

DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 357
Accident time: 12:45	Accident Date: 30/08/1999
Where it occurred: Dari Chia, Nr Willyowa village, Chwarta [or Sharbazar] district	Country: Iraq
Primary cause: Field control inadequacy (?)	Secondary cause: Inadequate equipment (?)
Class: Excavation accident	Date of main report: 10/09/1999
ID original source: SB/SD	Name of source: MAG
Organisation: Name removed	
Mine/device: Type 72 AP blast	Ground condition: electromagnetic rocks/stones
Date record created: 21/02/2004	Date last modified: 21/02/2004
No of victims: 1	No of documents: 3

Map details

Longitude:	Latitude:
Alt. coord. system:	Coordinates fixed by:
Map east:	Map north:
Map scale: not recorded	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

no independent investigation available (?)
inadequate metal-detector (?)
visor not worn or worn raised (?)
squatting/kneeling to excavate (?)
inadequate communications (?)

Accident report

The demining group involved made available their accident file. This contained varying reports by a Technical Advisor (TA) and a Senior Technical Advisor (STA). Both are reproduced below. They have been edited for anonymity.

Accident report 1: TA INVESTIGATORS REPORT

General

On Monday 30th August 1999 I was travelling back to Sulymania after visiting Tamas 2 minefield I had just reached the outskirts of Sulymania when I received a radio message from base that there had been a mine accident in Dary Chya. The information was brief from base, but I was informed that one deminer was injured and was being taken to Emergency hospital in Sulymania.

I received the radio message at 1315hrs, I immediately headed towards the minefield. Whilst travelling to the minefield I informed all [Demining group] demining teams in the Sulymania area to suspend work and return to their ops bases. I tried to contact [Demining group] 2A to inform him of the situation however contact was not made.

There was some confusion with the radio messages being sent from base, this was due to the fact that the radio message sent from the accident site was incomplete.

The accident had taken place at 1245hrs; the injured deminer arrived at Emergency hospital in Sulymania at 1400hrs and was admitted. He had superficial eye injuries, [see medical report] superficial wounds to his right hand and right thigh. His wounds were dressed; he had received 2gm of Ampicillin, 45 mg of Sosegon on route from the minefield. A cannula of 500cc Ringer Lactate was attached to his left arm.

I arrived at the minefield at 14:00hrs, started taking statements from all personnel involved. The head of the TMEU arrived at 14:30hrs as per his terms of reference he is to carry out all investigations in [Demining group] N, Iraq. However he is still learning the correct procedures and lay out of report writing. With this in mind I continued the investigation with the head of TMEU watching and taking notes.

We carried out interviews and took statements from the relevant personnel at the minefield between 14:00hrs and 16:00hrs, during the interviews I learned that the injured deminer was called [the Victim] he had been working as a deminer for 18 months. His disciplinary sheet is clean.

Background

The minefield is a defensive minefield laid by the Iraqi forces in 1985 mainly to protect the military posts and bases that were in the area. The villagers were evicted to collective villages elsewhere.

The reported mines in this minefield POMZ, V69, VS-50, VST and Type 72. The minefield is some 15 km from Chwarta Ops/base on the road that leads to Nalparez. The minefield is fenced but has been disrupted by local personnel. There have been 2 accidents in this minefield before clearance started. One man killed and one livestock killed.

The minefield is situated on a hillside and is bordered on one side by the main road that leads to Nalparez. The area is undulating and steep with loose soil and rocks. The site of the accident is on a steep part of the minefield, it is very rocky and covered in some areas with sparse vegetation. The safe lane where the accident occurred traverses the hill side and follows a mine row heading towards one of the previous cleared 10 meter breaches.

The minefield was visited by the preparation team on 24/2/1999 and was laid out for clearance. The team leader of this minefield has been the team leader in this minefield from the day one. The supervisors have changed over the months but supervisor [Supervisor 1] was in charge when the accident happened.

Clearance started on 3 March 1999 using members from team 9 and 12. On the day of the accident the following personnel were involved with the accident on site.

Supervisor 1
Team Leader
Medic
Deminer No.1
Deminer No.2
Deminer No.3
Deminer No.4

Accident Site

On entering the minefield an inspection of the [area] was carried out. The layout of the safe lane where the accident had taken place was clearly marked out as SOPs require. The safe lane remained untouched after the accident. There is one row of Type 72 mines running in the same direction as the safe lane, these mines are mainly surface laid. But due to weathering and ground movement over the years some have become buried. White pickets indicate mines previously found.

The ground around the seat of the explosion is loose with small rocks. There was no clear outline of the point of detonation. Most buried mines in this minefield have been found at a depth of between 3 to 5cm. The weather conditions on the day of the accident were fine and sunny.

The method of clearance being deployed that day in the safe lane where the accident took place was hand prodding.

On examining [the Victim]'s equipment all but his jacket remained in the safe lane. I note that most of the damage had been to the inside of the helmet visor. His jacket was in the rest area, which was removed by the medic whilst giving him first aid. The jacket had minor damage from the blast, the collar was covered in blood mainly on the left hand side, there was no penetration points from fragmentation.

The prodder which he had been using was badly damaged and had taken on the shape of a half moon. This indicated that the point of the prodder had detonated the mine. Photos were taken of the safe lane and the statements collected. Having taken all the information from the team members and everything needed to complete the investigation report I then returned to Sulymania and reported back to the NSTA.

