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DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 355
Accident time: 08:29	Accident Date: 29/01/2001
Where it occurred: Svay Donkeo village, Pursat District	Country: Cambodia
Primary cause: Unavoidable (?)	Secondary cause: Field control inadequacy (?)
Class: Handling accident	Date of main report: 12/02/2001
ID original source: KC	Name of source: MAG
Organisation: Name removed	
Mine/device: Fuze	Ground condition: hard
Date record created: 21/02/2004	Date last modified: 21/02/2004
No of victims: 1	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: GR: 525004	Coordinates fixed by:
Map east:	Map north:
Map scale: MF: M0344	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

no independent investigation available (?)
inadequate medical provision (?)
inadequate training (?)
mine/device found in "cleared" area (?)
visor not worn or worn raised (?)

Accident report

The demining group made an internal investigation and made their report available. The report is reproduced below, edited for anonymity. Photographs were included in the original, but as photocopies of such a poor quality that they have not been included in this document.

Internal Accident investigator's report

1. Introduction

On Monday 29th January 2001 an accident occurred in Svay Donkeo 2 minefield in Pursat District, which resulted in one deminer being injured following a small explosion.

As the Head of the Training Monitoring and Evaluation Unit of [Demining group] Cambodia, I was tasked by the Senior Technical Advisor with conducting an accident investigation, and producing an accident report.

I was unable to travel to the accident site on the day of the accident; therefore I visited the following day (30th Jan 2001), with the Senior Technical Advisor. On arrival at the accident site I was briefed by the Senior Technical Advisor on what information would be required and the conduct of the investigation.

2. Investigation Timetable of Events

The following timetable of events outline the sequence of events and actions conducted by the Investigator in compiling this report.

0829 Hrs	29 Jan 2001	Accident Occurred
0845 Hrs	29 Jan 2001	Accident Reported to STA
1300 Hrs	29 Jan 2001	STA Faxed Initial Accident Report Format to Pursat FOM
1600 Hrs	29 Jan 2001	FOM Pursat faxed back to STA completed Initial Report.
1230 Hrs	30 Jan 2001	STA and Head of TMEU visit accident site
1600 Hrs	30 Jan 2001	Head of TMEU took statements from all personnel involved
0700Hrs	31 Jan 2001	Quality Assurance Check conducted on area under clearance
1300 Hrs	01 Feb 2001	STA issued Memo to All Operational Staff on PPE.
1400 Hrs	02 Feb 2001	Head of TMEU submitted "Draft" Investigation Report.

STA Note

Following submission of the Draft Investigation report by the Head of the TMEU to the STA. The STA rewrote the report into a more easily read version, as the Draft report was not a very user-friendly document due to the standard of written English. All the facts and points required for the report were present, however the language used was slightly confusing. This was to be expected, as this report was the first occasion that the Head of the TMEU has had to produce an Investigation Report, and highlights some training requirements for him in his current role.

The STA finished the final report on 12 February 2001.

3. Minefield Background

Svay Donkeo 2 minefield was laid in close proximity to Svay Donkeo village in Bakan District of Pursat Province. The Cambodian Mine Action Centre (CMAC) designates the minefield as M0344. The minefield was initially laid as a protective minefield between the Khmer Rouge forces and Government forces: The area changed hands a number of times during the period from 1975-1979. In 1979 when Vietnamese troops invaded Cambodia the area of Svay Donkeo village was used as a military base by the Vietnamese. In 1987 the Vietnamese withdrew from the area and it was handed over to Government forces. It is reported that throughout the various periods from 1975 to 1987 the warring factions laid mines in Svay Donkeo.

There have been a number of accidents in this minefield involving humans and cattle; paths through the minefield are used as access from the main road to the village of Svay Donkeo by the local villagers.

As part of [Demining group]'s Pursat Province clearance plan it was identified that Svay Donkeo minefield was a high priority task and therefore should be undertaken during the Dry Season of 2001.

4. Minefield Clearance Plan

[The Demining group] began clearance of this minefield in June 2000 however the initial clearance had to be suspended due to the onset of the Wet Season. On 02 Jan 2001. Mine Action Team No. 2 from Pursat Province was deployed to this task to continue clearance during the Dry Season.

The initial clearance plan is to clear the immediate area around the village of Svay Donkeo and the adjacent Pagoda complex. The first area cleared included the track which runs from the Pagoda complex to the village, running North to South through the minefield.

