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Humanitarian Demining Accident and Incident Database

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DDAS Accident Report

Accident details

Report date: 17/03/2007	Accident number: 440
Accident time: 09:10	Accident Date: 17/09/2003
Where it occurred: Varany Navatkaddu Minefield, Thedmaradchchi District, Jaffna	Country: Sri Lanka
Primary cause: Unavoidable (?)	Secondary cause: Field control inadequacy (?)
Class: Excavation accident	Date of main report: 19/09/2003
ID original source: VK	Name of source: Private
Organisation: [Name removed]	
Mine/device: Type 72 AP blast	Ground condition: bushes/scrub sandy sparse trees
Date record created: 17/03/2007	Date last modified: 17/03/2007
No of victims: 1	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: Grid ref: 415098/1074489	Coordinates fixed by:
Map east:	Map north:
Map scale: IMSMA ID: LK 68	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

disciplinary action against victim (?)
no independent investigation available (?)
inadequate medical provision (?)
inadequate communications (?)
squatting/kneeling to excavate (?)
use of pick (?)

Accident report

The IMSMA report (summarised) and an internal accident report were made available in 2006. These are reproduced below, edited for anonymity (and the IMSMA report summarised for relevance).

1 From IMSMA report:

“The deminer [name excised] was carrying out manual demining drills in accordance with HALO Sri Lanka manual demining SOPs for 100% excavation. He was using the axe hammer to excavate the face of his lane down to a depth of 15cm when the detonation occurred. The mine detonated on the left hand side of his lane as he was using the axe hammer.”

Injuries: “Superficial burns to left arm; temporary loss of hearing, suspected dislocation of left elbow.”

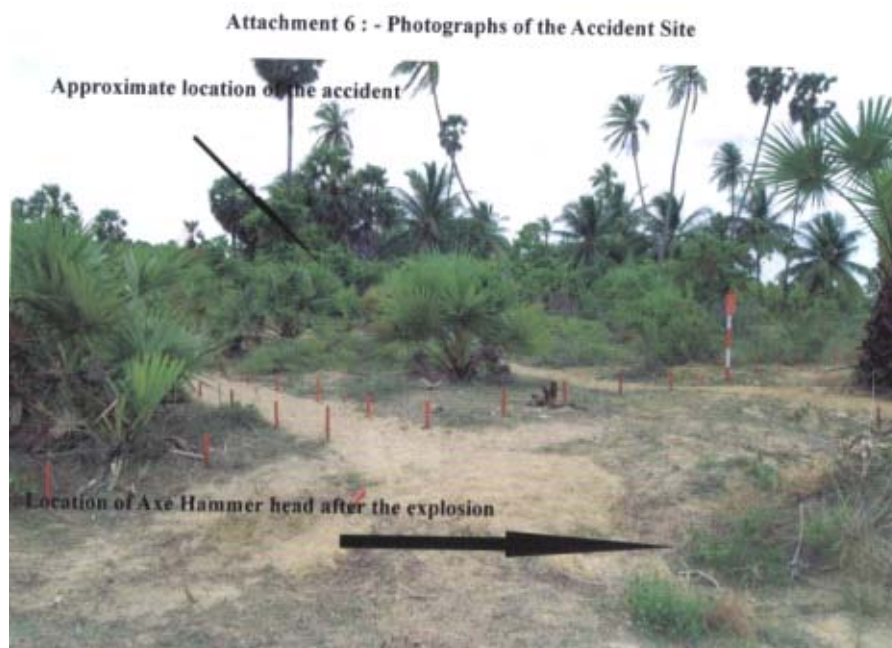
Damage to equipment: “Axe hammer metal axe head shorn off by blast”.



[The picture shows the head of the “Axe hammer” broken from the handle and with the corner burned off by the blast.]

“The mine detonated leaving a crater approx 50cm across and 25 cm deep.”

The ground was recorded as soft and flat. The weather was cloudy and hot. The vegetation was light bush.



[The picture above shows the sandy accident site.]

