available.]
10. Information indicates that Type 72 A/P blast mines & "Valmara" No 69 A/P fragmentation bouncing mines have been laid in this minefield.

11. The location where the accident occurred was approximately 2 m from the downward edge of the dirt road, next to the rock embankment, supporting the road on this side. Although the soil surface is flat, it is also between some of the fallen-down rocks, probably coming from the embankment. The rest area is located approximately 70 m from the accident site, with some rocks and embankment partially shielding it off from the working sites.

12. The site was well marked and the layout was clear. The site is well maintained.

Tasking, Supervision, Communications, and Medical

13. The tasking for this site was issued by UNOPS HQ, Erbil (Operation Section) and the objective of this task is to assist UNCHS (Habitat) with a road building and reconstruction project for resettlement to the Haji Mamand village. The specific aim for this mine clearance task is to clear the existing road on either side of all mines, wide enough to enable the road building contractor to widen and rebuild the road without fear and posing a safety hazard to his machines and employees/operators.

14. Seeing that the area to be cleared did not allow a full team or even a full section to be safely deployed on this task, only two pairs of Deminers in two clearance/working lanes were deployed at any (one) time.

15. Direct supervision was done by the Deputy Team Leader, and he had with him the Section Leader from Section No 4, who's Deminers made up the two pairs working at this site. At the time of the accident the Deputy was at the Control Point, approximately 150 m from the accident site, where the ambulance and the Medic were also located. After the accident the Deputy and Medic immediately went forward with the ambulance, upon which the Medic administered first aid to the injured Deminers.

16. Communication from the site to the Field Camp was done by hand-held, VHF radios - a distance of approximately 500 m. From the field camp to "Charlie" UNOPS Base by means of the VHF base radio. Communications is clear without any problems.

The Mine

17. The mine that detonated, causing the injuries was an Anti-personnel, Type 72 Blast Mine, with the following characteristics:

- a. Country - China
- b. Height: 38.5 mm, Diameter: 78.5 mm.
- c. Explosive content: 35 grams of TNT/RDX.
- d. Operating means/fuse: Pressure/diaphragm with centred firing pin.

Protection Gear and Equipment

18. According to all witnesses, each Deminer as well as the Section Leader, [Victim No.3] were wearing the necessary flak jacket (Dark Blue -British Type) as well as protective visors, not helmets. These visors were from the black- headband type (new), not old white ones.

19. During the investigation, it was noticed that the flak jacket worn by the more seriously injured Deminer, [Victim No.1] sustained shrapnel perforations on the right shoulder, front and towards the top. There were also perforations on the apron protection pieces of the Section Leader and Deminer No 1.

20. No shrapnel markings could be detected on the injured Deminers visors. There were only soil markings on the inside of Deminer [Victim No.1]'s visor.

21. The coveralls of all three injured Deminers were damaged and perforated where the blast and debris caused injuries to them – [Victim No.1] front of both legs, from the knees downward for approx. 25 cm. Deminer [Victim No. 2]: none observed. Section Leader [Victim No. 3]: both arms, facing front at normal standing position as well as right, upper front leg.

22. The normal Demining tools were observed, i.e. Minelab F1A4 (Tested and in working condition), prodder, hammer, tripwire feeler, shears, except the metal excavation tool (trowel). A sheared-off front (tip) piece of the excavation tool was found laying to the right, about 50 cm from the centre of the hole left by the detonation. The rest of the trowel, i.e. the handle and bigger piece of the excavation blade was not found. There was no damage to the other tools as mentioned above.

23. Medical equipment (stretcher and first aid bag) was available inside the ambulance at the CP and came forward with the Medic after the accident.

Injuries

24. See Casualty Report as received by "Charlie" UNOPS Base (Attachment "B"), Mine Accident Report (Attachment "D"), Primary Medical Report on injured as well as the Emergency hospital's Medical Record on injured [Victim No.1].