Conclusion

The Supervisor was on site the day of the accident therefore he is in overall charge of the minefield and is responsible for the clearance operations.

The accident was brought about due to the deminer not carrying out correct hand clearance drills. I conclude that the deminer was squatting over the area where he was excavating and the angle of the prodder as it was being used was incorrect.

As the mine exploded the blast travelled up the deminer's right hand side up and underneath his visor causing the injuries to his face.

Because the deminer was squatting, his visor was not resting on his jacket leaving a large gap between the two and the blast travelled between the gap.

The evacuation of the injured deminer was carried out in the correct manner and the first aid that the deminer received was [good].

The radio communications were poor and the correct procedure were not used.

Recommendations

All deminers should understand the care required when using hand prodding drills. TMEU is to visit all sites where hand prodding is being conducted and check on the procedures and report back to the STA with their findings.

That all hand prodding in the future is carried out with the deminers lying in the prone position using the prodder at arm length. This recommendation will be met with some fierce argument and will be hard to enforce, but as the British army has proved it is the safest way to hand prod. That the STA takes action to address the accident message procedure and refresher training on communications to be arranged.

Signed: TA Suleimanya: Dated 30/8/1999

Accident report 2: SENIOR TECHNICAL ADVISORS REPORT AND ACTIONS

General

On the day of the accident I was returning from leave in the UK. I crossed the border from Syria to Northern Iraq on the morning of the accident and travelled to Sulymania. On arrival at Sulymania headquarters at 20:00Hrs I was informed by the Technical Advisor for Sulymania Governorate that an accident had occurred that day at Dary Chya minefield. He informed me that the National Senior Technical Advisor who was performing the duties of the Senior Technical Advisor in my absence had tasked him to conduct the Accident Investigation with assistance from the Training Monitoring Evaluation Unit (TMEU).

The following morning I was briefed by the NSTA on the accident situation and all other programme issues. He had prepared a set of handover notes as per my briefing to him prior to my departure on leave. I was also given a report compiled by [the TA] on a missed type 72 anti-personnel mine accident which had occurred at Dary Chya minefield on the 22 August 1999. (A copy of my report is attached to this report.)

As the two accidents had occurred prior to my return I decided to treat them as two separate accidents as they were in my opinion unrelated despite the fact that they had happened in the same minefield.

Having read the statements from the missed mine accident and spoken to all concerned, I took the disciplinary actions as laid out in my own report on the accident.

I issued an external memorandum to all relevant agencies regarding the wearing of protective equipment dated 31 August 1999. [See Related papers]

On completion of the Initial Accident Investigation Report, I was unhappy with the statements which had been taken and decided to complete the report myself after taking the statements from the personnel involved myself.

Therefore I discussed the overall situation with the NSTA and we decided to visit the minefield as soon as possible to discuss the situation.

Therefore on Wednesday 1st Sept 1999, myself and the NSTA visited the minefield site and spoke with all the team members present. I then took statements from all personnel involved in the accident and discussed the minefield clearance plan with all team members.

Background

This minefield is a very high priority task as it borders the main road from Chwarta town in Sharbazar District to Nalparez town in Penjwin District. The minefield is near Willyowa village in Sharbazar District. This is a very busy main road and is constantly trafficked daily by local families.

The minefield is vast and stretches across the valley on both sides of the main road. The area targeted for clearance is on the Southern side of the road as the area is relatively flat and is mainly arable land. The mined area on the Northern side of the road is very steep and heavily forested.

The minefield contains only anti-personnel mines. The types present are laid in different parts of the minefield as follows:-

Front edge of the minefield (Eastern side) 2 x rows of V-69 bounding fragmentation mines

Middle of the minefield Rows of VS-50 blast mines

Rear edge of minefield (Western side) Possible rows of V-69 mines

Southern edge of minefield Rows of Type 72 and TS-50 blast mines

Clearance plan

Initially 4 "Confirmatory" breaches were cleared from the Eastern edge of the minefield across to the Western edge.

During the completion of the breaches, it was found that most of the blast mines were surface laid, and those that were buried were at a depth of between 3 and 5 cms.

Once the breaches were completed the 2 rows of V-69 bounding fragmentation mines on the Eastern edge were cleared to allow the teams to be deployed at a lesser safety distance to deal with the blast mines.

Once the V-69 mines were cleared the aim was to deploy as many teams as possible to complete this task prior to the onset of bad weather later in the year.

Clearance Conducted

Initially the teams operated using the traditional 3 man sub teams with Electronic Clearance methods.

On 30 June 1999, I tasked the NSTA and the Head of the TMEU to draft and submit "Drills and Procedures" for the deployment of 2 man sub teams in 3 minefields in Sulymania District and when authorised by myself to conduct a training period with the teams and conduct a trial in those minefields.

This trial was conducted from 07 July to 30 July 1999 and the results were well received by all staff. I therefore authorised clearance in this minefield to continue using 2 man sub team drills. This continues to date.

On 25 July 1999 [Ex-pat TA] submitted a report on the "Schiebel Sensitivity Setting Requirements using the 5cm test piece" to the NSTA. I had tasked [Ex-pat TA] to carry out this test to ascertain the optimum test piece sensitivity for the detection of "minimum metal mines" using the Schiebel detector. This was to complement the already completed reports on detectors carried out this year.