The MAT team travel from Talou Deminer accommodation daily to the site, which means a travelling time of approximately 1 hour 15 minutes to and from the task. There are plans to establish deminer accommodation within the Pagoda complex at Svay Donkeo in early February 2001.

To date only PMN-2 Anti Personnel Blast mines have been found in this minefield.

5. Personnel involved in Accident

Pursat Field Operations are managed by the Field Operations Manager.

On the day of the accident Mine Action Team No 2 was being supervised by the regular supervisor for MAT 2.

The demining pair involved in the accident were [the Victim] and [his partner].

The Trauma Care Medic of MAT 2 is [Medic 1]

Statements from all personnel involved are contained in this report. [See Statements.]

6. Accident Details

At 0829 Hrs on Monday 29th January 2001, a deminer from Mine Action Team Number 2 from Pursat Province, was injured by a small explosion, at Svay Donkeo minefield.

He was conducting Electronic Clearance drills as part of a two man demining pair, when he found an as yet unidentified metallic item which exploded in his hand when he picked it up.

He reported in his statement that the item was lying on the surface of the area he himself had cleared the previous day.

He described the item as being approximately 12 mm long, and 10mm in diameter, coloured Gold and looking like an earring.

Following the explosion, he was immediately assisted by his partner, the MAT supervisor and the MAT Trauma Care Medic.

After removing his protective equipment, the Trauma Care Medic inspected his injuries which were: -

- Traumatic Amputation of the left Index finger
- Traumatic Partial Amputation of the left thumb
- Blast injuries to right hand index finger and thumb
- Superficial fragmentation injuries to face

See Photographs 7 and 8 [only poor photocopies were made available: not reproduced].

The medic then gave the deminer First Aid that consisted of; administering a 1000ml Intravenous Drip, injecting him with penicillin and bandaging his wounds. The Trauma Care filled out the Casualty information sheet showing all vital signs etc (see attached Casualty Sheet). [See Medical report.]

Within 15 minutes of the accident occurring he was transported to a local hospital.

On arrival at the local hospital called "Beung Khna", it was found that they did not have the required instruments to operate on his injured hands. He was then transferred to the Provincial Hospital in Pursat town. On arrival at the hospital the staff were on lunch break, therefore a local private Doctor was summoned to examine the deminer's injuries. Later that afternoon the deminer was operated on by the medical staff of the Provincial Hospital.

7. Conduct of Investigation

On being tasked to conduct the investigation I travelled to Svay Donkeo minefield with the Senior Technical Advisor on Tuesday 30th Jan 2001. We arrived at the site at around 1230 Hrs.

The STA had previously informed the FOM to meet us at the site with MAT 2.

On arrival I received a briefing from the STA on the conduction of the Investigation and the contents of the Accident Investigation report. We were shown the deminer's protective equipment in the Parking Area and the fragment recovered from his jacket (see photographs 5, and 6). [Not made available.]

Myself; the STA and the FOM then visited the site after being briefed in the Parking area by the FOM and MAT Supervisor.

We approached from the briefing area to the accident site. I took photographs from different locations to show the accident site and the surrounding area. (see photographs 1,2,3,4) [photographs not included].

I then inspected the area where the accident had happened with the STA.

The area of the accident site was physically searched by the STA to see if any other items or fragments could be found, none were found at this stage.

Following discussions at the accident site, I drew the sketch map of the accident site and checked the accuracy of the supervisors minefield sketch map.

I then returned to the parking area, and instructed the FOM, Supervisor, Deminer No 2 and Trauma Care Medic, to report to Pursat Provincial Office at 1600 Hrs that day to give written statements for the report.

Myself and the STA then travelled to Pursat Provincial Hospital to visit the injured deminer.

We met the injured deminer in the hospital at approximately 15:00 Hrs, he was in good spirits and seemed to have been well cared for. His wife was on route from Battambang Province to see him. He was keen to be discharged from hospital so that he could be looked after at home. He was having understandable difficulty washing eating and going to the toilet due to both hands being bandaged. I briefed him that he was to report to the Pursat Provincial Office the next day following his hospital discharge to give a statement. We assured him that he would be sent home the following day if the Doctors gave him a letter of discharge. I also informed him that we would arrange transport, and regular medical checks at his home by the Senior Medical Officer Dr Chantry. [A discharge sheet was attached.]

At 16:00 I met with the FOM, MAT Supervisor, Deminer Number 2, and Trauma Care Medic to take their statements (see attached statements).