25. The injured [Victim No.1]: Facial burn/blast injuries (superficial) as well as fragment (plastic) to his right eye socket was removed by the eye doctor who treated him - this piece of plastic was probably from the Type 72 a/p mine. Left hand; Thumb amputated/severed completely, index finger injured and amputated/severed partially, middle finger second bone broken and injured badly, lacerations on back of hand and multiple cuts on inside (palm). Black burn marks from the detonation (explosives burn) were noticed on this hand by the doctor who treated him in the theatre on arrival - see Attachment "N" [not made available]. Also perforation marks/blast injuries (superficial) on both legs, from the knees downward, front.

26. Injured Deminer [Victim No.2]: Facial perforation /blast marks around the eyes and forehead area (superficial, not serious).

27. Injured Section Leader [Victim No.3]: Perforations/blast injuries (superficial) on both his arms, more towards the inside and much more to his left arm than to his right one. Also two/three perforations on his right, upper leg, facing front. A couple blast marks on his face (superficial).

28. No other persons sustained any injuries due to this accident.

Account of the Accident (As given by witnesses)

29. The account of this accident was taken and compiled from witnesses' statements, interviews, site visit, sketches made available and role playing during the interviews.

30. On 13 September 2000 at approximately 1030 hrs, the Section Leader of GS 4, Section 4, gave the signal (whistle through fingers and followed by hand signals) to the two pairs of Deminers that it was time for "change-over". He was standing at the entrance of the second, uphill clearance lane. [Victim No.1] acknowledged by lifting his hand and trowel into the air. Then the Section Leader started to walk towards the rest area, passing the clearance lane where the accident occurred and approximately 4 -5 metres from the injured Deminer No 1.

31. At the same time, the two relief Deminers in the rest area, looking on their watches and hearing the signal, prepared to start walking to the two working lanes for change over. Deminer No 2 from the other pair was delayed a while in the rest area because he was busy removing mud from his shoes at that time. Injured [Victim No. 2] walked down the road to be relieved. He arrived at the entrance to the clearance lane, approximately 5 metres to the rear (back) of [Victim No.1], where he waited for Deminer to stand up, turn around and leave the clearance lane towards him. The [Victim No.2] was at this position before the Section Leader arrived.

32. Instead of walking past towards the rest area, the Section Leader changed his mind and moved off the road towards the demining pair and the clearance lane where the accident happened. According to him, he was still on his way towards the clearance lane, when the mine detonated at approximately 1045 hrs. At that time he was looking down as to step over some rocks.

33. Directly after the detonation, [Victim No.1] was still at the front of the clearance lane, in a crouching position, holding his face covered with his hands. Victim No.2] went forward and assisted him outside the lane, in an already cleared area. The Section Leader also assisted and at that time the Deputy Team Ldr and Medic, on hearing the detonation, arrived with the ambulance and immediately started to administer first aid to the more seriously injured Deminer and then to the Section Leader and [Victim No. 2]. At the same time the Deputy then reported the accident to his Team Leader at the other minefield, approximately 3,5 km away.

34. The Team Ldr stopped his operations and dispatched the second ambulance and Medic to the accident site. By this time the Medic at the accident site have already completed initial

resuscitation and first aid, the injured Deminers were assisted into the ambulance and it left for Suleimaniyah Emergency hospital approximately 5 minutes after the accident occurred.

35. The Deputy Team Ldr relayed the casualty and accident information to the Radio Operator at the field camp who passed it on to "Charlie" UNOPS Base in Suleimaniyah. The injured Deminers arrived at Emergency Hospital in Suleimaniyah approximately 1 hour 15 minutes later, after been escorted by the UNOPS ambulance from the first check point outside town to the hospital.

36. The site was sealed off and equipment secured by the Deputy Team Leader for the Investigation Team. The same afternoon the [Demining group] Location Manager and Group Supervisor visited the site and compiled/conducted a preliminary investigation.