The NSTA issued a "File Note" on 05 Aug 1999, stating that when carrying out clearance in this minefield, a minimum test piece sensitivity setting of 8 cms was to be achieved for electronic clearance in this minefield, otherwise hand clearance methods were to be employed. This was to take into consideration the depth of the mines found so far, and the results of [Ex-pat TA]'s trial.

When I visited the site on 01 Sept, myself and the NSTA along with the supervisor and team leader conducted a short trial in the safe lane where the accident happened using the Schiebel detector. With the Sensitivity setting on 8 cms, I was able to detect a type 72 mine at a distance of over 15 cms easily.

In certain parts of this minefield sensitivity settings of 12 to 13 cms are possible.

Conclusions

The accident which occurred on 30 August 1999, was in my opinion caused solely by the deminer being overzealous with the use of his hand held prodder. There is no doubt that "familiarity breeds contempt", and that even although he knew that he was likely to encounter

mines during his working time as the Number 1, he was not concerned enough to exercise the due care and attention required.

This is not the first time and it is unlikely to be the last time that 1 of the deminers detonates a mine whilst carrying out "hand clearance" procedures or excavating ground to investigate a detector contact. This is unfortunately a hazard of the job.

In most of the statements the personnel made reference to the use of the Schiebel detector in this minefield. This has no bearing whatsoever on the accident which occurred as the injured deminer was carrying out hand clearance at the time, or on the missed mine accident which was operator failure and not equipment performance. It does however have a bearing on the overall task itself. I found that when I returned from leave, because there had been 2 accidents in quick succession in this minefield it was very easy for the "water to become muddy" ie to mix the two accidents together. This is why I made the conscious effort of dealing with 1 first separately and then dealing with the other.

On the 06 Sept 1999 I visited the minefield and spoke to all the team members the NSTA, and the supervisor about their concerns regarding the use of the detector. When I asked them if they had serious concerns about the detector in this minefield, and if they were happy to continue using the detector they all said they were happy with the detector, but 1 or 2 deminers were concerned about the quality of the rechargeable batteries in use, and would prefer to use locally purchased dry cell batteries. I agreed that only "Blue Bizarre" batteries should be used until we could buy some newer rechargeable batteries. I issued a "File Note" dated 11 Sept 1999 to this effect. [See Related papers]

I have previously tasked the Research and Development Technical Advisor with conducting a "Rechargeable" Battery trial as part of his "Terms of Reference". This will go ahead as planned.

I firmly believe that the deminers have concerns about working in minefields containing "minimum metal mines", as they have not done so in many cases for years, if at all. This is only natural as any deminer would rather work in a minefield with mines which are easy to detect. I also feel that when an accident occurs that the deminers are very quick to blame their equipment and not their friends and colleagues. They seek to protect each other and often colour their statements accordingly, especially as they might think that if someone is injured by his own hand, he will not receive any compensation.

Regarding the adoption of the 2 man drills in this minefield, again I spoke to all the team members to ask their overall opinion on these drills, they were all very happy with the drills.

In fact the benefit of the adoption of the new 2-man drill was demonstrated when the missed mine was found on 22 Aug 1999, under the old 3 man drills this mine would not have been found, and subsequently could have caused an accident. The new 2 man drill includes 100% Quality Assurance of the area cleared by the previous deminer, therefore the chances of mines being missed is minimised.

The plain fact of the matter in this accident is that the injured deminer was at fault and any blame to be apportioned for his subsequent injuries lies on his own doorstep.

The injuries that the deminer received would have been minimised if his protective helmet and visor had been fitted correctly. It is obvious that [the Victim]'s equipment was incorrectly fitted at the time of the explosion. He was either crouched directly over the mine, which I think is unlikely, it is more likely he had raised his visor up in an attempt to keep cool. We will never know the truth as he is unlikely to enlighten us on this, however in previous accidents, deminers have prodded larger mines (PMNs) and received no serious injuries due to correct wearing of equipment.

The Radio communications procedures were not followed correctly by the supervisor and the radio operator at MAG HQ in Sulymania. There is a laid down accident message in (N. Iraq) Standard Operating Procedures dated Jan 1999. The UNGCI have issued a proword of "Pan Pan Pan" which can be used on channel 3 to allow the national staff to talk in Kurdish freely, this was taught to all supervisory staff during the winter training period in Jan/Feb 1999, but was not used on the day of the accident because the supervisor forgot. This is understandable due to the excitement following an accident, and due to lack of practice.

The evacuation procedure was well executed and the casualty received professional care at the site, and was transferred to hospital with all speed.

The subsequent Accident Investigation started well when the TMEU and [TA] visited the site, however as [the TA] tasked the Head of TMEU to take the witnesses statements, for which there is no real guidelines it became a bit confused. The TMEU will be responsible in time for all Accident Reporting, but it is obvious that we are not in a position to delegate this task to them as yet. Therefore I had to basically redo most of the report myself. Also as [the TA] is the Technical Advisor responsible for monitoring the minefield concerned, he should not have been the one tasked to assist the TMEU with the Investigation. However at the time of tasking the NSTA had nobody else he could send quickly.

The minefield clearance task in Dary Chya has been conducted well since it started and to date the teams have destroyed in excess of 750 mines. It is unfortunate that 2 accidents happened in quick succession at this site, however the supervisory staff cannot be held responsible for the actions of a deminer who when unsupervised, chooses to ignore basic safety procedures.