On 31st Jan 2001 at 09:00 I took a statement from the injured deminer in Pursat Office.

The Provincial Manager arranged for transport for the injured deminer to be transported home today.

The STA instructed the FOM that MAT 2 could return to work on the 01 Feb 2001. He also instructed him to conduct random Quality Assurance checks at the site the next day.

The Quality Assurance checks only produced some small fragments from the accident site' which were remnants of the item which exploded; these fragments were so small that they did not help in the identification of the item.

I submitted my draft Investigation report to the STA on Friday 02 Feb 2001.

8. Investigators Observations at Clearance Task Site

Minefield Site

This task is well laid out and the supervisor has a clear plan of how the task is to be conducted. All perimeter marking is well maintained and easily understood. The minefield sketch map is accurate and well maintained. The MAT deminers have been well briefed on the task, and understand the clearance plan. The pairs are deployed sensibly and within the safety distances laid down in [Demining group] Cambodia SOPS.

Accident Site

The site of the accident is adjacent to the previously cleared track which bisects the minefield from North to South, from the Pagoda complex to the Village.

The item found was approximately 0.5 metre from the edge of the track, and just outside the unclear area where the injured deminer was working prior to the accident.

The ground was hard and very dry.

The area which had been cleared the previous day had been dug over and I could see where excavations had been carried out to locate signal readings.

The Quality Assurance check found only fragments of the item which exploded and nothing else.

9. Investigators Conclusions

Following my investigation I came to the following conclusions.

1. The item which exploded was not something that the deminer had come across previously, and as yet we are still unsure as to its exact identity. It is possible that it was a type of detonator from a munition which had been disassembled for scrap purposes, and then discarded in the area.
2. During the day prior to the accident, there had been a large influx of people into the area to attend the nearby theatre, and it is possible that one of these people brought the item to the area. The track which runs through the minefield would have been heavily trafficked during this time. Therefore someone could easily have dropped or thrown the item from the track to the cleared area which is a distance of only 0.5 metre.
3. The deminer did not recognize the item as being part of any explosive device he has previously encountered
4. Although the item was found in the cleared area, I do not think it had been missed the previous day, the deminer stated that he had found it easily, and that it was lying on the surface and was clean and bright.
5. The First Aid given to the deminer by the Trauma Care Medic was of a good quality.
6. The Personal Protective Jacket being worn by the deminer at the time of the accident did protect him as can be seen from photograph number 6, where the fragment was lodged in his chest area. If this fragment had penetrated at the ' point of impact it would have entered the chest cavity. However his helmet and visor were not fitted correctly, which meant he received facial injuries. He is very lucky fragments did not blind him. (See photo 8 for facial injuries.) [Photos not provided.]
7. The site was well marked and the perimeter marking was well maintained.
8. The overall layout of the minefield was well thought out and well disciplined.
9. The Trauma Care Medic would have been in a difficult position if the accident had been caused by a 'missed' mine as he ran straight to the site to assist the injured man.
10. The hospital where the casualty was initially taken to did not have the facilities to deal with what was a fairly minor injury.

11. At the Provincial Hospital, the FOM had to get a private Doctor to attend the patient, as there was no Doctor at lunchtime in the Hospital.
12. There are concerns over the level of Medical facilities and their ability to deal with even fairly minor casualties.
13. This is a very unfortunate accident which could have happened to anyone who picked up this item.

10. Investigators Recommendations

1. All operational staff should be reminded of the importance of wearing PPE correctly, the PPE is designed to give maximum protection only if it is correctly fitted.
2. A review of all support medical facilities in all the provinces should be conducted by the Senior Medical Officer and a report submitted to the Senior Technical Advisor.
3. All Trauma Care Medic posts should be located out with the minefield, and all Trauma Care Medics should be briefed not to enter the minefield in the event of an accident. The patient should be brought to the medic for treatment.
4. Standard Operating Procedures on Casualty Evacuation, Medical Support Facilities, and Accident Investigation should be reviewed and, and if necessary rewritten as part of the current rewrite of SOPS being conducted by the Senior Technical Advisor.
5. The deminer injured should be medically examined by the Senior Medical Officer prior to returning to work after sick leave.
6. The injured deminer should be given refresher training by the TMEU before returning to work after sick leave.

Signed: Head of he TMEU

Victim Report

Victim number: 452	Name: Name removed
Age: 37	Gender: Male
Status: deminer	Fit for work: not known
Compensation: not made available	Time to hospital: 6 hours 31 minutes
Protection issued: Frag jacket	Protection used: Frag jacket, Helmet
Helmet	
Short visor	

Summary of injuries:

INJURIES

minor Face

severe Hands

AMPUTATION/LOSS

Fingers

COMMENT

See medical report.