The last QA visit had been on 28th of August 2003.

The victim was a trained deminer and medic.

The axe hammer was "used for excavation of lane 1m wide".

The victim was wearing a visor and body armour.

Comment: Damage to PPE was minimal. Only the visor showed signs of having been affected by the blast, with light scratch marks on the outside. This was certainly due to the lightness of terrain and the absence of any large rocks or stones. The head of the axe hammer was sheared off by the force of the explosion and propelled for approx 15 metres into a safe area, behind the baseline. The deminer's body armour was unaffected by the blast."

2 minutes to first aid, a further 20 minutes to local hospital 10 km away. 30 minutes to final medical treatment facility 15 km away.

Accident reported to national authorities at 14:45 on 17th

Internal report

2 Incident details

On 17/09/03, at 0910hrs deminer V Sriitharan detonated a Type 72 A mine in his lane, whilst conducting 100% excavation. No serious injuries were sustained. The Task Commander, B Christy gave immediate First Aid before the deminer was transported to hospital.

3 Injuries

- Burns to left arm (no danger of further infection)
- Suspected fracture to left elbow (TBC by X Ray)
- Some hearing loss in the left ear
- Symptoms of shock (not serious)

The Deminer is able to hold a conversation and give answers to basic questions.

4. Treatment

The deminer was taken first to Chavakachcheri Hospital where medical facilities were found to be inadequate (No X Ray facilities and only 1 duty doctor), and then to Jaffna Teaching Hospital (JTH), where there was a strike in process and no doctors were available to administer any treatment.

[Demining Group] demining Supervisor, a qualified GP arrived at JTH saw that there were no doctor's available and administered further First Aid to the deminer's left arm. He was then brought to HALO offices on Navalar Road, where The HALO Trust .Senior Medic gave further dressing treatment to the affected left arm. **In his opinion there is no requirement for a MEDIVAC to Colombo.**

5. Further Action

The deminer will be taken to Annaipanthi Nursing Home, Navalar Road Nallur, for X Rays to the left arm, in order to investigate possible fracture of the left elbow joint

The [Demining Group] Sri Lanka Operations Manager and the Demining Supervisor have carried out an accident investigation.

6. Conclusions/Observations and Recommendations

1. Conclusions/Observations:

1.1. *Deminer Error:* The deminer was prevented from gaining easy access to the left hand side of his lane by the presence of the Palmyrah tree. This made it more difficult than usual to excavate down to the minimum depth of 15cm as taught on [Demining Group] manual demining training courses and as laid down in [Demining Group] Sri Lanka Manual Demining Standard Operational Procedures (SOPs): SOP 4 Para 4.8. Although the crater from the explosion caused a large amount of disturbance to the left hand side of the lane, it was still

possible to feel a firm crust of soil only a few centimeters below soft sand. In contrast the right hand side of the lane, where access was easy for the deminer, was fully excavated in the normal and safe fashion.

1.2. *Minefield Supervisors*: The accident was not caused by inexperience or lack of information on the part of more senior staff. The deminer [the Victim] has been employed as a manual deminer since February 2003 and has cleared many mines in the past 7 months of work. He was working along a clearly defined Sri Lankan Army minefield belt and knew that the likelihood of finding more mines was very high. The Task and Section Commanders both had access to Sri Lankan Army minefield records and sketch maps and had walked over the ground on several occasions with the maps and accompanied by the Operations Manager.

1.3. *Interference with the mine's position*: There is a possibility that the mine was disturbed (i.e. tilted) by the growth of the Palmyrah Tree, given the size of the tree and the year that the mines were laid by the SLA (1997). This could have caused the mine to tilt to one side, resulting in a higher chance of initiation by the hammer scraper. However the blast wave appears to have been straight upwards, judging by the damage to the Palmyrah tree. If the mine had been lying on its side, an angled blast wave would probably have been visible on the tree.