Recommendations

Following my own conclusions the following recommendations and actions will be carried out.

1. All demining staff are to be reminded of the importance of the correct fitting and wearing of personal protective equipment (PPE).
2. The correct Accident Message Procedure for the use of the prowords "Pan Pan Pan" are to be reiterated to all Supervisory staff and Radio Operators.
3. Each TA, Supervisor, Team Leader, 'Deminer Grade I, and Radio Operator should be issued with a plastic coated Accident Message reminder card.
4. Each Radio room is to be fitted with an accident message whiteboard.
5. The UNGCI have recently changed staff. This is an on going situation due to their rotation. Therefore a copy of our "Accident Message" format is to be posted in the UNGCI radio room, the STA will organise this.
6. Until further notice all Accident Investigation reports are to be conducted by the STA, NSTA and the Head of the TMEU together. The STA will be responsible for the report and will use the opportunity as a training tool.
7. The STA has already tasked the Research and Development Technical Advisor to conduct a complete rewrite of the (N. Iraq) Standard Operating Procedures. As part of this rewrite the R+D TA will include "Accident Reporting" and "Accident Reporting" as a standard format which is more user friendly, and more comprehensive on the Question and Answers to be used in the taking of statements.
8. The clearance of "Dary Chya" minefield will continue as planned, and the Schiebel detector will continue to be deployed on "Electronic" clearance in this minefield.
9. The recommendation from [TA] to carry out all hand clearance drills in the prone position, whilst this would lower the body profile in the event of an accident, would not be a practical manner of working, and will not be adopted.
10. No disciplinary action will be taken against any member of staff as a result of this Investigation.

Signed: Senior TA

Victim Report

Victim number: 454

Name: Name removed

Age: 26

Gender: Male

Status: deminer

Fit for work: no

Compensation: not made available
(insured)

Time to hospital: 1 hour 25 minutes

Protection issued: Frag jacket

Protection used: frag jacket, Helmet

Helmet

Short visor

Summary of injuries:

INJURIES

minor Face

minor Hand

minor Leg

severe Eye

AMPUTATION/LOSS

Eye

COMMENT

See medical report.

Medical report

A report from the "Emergency hospital" dated 25th October 1999 stated:

"I examined [the Victim] for both eyes on Sun 24/10/99 in Emergency Hospital with multiple bilateral shell injuries to both eyes causing multiple Corneo Scleral wounds, repaired under GA on 30/8/99 in Emergency hospital. [The date of surgery must be a mistake.]

Now the Right Eye:

- Corneal opacity
- Traumatic cataract
- u/s I.O. F.B. Retinal detachment
- Light perception [illegible] blind
- (Lost eye)

Left Eye

- Clear cornea
- Anterior chamber formed
- Traumatic cataract
- Normal [illegible] tension
- u/s Vitreous bands, Haemorrhages and I.O.F.B.

Needs surgical removal of I>O>F>B> and Vitrectomy outside Kurdistan region.

Related FAX

A FAX message from the STA to the Demining group head office dated 27th October 1999 stated: "The e report concluded that the sight has been lost permanently from the right eye. Surgery might be available for the left eye, but not in country." The FAX went on to ask that the insurance claim should be processed.

Victim's referral chart

A Victim's referral chart recorded that the Victim was 26 years old, blood type O+ and called all his injuries "superficial". They were to the right hand, right thigh, face and eyes.

His initial treatment (by field medics) was:

- Cannula + 500cc Ringer Lactate
- Dressing of the wounds
- 2gm Ampicillin
- 45mg Sosegon I.M.
- 1000cc Normal saline for washing eyes.

Analysis

The primary cause of this accident is listed as a "*Field control inadequacy*" because the Victim was working in breach of SOPs (visor raised) and his error was not corrected. Whether the correction should have been made by a partner in a demining pair or a Field Supervisor is not relevant. Field supervision allowed one SOP to be breached, from which it follows that others may also have been breached and led to the accident.

It should be noted that the Victim wore a short visor on a helmet and that it is not possible to see (when looking from directly behind) whether the visor is partly raised. In a squatting or kneeling position, a short helmet visor can never interface with the chest protection. The demining group's adoption of a kneeling/squatting position should have been accompanied by a change to using a longer visor (perhaps with no helmet – as used by many other professional groups). The group's failure to do this meant that they provided inadequate protective equipment, so the secondary cause is listed as "*Inadequate equipment*".

The Senior Technical Advisor wrote to his Head Office asking for the insurance claim to be processed on 27th October 1999. (See Related papers.) The Victim's second eye required surgery outside the region if it was to be saved, but there is no record in the file of that having happened. This raises questions over whether the insurance cover for medical treatment was high enough to cover the cost of moving the Victim to another country for eye surgery? If it was not, the medical provision was inadequate.

There was concern over the old model of Schiebel detector used – and some conflict in the reports over whether it was in use. (See "Statements".) This detector has been found incapable of reliably finding the Type 72 AP mine in easy ground in many demining theatres. Unable to use a detector, the victim had to prod all of the ground. When prodding over an entire rocky area, excess force is more likely to be used. Had an appropriate detector been available, the victim would have only been obliged to prod when metal was present.

The demining group involved in this accident is thanked for its total transparency and for allowing complete access to the related papers.