Medical report

The victim was taken to a hospital without surgical facilities and sent on. On release from the first hospital, a "release form" was filled out. The "release form" and the field medic's statement are reproduced below (edited for anonymity).

Victim's first hospital release form

The victim's name: [excised], Sex: *Male*, Age: *37 years old*.

Team: *MAT 2*, Blood Group: *B+*

Accident place: *Svay Donkeo*, Date: *29 January 01*, At : *8:29 Hrs*.

Reason of Accident: *Detonator explosion*.

Type of Accident: *Lost index finger and thumb of the left hand and damaged to the right index finger and thumb*.

Situation of victim when the accident was immediately occurred: *Normal*.

Diagnose pre treatment: *Blood pressure: 11/7, pulse: 65, Breath: 24, Temperature: 36,5*.

Treatment:

Syrup: *Rigerlactated 1000m= 1.5 ac*.

Other: *Ampicilline J00000ui = 2 vial*

Diagnosis post treatment:

Pressure: *11/7*, Pulse: *65*, Breath: *24*, temp. *36.5 oc*

Victim situation: *Normal*

Follow up the diagnose on sending to hospital:

At: *8:58 hrs* blood pressure *11/7* pulse: *65*, Breath: *24*: Temp. *36,5*

At: *9.. 20 hrs* blood pressure: *11/7*, pulse: *65*, Breath: *24*, Temp. *36.5*

Send to: *Pursat hospital*, at *11:25 hrs*.

Trauma Care medic, Signature.

MEDIC statement

This statement was taken at Pursat Provincial Office on 30th Jan 2001.

When the team started working I prepared my medical equipment at the Trauma Care post. At 0829Hrs I heard a small explosion. The number 2 of one of the demining pairs called me and I ran to where the explosion had happened.

When I arrived [the Deminer No.2] was bringing the injured deminer towards me, we took him to the safe area and then the supervisor arrived. We removed the deminers PPE, and I started to check his injuries.

The deminer had all but lost his left index finger and part of his left thumb; he had slight injuries to his right index finger and thumb, and some injuries to his face. The injuries to his face were mainly around his nose, chin and right eye. He was very lucky that no damage had been done to his eyes.

I spent around 15 minutes giving him First Aid, bandaging his hands, giving him 1000ml IV drip and injecting him with penicillin.

Once the First Aid was complete, we transported the deminer to Beung Khna hospital in Pursat, we arrived at 0920 Hrs, and the doctor there inspected the deminer for about 45 mins and told me that he did not have the right instruments to operate.

Therefore we took the deminer to the Provincial Hospital however the staff were on their lunch break, so I arranged for a doctor from a private clinic to examine the deminer. At 1500 Hrs the Provincial Hospital staff operated on the deminer. Following the operation I stayed with the deminer until he was fully awake, then I returned to the deminer accommodation at Talou.

Signed.

Analysis

The primary cause of this accident is listed as "*Unavoidable*" because it seems likely that the item had been placed on the cleared ground by a member of the public – possibly in the belief that the deminers would know what to do with it and that this was a responsible way to dispose of the item.

The secondary cause is listed as a "*Field control inadequacy*" because the Victim's visor was raised – possibly in order to examine the item clearly – and the visor should be down at all times when deminers are in working lanes.

Although the investigator described the unknown device as a "detonator", I have called it a fuze because it presumably included a means of initiating the detonator. This implies inadequate training because the item involved was an explosive device including a detonator and the Victim did not recognise it.

Statements

Statements from personnel involved in the accident are reproduced below (edited for anonymity).

The Victim

This statement was taken at Pursat Provincial Office on 31st Jan 2001.

On 29th Jan 2001, we started working at 07:00. I started as the Number 1 of the demining pair, conducting clearance of the minefield. At 07:30 I changed with [my partner] and he acted as the Number 1.

At 08:00, I took over from [my partner] as the Number 1 and continued to conduct Electronic Clearance. After a period of time, I moved the test piece, and was conducting the detector check in the cleared area when I picked up a strong signal from the detector search head.

I used the detector to focus on the source of the signal and saw an item on the surface of the ground which I thought was an ear-ring. I put the detector down and stooped to pick up the item to see what it was.