CONCLUSIONS

37. All the Demining personnel at this site knew that the minefield contained Type 72, A/P blast mines. They found and destroyed quite a few of the mines in the close proximity of the accident location. There were also indications (casings and prongs) that No 69, "Valmara" A/P fragmentation bouncing mines could be present. This was/is confirmed through the information folder/history file on S/0442 - see Appendix 4 to BOI 13/00, Minefield Report.

38. All indications are that the mine detonated, causing the injuries to the three demining personnel, was in fact a Type 72, A/P blast mine. Fragmentation (plastic) found in the working lane as well as pieces taken from superficial wounds on the injured Deminers, confirms this.

39. The most likely cause of this accident was that [Victim No.1] tripped over a rock up front in the working lane whilst he was in the process to stand up, lost his balance and fell forward. He then tried to use his left hand, in which the excavating tool (trowel) was most likely located, to brace himself/break his fall, in the process pressing on the mine with his left hand and trowel, thus activating the Type 72 A/P blast mine.

40. The loose rock in the working lane has already been moved and relocated during the clearance process. This rock should have been moved/cleared away to the rear of the Deminer. Other rocks in front of the clearance lane was too heavy and oddly shaped to have been able to "roll" down the rock wall, falling on top of the mine, as stated.

41. All three injured demining personnel wore their protective clothing (flak jacket) and their visors. Two of them, the section leader as well as the Deminer No 2 admitted that they did not wear the visors in the prescribed position, being the "down" position. The injuries to their faces confirmed this. The facial injuries to the more seriously injured [Victim No.1] also indicates that it is doubtful that even he wore his visor in the "down" position. If the visors were positioned correctly, in the "down" position, surely there should have been shrapnel damage and scratches to the visors - none observed in this case.

42. The injuries to the Section Leader indicate that he was much closer to the detonation than he stated - according to his injuries, he should have been within 3 m of the blast. The injuries to [Victim No. 2] indicate that his body was probably shielded by the crouching body of [Victim No.1], thus causing him to only sustain facial injuries (due to an "open" visor and his head above the "body shield" of [Victim No.1]).

43. The injuries caused to the front part of [Victim No.1]'s legs below his knees, indicate that his upper legs were in a position, probably facing away from the blast (like in a crouching position), thus causing the blast injuries to his lower legs only. The perforations to the shoulder-part of his flak jacket indicate that this part of his body was probably facing the blast directly and close to it, due to him "falling" forward, onto the mine with his left hand. The same can be said about his face/head position. He was probably facing down and forward when the detonation happened.

44. Deminer No 1 was wearing his working gloves when the accident occurred. The left-hand glove was blasted/torn open on some of the finger seams and was also perforated where shrapnel and blast penetrated it.

45. There were blast/black burn marks, coming from a typical explosive detonation, to the gloves as well as to the injured hand of [Victim No.1], indicating that his hand must have been

in very close proximity, if not in direct contact with the exploding mine. The markings observed on the piece of the trowel that was found indicate the typical explosion ricochet-burn markings as well as "melt/spotweld" markings. These confirm that the trowel was in very close proximity, if not in direct contact with the explosion for such high heat generating to cause the "melting/spotweld markings".

46. The quality and durability of the visor headband (black type) is questionable – it breaks/wear-out too quickly and easily causing that the demining personnel experience a problem to adjust the position of the visor as needed.

47. Incorrect "change-over" drills were used. There was no formal, staged procedure between the Deminers which clearly distinguished their actions and positions during the change-over drills. The No 2s started to walk automatically towards the clearance lanes and then also, there seem to have been no sequence at this site as to which Deminer No 1 should have been relieved first - the Deminer No 2 of the second pair was still in the rest area or have just left it, when the accident happened. This indicates that he could have been also injured, had he been opposite the accident site on the road, on his way towards his clearance lane (the furthest).

48. Safety distances, in this case 50 m due to the possible No 69 "Valmara", fragmentation bouncing mines, were not observed. The whole change-over procedure which was followed at this site, it was a indicate that it was a "flowing" process, with no confirmation regarding safety distances and when Deminers should/could commence working again.