Related papers

The papers that follow include a memo notifying UNOPS of the accident, a report on the missed mine event that occurred previously (without detonation), and reports on the detector and its performance in the area.

EXTERNAL MEMORANDUM

To Programme Manager UNOPS
From STA Demining group N. Iraq
Date 31 August 1999

Subject:- Mine Accident in Sulymania Governorate 30 August 1999

On 30 August 1999 one of our deminers functioned a mine in one of the minefields under clearance in Sulymania Governorate and as a result received blast injuries to his hand and

face. The following information is to confirm to all relevant agencies the details of this unfortunate accident.

LOCATION

The accident occurred in the minefield designated as [excised]. This minefield is situated near Willyowa village in Sharbazar district of Sulymania Governorate.

The minefield is laid adjacent to the main road between Chwarta and Nawparez.

This minefield has been under clearance since 03 March 1 999, and to date the team working on this task have destroyed over 750 mines in this minefield.

ACCIDENT DETAILS

The accident occurred when a deminer was carrying out hand clearance drills. He functioned the mine by striking it with his hand held prodger. He was given first aid at the site and was transferred to the "Emergency" hospital in Sulymania.

MINE DETAILS

The mine which functioned was a Chinese Type 72 anti-personnel blast mine. The mine was completely buried and it is not known what the of the mine was, ie side-on, upside down etc.

DEMINER'S INJURIES

The deminer injured received superficial blast and fragmentation wounds to his right hand, right leg and face. He also received blast and fragmentation injuries to both eyes. He will be kept in hospital for the next few weeks for the relevant treatment.

Severity of injuries

The severity of this deminers injuries would indicate that he was not wearing his Ballistic helmet and visor correctly and subsequently did not receive the maximum protection from his visor, hence the injuries to both eyes. The importance of wearing the ballistic helmet and visor correctly can not be stressed enough. It should be remembered that if the blast from a mine explosion is directed under the visor then the visor will contain the blast and the subsequent injuries will be worse.

CONCLUSIONS

This type of accident can happen at anytime whilst carrying out mine clearance, whether conducting hand clearance techniques, or when investigating "contacts" during electronic clearance.

As I stated in my external memorandum dated 07 June 1999, the ballistic visor affords excellent protection against blast mines. The deminer involved in the mine explosion in June 1999 returned to work after only 10 days rest, as his injuries were minimal due to the correct use of protective equipment

This accident has left the deminer injured on 30 Aug 1999, in a condition where his eyesight, if not lost completely, will certainly be greatly impaired for the rest of his life, due to the incorrect use of his protective equipment.

RECOMMENDATIONS

I would urge all relevant agencies to reiterate the importance of the correct fitting of protective equipment to all staff involved in demining activities.

FULL REPORT

A full investigation report will be prepared in accordance with [Demining group] N. Iraq Standard Operating Procedures Jan 1999. Copies of this report will not be disseminated to other agencies due to security considerations. A copy of the report will be held in my office in HQ should anyone wish to see it.

Signed: STA [Demining group]

Missed mine report

MISSED MINE AT DARY CHYA MINEFIELD 22 AUG 1999

SENIOR TECHNICAL ADVISORS RECOMMENDATIONS AND ACTIONS

Introduction

This report has been compiled to document the recommendations made and actions carried out by the Senior Technical Advisor following the discovery of a Chinese Type 72 anti-personnel mine in a previously cleared area of the minefield designated as MAGIS/0385 at Dara Chya.

Background

I returned from leave in the UK on 30 August 1999. On the morning of 31 August I was given a copy of Ref B explaining the accident which had occurred at the minefield. The NSTA who had been carrying out the duties of the STA in my absence had tasked [TA] to investigate this accident and compile the report.

I needed time to assimilate all the information as well as the large amount of paperwork and outstanding other issues which awaited my return, and therefore instructed the NSTA that the deminer who missed the mine should remain under suspension until the following Monday 06 Sept 1999, by which time I would have made my recommendations and the subsequent disciplinary action would be taken. I spoke with the deminer and told him of this decision personally.

I also wanted to study the actions carried out following [the TA's accident report], as I felt it was only fair that this accident was dealt with in as fair and efficient a manner as possible, and as a precedent had been set in the accident described in [the Ta's accident report].

Therefore having studied the reports and discussed this accident with the NSTA at a meeting held in the STA office in Sulymania on Sunday OS Sept 1999, I made the following conclusions, recommendations, and disciplinary action was authorized.

CONCLUSIONS

Missed Mine

The missed mine should have been easily found by the Schiebel detector being used by [the deminer]

if the correct clearance drills had been carried out, and he had applied all drills as per [SOPs], as the detector was fully functional.

His excuse that he forgot to check the rocks is unacceptable, especially after being fully briefed. As the mine was actually visible I can not understand how he failed to locate it. I can only conclude that he was not carrying out the drills correctly.

Two Man Drills

The 2 man sub team drill is a good practical drill provided the command, control, and quality assurance are maintained and correctly applied as per the guidelines and drills.

The 100% Quality Assurance of the oncoming deminer who carried out the correct drills ensured that the mine was found.

Command and Control

The overall command and control of the team leader shows a complete disregard for the guidelines laid down for the 2 man drill, which states that 1 deminer grade 1 should have a maximum of 3 sub-teams to monitor and he should rotate his rest period with the team leader. During this period 1 deminer grade 1 had 4 sub teams to monitor.