1.4. Possible Methods of Initiation:

1.4.1 The deminer's hammer scraper passed over the top of the mine and initiated it with the bottom corner. This is borne out to some extent by the dent on the bottom left corner and the blast markings on the hammer scraper head, which can be traced from the bottom left to the top right of the blade.

1.4.2 The hammer struck the mine full on one side due to reasons given in para 1.3.

1.5. *Lane Placement*: Both the Section Commander and Task Commander should have noted the awkward positioning of the Palmyrah tree and been aware of the impediment that it posed to excavating evenly along the entire length of the deminer's excavation trench. Lane placement should have been adjusted accordingly. In this particular instance it would have been more appropriate to have demined 4 lanes measuring 1m wide **around** the tree before excavating up to it. This is normal practice on all [Demining Group] minefields in The Jaffna Peninsular and individual deminers are taught to excavate around trees and similar obstacles on the manual demining course. By doing so it would have kept the tree in the centre of any excavation lane, thereby preventing a "blind spot" on one side of the lane.

1.6. *Existing Mine Pattern*: A cleared line of mines on the southern side of the tree should have given sufficient warning that a mine was likely to be found where it was and the deminer told to proceed with sufficient care.

1.7. *Medical Facilities*: **Chavakachcheri District Hospital** was not equipped to deal with an emergency of this nature. Had the injuries been more severe there is a real chance that medical negligence could have contributed to victim fatality. When The [Demining Group] Operations Manager arrived at Chavakachcheri Hospital **15 minutes** after the casualty had arrived he was **still waiting** to receive treatment

Jaffna Teaching Hospital (JTH) was experiencing strike action and similarly could not provide a doctor to administer any necessary treatment. Instead The [Demining Group] Manual Demining Supervisor (a qualified General Practitioner) had to dress the deminer's burns himself on arrival at JTH. The [Demining Group] Senior Medic gave further treatment in [Demining Group] Headquarters in Navalar Road, before the deminer was eventually taken to a private nursing home.

1.8.1 *Army CASE VAC facilities*: The SLA put all military flights at the disposal of [Demining Group], which would have been crucial in facilitating an emergency CASEVAC Operation to Colombo

2. Recommendations:

2.1. Manual Demining SOP Ammendment: An "actions on" paragraph be inserted into [Demining Group] Sri Lanka manual demining SOPs detailing the requirement to work evenly and systematically when excavating around the base of trees.

- 2.2. *Disciplinary Action to be taken against Minefield Supervisors:* Both the Section Commander and Task Commander be given final written warnings for failure to closely supervise deminers under their control and allocate lanes correctly.
- 2.3. *Disciplinary Action to be taken against the deminer:* The manual deminer concerned is to be given a final written warning for breach of SOPs.
- 2.4. *CASEVAC SOPs:* A new CASEVAC SOP should be drafted for transport of casualties to Colombo in case of future strike action at JTH.
- 2.5. *Chavakachcheri Hospital:* Should not be used in the event of any future CASEVACs.
- 2.6. *Modifications to Hammer Scraper and excavation drill:* The [Demining Group] will conduct trials with different length of handles and methods of excavation in order to try and guard against over vigorous excavation techniques on individual lanes.
- 2.7. *Contact with JTH:* Daily contact will be made by the Senior Medic of [Demining Group] with JTH, to ensure that Hospital facilities are functioning correctly. In future demining will not take place if there is strike action in JTH.
- 2.8. *Formalisation of CASEVAC Plan with SLA:* The [Demining Group] will enter into formal agreement with SLA over the facility of using military flights for CASEVAC purposes.
- 2.9. *Refresher Training:* All [Demining Group] Manual deminers will undergo re training in the process of excavating around trees.