49. There were no consistency in the signals that were used to indicate "change-over" drills/procedure - sometimes whistling through the mouth and fingers was used, sometimes hand signals and sometimes verbally (shouting). No metal/plastic whistle instrument/s are in use anymore.

50. Lastly but most important the conclusion could be made from all the evidence witnesses and explanation that:

The verbal evidence given by injured Deminers No 1 and Deminer No 2, as well as by the Section Leader is clearly contradicting the physical evidence, i.e. the injuries and markings described by the Doctor to the left hand of [Victim No.1]; the damage and markings to his left working glove and the markings to the remaining piece of trowel found. Also the remaining piece of metal extracted from his left middle finger indicates that he had the trowel in his left hand, contradicting evidence given.

Furthermore, the evidence given on the exact position of the Section Leader, by himself, does not correspond to the severity of the injuries he sustained on his arms - he should have been very close to the explosion, closer than 3m. He also mentioned that he tried to hide himself behind a tree when the mine detonated - the closest tree to the position that he indicated he was at the time of the explosion, is at least 10 m away.

Looking at the scene of the accident, the explosion position, the injuries sustained, the evidence given, as well as the time of the accident (1045 hrs), there seems to be collusion between the injured Deminers and the Section Leader. They are trying to hide the possible mistakes and therefore gave falsified and mutually agreed-upon evidence, unfortunately not corresponding to the hard facts found and observed.

According to the Site Log (Appendix 3) and evidence given, work started at 0630 hrs that morning and change-over took place every 30 minutes thereafter. The accident (explosion) took place at 1045 hrs, exactly halfway between the normal change-over timings. It is highly unlikely that change-over will physically take so long after 1030 hrs (normal time for change - over), causing the change-over to be delayed till the mine detonated at 1045 hrs.

RECOMMENDATIONS

51. As a result from the evidence presented, the physical observations and conclusions by The Board, it is recommended that:

- a. The Section Leader, [Victim No. 3]'s contract be terminated immediately.
- b. The injured Deminer [Victim No. 2]'s contract also be terminated.

c. The injured Deminer [Victim No.1] be treated until fully recovered, on the cost of [the Demining group]'s insurance. He should then be reprimanded and demoted. It is recommended further that he should be kept employed, even if it's in an administrative/guard position.

d. The Deputy Team Leader, who was directly in charge of this site, the safety, operations, sequence of events as well as the happenings after the accident, be reprimanded severely and demoted to the position of Section Leader.

The reason for above recommendation (and it must be clearly noted and conveyed):

The Board explained it to them before the proceedings commenced, that falsified and untrue evidence might lead to disciplinary action to be taken, and may even lead to dismissal. In spite of the above, the Investigating Officers believe that falsified evidence, collusion/collaborating between the witnesses and not accounting for/giving a true sequence of the events, occurred.

52. All demining personnel must be made attentive again as to the reason to wear visors correctly (in the "down" position), when entering and working within a minefield/clearance area or outside the safety distance. The fact that blast and/or shrapnel coming from an explosion could cause blindness/loss of eye/s must be stressed, as was experienced now during two accidents in UNOPS minefields in N/Iraq.

53. Team Leaders, Deputy Team Leaders and Section Leaders must be more vigilant and energetic in the execution of their responsibilities -they have to ensure that demining personnel wear their personal protective equipment correctly and constantly during operations. Any visitor/s or non-demining personnel also have to wear these protective gear when entering any danger/operational areas - again, this is the responsibility of the Team Leader/Deputy or Site Supervisor and it have to be strictly observed and enforced.

54. All foreign objects, i.e. rocks encountered in the clearance lane, need to be removed/cleared to the rear of the working position, immediately after encountering and rendered safe to handle.

55. Signalling for the change-over drill to commence need to be formally given by means of a whistle (referee type) and not by any other unclear means. Where these whistles are not in use, it has to be installed immediately and without delay.