This should have been noticed by the supervisor on his visits if they were doing it then?

The supervisor did notify the DDFM in his QA report of 18 August that he was unhappy with the command and control of the team leader and had spoken to him on this.

The team leader did carry out immediate disciplinary action at the site when the accident occurred, but then carried on working as if nothing had happened. It was only when the supervisor arrived that the work was suspended and the accident reported.

In SOPS there is an "Accident" procedure, but no guideline for Incident-procedure. This maybe led the team leader to believe he was doing the right thing.

Report Writing

The report [by the TA] is difficult to follow at various points are missing, this again indicates the need for a proper procedure to be put in SOPS, and the inexperience of the JMEU members in Q+A techniques. Also the difficulty in using translated statements for an English report.

Recommendations

1. The deminer should be given a final written warning, as whilst this is a serious accident he has a good record and has faced no disciplinary action in the past. This is in keeping with the action taken in [the TA's report].
2. The 2 deminers grade 1 who were overseeing this sub team should both be given a verbal warning as they were at fault for not carrying out the correct procedures as per the guidelines for 2 man drills.
3. The team leader should be given a written warning as he was not exercising correct command and control of his sub teams, as he was not applying the correct drills and procedures as per the 2 man drill as instructed by the NSTA.
4. The supervisor should prepare a written report on the team leader expressing his concerns regarding the performance of the team leader and his ability to perform his duties.
5. The rewrite of SOPS in Dec 1999 should include a section on Incident-procedure.
6. The TMEU should not carry out any further investigation report preparation until they have received further instruction on the subject from the STA personally. This will be discussed between the STA, NSTA and the head of the IMBU.
7. The recommendation from [the TA's report] to adopt the 100% QA for all teams will be incorporated into all teams when authorized by the STA that all teams adopt the 2 man drills, once sufficient spare detectors are available in country.
8. The recommendation from [the TA's report] that the deminer grade 1 should not change over at the same time as the deminers is accepted.

Signed: STA

FILE NOTE ON DETECTORS

From: ASTA

Date: 05 August 1999

Ref. A: Our discussion before you go on leave in your office dated 20 July 1999.

Subject: Authorisation for AN-19 Schiebel detector Sensitivity Setting for Dari Chia Minefield

On 01 August 1999, I paid a visit to the above mentioned minefield to assess and decide on a clearance depth required to be achieved in this minefield. I found out that it is necessary for me to take the following actions:

- I have discussed my concerns with all the deminers, deminer grade ones, team leader, the supervisor and the DDFM on that site.
- The supervisor, the team leader and I had a walk around the minefield and we inspected all the safe lanes and confirmatory breaches.
- I carried out sensitivity setting of AN-19 mine detector according to the operator's manual and I achieved the sensitivity from 8-11 cm.
- I have noticed that because of the nature of the type of the ground, the mines of this minefield are generally surface mines or they are buried 3 - 4 cm under the ground in the worst case:

The following actions to be followed in Dari Chia minefield:

1. AN-19 Schiebel detector should be able to register a 5-cm test piece in a minimum distance of 8 cm from the search head. If minimum 8-cm can not be achieved then the hand prodding drill will be adopted.
2. To maintain a correct measurement of a minimum of (8 cm), all test pieces are to be tied with a ruler and to be issued to all the sub-teams working in this minefield.

FILE NOTE – DETECTOR PERFORMANCE

Subject:- Dary Chva minefield

Whilst speaking to the deminers at this task site they expressed concerns regarding the rechargeable batteries they are using. They said that they have found during clearance that the sensitivity of the detectors fluctuates during the day when they use these. The same problem does not happen with the Blue "Bizarre" batteries.

Therefore until further notice only "Blue Bizarre" batteries are to be used in the detectors at this site.

SIGNED: STA

Statements

Statements (edited for anonymity) from various minefield personnel are reproduced below. The Victim's statement is last.

MINEFIELD SUPERVISOR

The following statement was taken at the minefield by the STA .

Question 1. On the day of the accident, at what time did work commence at the site.

Answer 0730 Hrs

Question 2. Where you present in the minefield at that time.

Answer No

Question 3. At what time did you arrive at the minefield?

Answer 1000 Hrs.

Question 4. Did you visit the safe lane where the accident took place prior to the accident?

Answer Yes, on arrival I visited all the safe lanes to conduct my Quality Assurance checks, I started with the safe lane nearest the road and progressed around the minefield. On reaching the 3rd breach, I was called to the last safe lane as they had found a mine. This is the safe lane where the accident took place later that day.

Question 5. When you visited the last safe lane who was working there?

Answer [The Victim]

Question 6. Did you have any comments or did you make any comments on the safe lane when you visited it.

Answer Yes, after [the Victim] had disarmed the Type 72 anti-personnel mine he had found, we checked the distance between the mine and the previous ones found in that safe lane. [The Victim] said all the mines found in this safe lane had been buried under the ground. The total found so far in the safe lane was 4 mines.

I asked him if he was happy with the area, and he said that because of the ground conditions he preferred to continue hand clearing this area. He said that due to the likelihood of ground slip in this area, the mines might be deeper than normal.

Told him to excavate to a depth of 15-20 cms as he saw fit, but that 15cms was to be the minimum.