7. Key timings (summarized – spreadsheet held on record)

- 09:10 Uncontrolled explosion. Deminer given treatment by Task Commander
- 09:15 Ambulance departs for Chavakachcheri hospital. Driver informs Demining group office of accident. Operations manager leaves office for hospital after failing to contact programme manager by mobile phone.
- 09:35 Ambulance arrive at Chavakachcheri hospital. No doctor available.
- 09:57 Operations manager arrives at Chavakachcheri hospital. Victim leaves for JT Hospital.
- 10:25 Operations officer arrives at accident site and conducts investigation. Ops Officer finds hammer head lying 15 metres from accident site. Also finds fragments of mine. Fails to contact Programme Manager by mobile phone.
- 10:30 (Approx) Ambulance arrives at JT Hospital, finds there is a strike and no doctors are available.
- 11:15 Ops officer contacts Programme Manager by mobile telephone
- 12:30 Operations officer sends a qualified [demining group] GP by motorbike to check on the victim.
- 13:15 [demining group] GP calls operations officer to tell of strike at JT Hospital.
- 13:25 Ops Officer arrives at hospital car park to find GP treating victim's burns in the car park.
- 13:40 Programme Manager asks whether further medevac is required. Ops officer says injuries are not serious, based on the GP's opinion.
- 14:45 Programme Manager is told by the NSCMA secretary to conduct the investigation with no parallel external investigation.
- 16:00 Victim admitted to private nursing home for assessment.
- 22:00 Ops Officer visits victim.
- [It can be seen that it took six hours and 50 minutes for the victim to get "treatment" with no surgical facility and no trauma specialist.]

Victim Report

Victim number: 587

Name: [Name removed]

Age:

Gender: Male

Status: deminer

Fit for work: presumed

Compensation: Not made available

Time to hospital: Six hours 50 minutes

Protection issued: Frontal apron

Protection used: Frontal apron, Long visor

Long visor

Summary of injuries:

INJURIES: minor Arm; minor Hearing

COMMENT: See Medical Report.

Medical report

[Under Section 7, Key Timings of the accident report it can be seen that it took six hours and 50 minutes for the victim to get "treatment" with no surgical facility and no trauma specialist.]

[It took six hours and 50 minutes for the victim to get "treatment" with no surgical facility and no trauma specialist.]

History Observation

Lost of left site hearing of ear after landmine explosive. Right site ear hearing also very poor. Left side arm affected. May be dislocation or Fracture in the Elbow Joint. Admitted the Patient to the Annnaipanthy hospital. [Name excised] (General Physician) will see the Patient by 4.00 pm today who need to stay in the hospital for special investigation. I arranged him necessary Facilities.

On my External Examination There is no any External Injury

Thanking You.

Signed Senior Medic

The following details were also in the demining group's internal report on the accident.

Left Elbow: Patient complaining of acute pain in left elbow. X Ray did not show dislocation

Left Ear: No hearing

Right Ear: Hearing drastically reduced

Burns to left Arm: Superficial

An ENT specialist has been arranged to visit the patient at 1600 hrs 18/09/03.

Signed: [Demining Group] Senior Medic. 18/09/03

Analysis

The primary cause of this accident is listed as “*Unavoidable*” because it seems that the deminer may have been working appropriately to his SOPs when the initiation occurred. The secondary cause is listed as a “*Field Control Inadequacy*” because the internal investigation concluded that disciplinary action against the field supervisors was appropriate – because they did not instruct the deminer to clear around the palm tree in a different manner.

The fact that the investigators suggested trials of variants on the tool “Axe hammer” or “scraper” implies that they may have recognised that it was unsafe.

The tool has been involved in a large number of other accidents with this demining group. The “Axe Hammer/Scraper” used in this accident is sometimes referred to by the demining group as a “Trowel” or an “Enxada”. It is actually a mattock with a handle length that varies. In many accidents with this tool the wooden handle shatters as it did in this accident and the tool head landed 15 metres away. If the head had struck the deminer it could have been fatal. See also accidents 15, 18, 48, 53, 313, 327, 330, 439.