56. The "change-over" procedure should again be looked at closely, amended as follows and implemented:

a. Definite acknowledgement by the Deminer No 1, after the whistle-signal for change-over is given.

b. Assemble all the demining tools to the rear of the working position in a safe area of the clearance lane - not at the front, behind/next to the Front Marking Stick.

c. The Deminer No 1 then stand up, turn around and move back inside the cleared clearance lane to a point at least 5 m away from the Front Marker Stick, where he awaits the arrival of his relief Deminer.

d. At this point verbal hand-over and instructions/information will take place between both Deminers.

e. The retiring Deminer physically leaves for the rest area while the "new" Deminer No 1 remain in this position.

f. Only after the Section Leader/Deputy Team Leader/Team Leader has ensured the physical safety and location of the relieved Deminers, back in the rest area, another definite signal have to be given for operation/work to commence again.

57. It is also recommended that the Rest Area for this site be re-located so that it would not be necessary for Deminers from clearance lanes further along the site to walk pass clearance lanes closer located to the Rest Area. The Rest Area for each demining pair should be located away from the demining site, opposite each other.

58. The visors with the black headbands have to be examined and evaluated/tested for quality and durability due to indications and evidence that these headbands are not as strong as the previously used ones.

59. It have to be stressed and made clear to ALL demining personnel that:

- a. The primary aim a BOI is to determine the most possible, if not 100% accurate sequence of events that lead up to an accident which occurred;
- b. Secondly to ascertain what mistakes, if any were made, most likely caused the accident;
- c. To make recommendations as to possible new/amended procedures and/or improvements that should be implemented - the main reason been to avoid accidents to repeat itself because of the same/similar mistakes or wrong procedures that were followed;
- d. Only by telling the truth and giving a true account of events that lead up to the accident (as far as possibly could remembered), could the Investigation Team execute its task meaningful and conclude with the best possible recommendations which will be beneficial to all; and,
- e. If it is determined that witnesses gave false evidence and information to The BOI as to hide mistakes/non-conformance to SOPs it will be treated very seriously and that it could result in such witnesses to lose their job/s.
- f. This specific case could be used as just such an example (Lessons Learned).
- g. It is strongly recommended that it is time now, not later to start compiling a "Lessons Learnt" paper for the U MOPS Mine Clearance program in N/Iraq- Kurdistan. A few accidents occurred and if this paper/document is not started soon, information and learned lessons/recommendations will get lost along the way. These "Lessons Learned" have to be used during training, refreshers and MEDEVAC practices. Equipment related issues have to be addressed as to ensure corrective actions are taken/recommendations on future purchases are implemented, also via the New York Office.

Signed: September 2000.

INTERNAL MEMORANDUM

UNOPS 28 September 2000

To: Sector Manager South

From: Project Coordinator

Subject: BOI MAGIS/4402

An excellent BOI, well structured and complete; easy to read and comprehend. A very good effort.

However, it still has the same problems as many of our previous BOIs; witness lie, we can only guess as to what detonated the mine, and the disciplinary recommended is severe thereby not sending any message to encourage telling the truth.

I therefore want this investigation taken one step further, to establish what actually happened, recommend remedial action to preserve our workers if possible (if we are firing people for lying during BOIs, then deminer No.1 should be the first to go, he knows for certain what happened), and send a positive message to all that we really need the truth so that we can build on our experiences.

I would like the four offenders assembled in one room, and have someone who was not involved in the BOI explain the findings and recommendations (except that the PC does not accept that deminer No.1 is not fired with the rest). Also tell them that the PC has directed an exception, in the interest of finding the truth and advancing the program. All four deminers will be able to retain their jobs, but demoted and required to take remedial training in exchange for telling the truth (even if it involved horseplay or stupidity). The choice is theirs, tell the truth or face the severe consequences recommended by the BOI.

I concur with all other recommendations and look forward to hearing from [the Demining group] their proposal for corrective action.

UNOPS