Question 7: During your QA checks did you note any problems in the minefield?

Answer: No, the work was going well.

Question 8: Where were you when the accident happened?

Answer: I was in the rest area with the team leader, I had filled in my QA sheet and I had called him from the minefield to sign it before I left.

Question 9: When you called the Team Leader where was he?

Answer: He was monitoring the sub-teams nearest to the road.

Question 10: At the time of the accident who was the Deminer No 1 supervising the sub-team involved in the accident?

Answer: [Name excised]

Question 11: Tell me what happened after you heard the explosion?

Answer: At first we thought it was possibly from another area, or even hunters shooting, as the explosion was not very loud and we mistook it a gunfire. Then I looked to the minefield and saw the smoke amongst the trees where the deminers were working.

The team leader immediately ran to get the stretcher, and then ran to the minefield. At that time [Name excised] called on the radio for the stretcher and assistance as an accident had happened.

Question 12: What did you do?

Answer: I stayed in the rest area to control and organise the other men, they were all excited and some of the drivers wanted to go to the minefield to help.

I told the Ambulance driver to prepare his vehicle ready for the evacuation.

I then put on my helmet and jacket and went towards the minefield. I instructed the other sub teams to withdraw from the minefield and go to the rest area. I told the Deminer No 1 to gather some men and organise them to assist with the evacuation of the casualty.

The team leader called me on the radio and asked for some men to assist him. I sent 2 deminers to help him. I then entered the minefield and met the team leader and the men bringing the casualty down the hill.

We then took the stretcher and casualty out of the minefield and met the medic near the fourth breach. First Aid was administered at that place.

Whilst the casualty received First Aid, I sent the accident message to "base".

Question 13: How did you send the accident message?

Answer: I called on Channel 3, and said "Accident Message" twice and gave the casualty's CIN No only.

Question 14: Why did you not use the "Accident Message" format, and "Pan Pan Pan"?

Answer: I forgot all about "Pan Pan Pan" and the format. When I started to talk to Base in Kurdish, Charlie control told us to use Channel 15 and speak in clear.

Question 15: Did you have any other problems with the message?

Answer: Yes, when I sent the CIN No for the casualty, they said this number is from team 3 and not team 12. I assured them that the number was correct and their records must be wrong, as the deminer had been moved from team 3 to team 12 recently.

When I was talking on Channel 15, someone was jamming the radio net.

Question 16: Once the Ambulance had left for Sulymania what did you do?

Answer: I collected the remaining men, checked the equipment and waited for the arrival of [the TA] and the TMEU. They were on their way to start the Investigation~

Question 17: What happened next?

Answer: [Excised] 7 arrived, but as we had no medic we had to send to Chwarta camp for one. Once the medic and the TMEU arrived they started the Investigation. What do you think caused the accident?

Question 18: There are possibly 2 contributing factors

1. The ground is hard and rocky and therefore the deminer could have been overdoing it with his prodder, ie using too much force.
2. The mine may well have been in a position where it had moved since being laid, ie side-on or inverted, and [the Victim] struck the pressure plate.

Question 19: Why do you think [the Victim] received the injuries to his face and eyes?

Answer: He was not wearing his visor correctly.

Question 20: Do you have any comments on improvements for the future drills?

Answer: Yes, if you add 1 more deminer No 1 to the teams in the 2 man drills it will help the team leader to monitor the team better.

TEAM LEADER

This statement was taken at the minefield by the STA.

Question 1: What time did you start work on the day of the accident?

Answer: 0730 Hrs

Question 2: Prior to starting work did you give the deminers a safety brief?

Answer: Yes, I briefed them all in the rest area and then I confirmed various points as I visited each safe lane during my Quality Assurance checks.

Question 3: Once the deminers had started working, did you visit the safe lane where the accident took place later that day?

Answer Yes, when the deminers started work I walked around the safe lanes and then started my Quality Assurance checks at about 0800hrs. I started with the safe lane nearest the road and visited all the safe lanes 1 by 1. After I had visited the safe lane in question, I walked to the top of the minefield and walked down the breach No 2, from the vantage point there I could see all the sub-teams, either by eye or by the use of binoculars.

When the supervisor arrived I walked through the minefield to the front edge to meet him as he was starting his QA checks. Then he and a newly promoted deminer No 1 went to visit the other safe lanes, this was to update on the other sub-teams positions.

Question 4: What happened next?

Answer: I continued to monitor the deminers in the minefield until called me to the rest area to sign his QA check sheet, as he had finished all the sub-teams QA. He had received a radio call from the team leader at "Barmakazaka" minefield and was preparing to go there.

Question 5: At the time of the accident where were you?

Answer: I was in the rest area with [name excised] when we heard the explosion.

Question 6: What did you do when you heard the explosion?

Answer: I ran to collect the stretcher, and then ran to the accident site. As I was running to the site, I of the deminers to come and assist me and he took the stretcher from me and we carried on up the hill to the accident site.

Whilst I was running to the site, [name] kept calling on the radio for me to assist him and bring the stretcher. I returned his call, but I was very tired and out of breath.

Question 7: When you got to the accident site, what was happening?

Answer: [Two deminers] were assisting [the Victim] to remove his helmet and jacket.

Question 8: What happened next?

Answer: We took [the Victim] out of the minefield on the stretcher and met with the medic who gave him first aid. The deminers then helped take [the Victim] to the Ambulance and he was taken to the hospital.