I had picked the item up in my left hand using my thumb and index finger. It appeared to be about 12mm long and 10mm in diameter, it was coloured like gold and seemed very attractive. I wanted to put the item into my right hand to examine it more closely, as I was doing so it exploded.

Immediately after the explosion I stood up and shouted "Oh I have had an accident". My partner ran to me from the observation area, followed by the Supervisor and Trauma Care Medic.

The Supervisor, [my partner] and the medic, took me to the safe area and removed my Personal Protective Equipment. At this point the medic gave me First Aid by giving me an IV drip penicillin and bandaging my hands. I was then transported to the hospital.

I was fully aware of my surroundings throughout the period.

I had personally cleared the area where the item was found the previous day, and I can only think that the item had been thrown there by someone passing through the minefield. That day and the previous day many many people had been in the area of the nearby theatre to

see the show. I think someone from this group must have transported the item there, although I do not understand how they could do this without the item exploding.

[The Victim] could not sign his statement as both hands are injured

SUPERVISOR

This statement was taken at Pursat Provincial Office on 30th Jan 2001.

On 29th Jan 2001, I left Talou deminer accommodation at 05:40 with the MAT. We arrived at Svay Donkeo minefield at 07:00. I gave the MAT a 15 minute briefing on the days work and SOPS before they were deployed. The normal partner of [the Victim] was detached to Kompon Speu province, so I tasked [Deminer No.2] to work with him.

After the MAT started work I walked around the site checking that all marking etc was in order. Whilst I was walking around I heard a small explosion in the area where [the Victim and his partner] were deployed.

I stopped the rest of the team working immediately.

I immediately went to the area of the explosion and assisted [the medic] to take [the Victim] to the safe area for First Aid treatment.

I informed the Field Operations Manager of the accident by VHF radio at 08:33 Hrs.

I then arranged for the deminer to be transported with the Trauma Care Medic to hospital in Pursat. Myself and the remainder of the team waited at the minefield for the Field Operations Manager to arrive.

When [he] arrived I showed him the location of the accident and we took photographs. We found that there was a piece of fragmentation embedded in the deminers protective, jacket.

Following the photograph taking, myself and the rest of the team returned to Talou accommodation.

Signed.

DEMINER No.2

This statement was taken at Pursat Provincial Office on 30th Jan 2001.

On 29th Jan 2001, we started work at 07:15 Hrs. I was working with [the Victim] and he started as the number 1 of the pair. We swapped over at 07:45 Hrs and again at 08:15 Hrs.

I was observing [the Victim] when he moved some cut vegetation to the pile and then he was testing the detector when he saw something.

He then squatted down and it looked like he was trying to pick something up in the clear area, then all of a sudden there was a small explosion.

I then ran to [the Victim] and helped him to the safe area; I could see that both of his hands were injured. I helped him remove his protective equipment and the detector as this was still with him.

Then the Trauma Care Medic gave him First Aid and he was transported to hospital.

I then waited with the rest of the team for the Field Operations Manager to arrive.

Signed.

FIELD OPERATIONS MANAGER

This statement was taken at Pursat Provincial Office on 30th Jan 2001.

On 29th Jan 2001, I was in the deminer accommodation at Talou. At 0833Hrs I received a radio message from MAT 2 at Svay Donkeo minefield to inform me that an accident had occurred. I was informed that one deminer had been injured. I was informed that an explosion

involving an unidentified item which was about 12mm long and 10mm in diameter had caused the injuries.

I then passed a radio message to Battambang Regional Office and asked her to pass the information to the STA and Regional Manager Battambang. Whilst I. was talking to her, FOM Bartembang was there and he told me he would pass the messages on to Phnom Pehn.

Once I had passed these messages I travelled with the Ambulance to Beung Khna Hospital and met the deminer there. I spoke with the District Doctor and he said that they did not have the right instruments for the operation required. Therefore I sent the deminer to the Pursat Provincial Hospital.

I then travelled to Svay Donkeo minefield and met with the remainder of the MAT at the parking area. I conducted an interview with the number 2 of the demining pair, and then myself and the supervisor inspected the accident site.

Following this I spoke with the local villagers.

I then told the team to return to Talou, and I returned to Pursat office. On arrival I received the Initial Accident Report format which had been faxed by the STA. I completed the report and faxed it to Phnom Pehn.

I was then informed that the STA would visit the next day and conduct an accident investigation with the Head of the TMEU Koy Chomrong.

I believe that someone passing by threw the item into the cleared area

Signed.