Statements

Statement by Injured Deminer

I [Name removed] was working at about 09:30 at Varany Minefield for about 2 meters in my demining lane. As I was demining there was a small Palmyra tree on the left side of my lane. As I passed the tree for about 35 cm there was a sudden blast when my hammer scraper went to the left direction. I was dazed and was surrounded with smoke and dust. My visor was heavily fogged. My first reaction was to see if my hand was there because it was numb. I could not make out what was happening around me. [Name removed] came after some time and took me out on a stretcher. My arms and fingers were stinging very badly and my left ear was not working. Now I am unable to move my left arm and fingers due to a severe pain and my left is completely deaf but my right is manageable. The left side of my head hurts and I feel totally lost at times, like I am in amnesia.

I think that the tree while growing was turn the mine vertically and my hammer scraper initiated it.

[Name removed] Manual Demining Supervisor in Jaffna, gathered this report.

Statement by Task Commander Varany Minefield

I [Name removed] task commander went to mine field at 7.20 Am on September 17th 2003. At about 7.30 we started demining operations. When 3rd shift going on I was supervising 4th lane works all of a sudden a loud explosion heard. When I observed the huge smoke was observed. I also head of the section commander blowing whistle continually. I rushed to the place immediately at the time section commander [Name removed] and one deminer were with me. When I observed the lane where I head the sound the deminer [the Victim] was standing up. I ordered [Name removed] bring the deminer to a safe area. I examined the injured person and found injury on his left arm. Immediately I attended the injury with antiseptic send my driver to inform the incident to office over telephone available in the Varani at 9.20 am I took the injured person to the Chavakachcheri hospital by means of ambulance. I also instructor my going not to work still I got instruction from office during this time my operations manager came to see they made inquiries from me and went to the place where incident occurred. Operations manager took photographs at his instruction we came back to office.

Statement by Section Commander Varany Minefield

I Section Commander [Name removed] while working at Varany Navatkaddu Mine field on 17th September 2003. To Start the 3rd Shift below the whistle and supervised Deminer's Operation in each lanes. At that time my task commander [Name removed] was supervising

at the 4th Lane. During this process a Barbed wire had to be removed near the board indicating land mines. The task commander instructed me to remove the barbed wire. I was doing this job some where in front where the incident took place. I also heard the sound of the explosion. At the time lot of smoke and flames could be seen at that place. I realized an accident has taken place. Suddenly I ordered all deminer to vacate the place and went toward the sight. At the time task commander [Name removed] was beside me.

When I observed the place where the incident took place I noted [the victim] deminer was standing up. Task commander [Name removed] gave instruction to my deminer to go to the lane where incident took place an to bring the injured person. The injured person was given first aid treatment by task commander. During this period I closed the lane the accident occurred with the help of sticks. I also kept the a Deminer at that place. On the instruction of the task commander I took the injured person to the Chavakachcheri hospital by ambulance. While we were in hospital our operations manager came to hospital from Chavakachcheri hospital operation manager ordered to take him to Jaffna hospital. Ambulance driver in the vehicle took him to hospital. Operations manager took me and task commander to the site where incident to place and took many photographs and instructed us to get back to office.

Statement by Deminer 10 Section

I Deminer [Name removed] working at Varany Navatkaddu Mine field on 17th September 2003. After the interval 8.40-8.50 we started the work .A sudden explosion heard. When I saw smokes and flames. At the time I heard task commander's whistle sound. Suddenly I was close the lane and went out. When I came out I saw task commander and section commander was there. And I was look where incident occurred injured person [the Victim] was there. On the instruction of section commander I went inside the lane and carried the injured deminer. The injured person was given first Aid treatment by task commander. After that took the injured person to the Chavakachcheri hospital by Ambulance.

Statement by deminer 2 - 10 Section

I Deminer [Name removed] working at Varany Navatkaddu Mine field on 17th September 2003. After the interval 8.40-8.50 we started the work .A sudden explosion heard. When I turn my head back side I saw smocks flames on [the Victim]'s lane. At the time I heard task commander's whistle sound. Suddenly I was close the lane and went out. When I came out I saw task commander, section commander and [Name removed] was there. And section commander went inside the lane. The injured person was given first Aid treatment by task commander. After that took the injured person to the Chavakachcheri hospital by Ambulance.