At the time that [the Victim] was receiving first aid, Omar sent the accident message.

Question 9: Did you send a second vehicle and deminers with the Ambulance?

Answer: Yes, I sent [a] vehicle as it is the best one and he is a good driver. I also sent 3 deminers with it who had the same blood group as [the Victim]. Their names were [excised].

Question 10: Once the Ambulance had left the site, what did you do?

Answer: I assembled the remaining deminers in the rest area, we packed up our equipment and waited for the Investigation team to arrive.

Question 11: When you had visited the safe lane during the morning, were there any problems?

Answer: No, I had selected [the Victim and his partner] to work at this safe lane because they are good trustworthy deminers. They had no problems.

Question 12: You had instructed the deminers to test the Schiebel against any mines found by hand prodding, is this correct and why did you do this?

Answer: I told the deminers that when they found a mine they were to leave it and call the deminer No 1 to check it with the Schiebel, to ensure that the detector would locate it. I was doing this to ensure that all the mines found by hand clearance would be found by the detector ,as I wanted to ensure that the mines which were buried in this minefield were detectable.

Question 13: Did you find that the mines found by hand clearance were detectable?

Answer: Yes, all the mines were detectable, most of the Type 72 mines found in this minefield are either on the surface, or are buried between 3-5 cms from ground level to the top of the mine.

Question 14: Are you as the team leader happy to use the Schiebel AN 19/2 detector in this minefield?

Answer: Yes, I have no problems with this as we can get a sensitivity setting of between 8-11 cms in most areas of the minefield.

Question 15: Is there anything you think could have contributed to this accident?

Answer: [The Victim] reported no problems to me, I cannot think of anything.

Signed.

DEMINER GRADE 1 (Supervisor)

This statement was taken at the minefield by the STA.

Question 1 What time did you start work on the day of the accident?

Answer: 0730 Hrs

Question 2: Did you brief the deminers before starting work?

Answer: Yes, I was in charge of 2 sub-teams in the morning and I informed them not to touch anything without informing me first. I also informed them on the correct drills to be applied for hand clearance.

Question 3: How did you QA the sub teams and how often?

Answer: I checked the depth of excavation. I visited them 2 to 3 times every 30 minutes.

Question 4: Did you visit the safe lane where the accident took place that day?

Answer: Yes, as part of the normal rotation of the deminer grade 1,1 was supervising that sub team between 1200 to 1230hrs. [Deminer] had found a Type 72 mine which was buried at a depth of about 5 cms and I checked it with the Schiebel to ensure it would be detected. The detector did not detect it.

Question 5: Why do you think that the mine was not detected?

Answer: One of 2 reasons either the detector is too old, or the rechargeable batteries were no good.

Question 6: Was the mine still in the ground when you tested it?

Answer: Yes, we had cleared around it but it had not been moved.

Question 7: In which position was the mine?

Answer: It was laid in the normal position.

Question 8: Who had told you to check the mines found with the Schiebel?

Answer: The supervisor and the team leader.

Question 9: Are you happy to use the Schiebel detector in this minefield?

Answer: I would prefer to carry out hand clearance drills.

Question 10: When the accident happened where were you and what were you doing?

Answer: I was supervising the sub teams furthest from the accident site.

Question 11: What did you do after the accident?

Answer: I stopped the work and left the minefield with the deminers, to assist the evacuation, then went to the rest area.

Question 12: When you had left the safe lane where the accident had occurred, was the mine that had been found disarmed?

Answer: No, it was marked with red pickets.

Question 13: When you checked the mine with the Schiebel, was there a low battery warning tone?

Answer: No, it was working perfectly.

Question 14: When a deminer 1 goes to the rest area do the remaining deminers have to watch more than 3 sub teams?

Answer: No, the Team leader or Supervisor assists them.

Question 15: Do you have anything further to add to this statement?

Signed.

The Victim

This statement was taken in the "Emergency" hospital in Sulymania by the Head of the TMEU.

Question 1: How long have you been a deminer?

Answer: Since March 1998

Question 2: On the day of the accident, what time did you start work?

Answer: Between 0725 and 0730 hrs.

Question 3: Where did you start work?

Answer: We worked in the same area as the day before

Question 4: Before the accident another mine had been found who disarmed it?

Answer: I did.

Question 5: Who visited you when the mine was found?

Answer: The deminer grade 1, he checked it with the Schiebel and it gave only a slight sound.

Question 6: After disarming the mine did you go to the rest area?

Answer: I cleared a further 20 cms of ground and then we changed over, and I went to rest.

Question 7: Prior to the accident were you visited by the deminer grade 1?

Answer: Yes, [he] visited me and told me that the supervisor had told him that "if you want to move to Penjwin, you will be moved, if not [another deminer] will go in your place".

Question 8: What happened next?

Answer: I then carried on working, I moved my right leg forward and laid it on the ground, I then folded my left leg behind the right, I started hand prodding and suddenly fragments stones and dust rushed to my face.

Question 9: Did you have problems that day?

Answer: No, but I was worried about the funding situation.

Question 10: On the day of the accident what was the weather like?

Answer: The weather was fine

Question 11: Do you have further comments to make?

Answer: Yes, please do not work with the detector in this minefield as it contains type 72 mines and is therefore unsafe.

Signed.