

# DDAS Accident Report

## Accident details

<b>Report date:</b> 14/07/2011	<b>Accident number:</b> 438
<b>Accident time:</b> 13:20	<b>Accident Date:</b> 19/02/2006
<b>Where it occurred:</b> LK-241 SL, Periyavillan village, Valikamam, Southwest Jaffna	<b>Country:</b> Sri Lanka
<b>Primary cause:</b> Unavoidable (?)	<b>Secondary cause:</b> Field control inadequacy (?)
<b>Class:</b> Handling accident	<b>Date of main report:</b> 20/02/2006
<b>ID original source:</b> None	<b>Name of source:</b> Demining group
<b>Organisation:</b> [Name removed]	
<b>Mine/device:</b> P4 AP blast Fuze	<b>Ground condition:</b> not applicable
<b>Date record created:</b> 16/03/2007	<b>Date last modified:</b> 14/07/2011
<b>No of victims:</b> 1	<b>No of documents:</b> 1

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b> SL Grid 0113885 0507031	<b>Coordinates fixed by:</b>
<b>Map east:</b>	<b>Map north:</b>
<b>Map scale:</b>	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b>
<b>Map name:</b>	

## Accident Notes

no independent investigation available (?)  
inadequate communications (?)  
visor not worn or worn raised (?)

## Accident report

The demining group made their internal investigation available in 2011. Its conversion into a DDAS file has led to some of the original formatting being lost. Text in square brackets [ ] is editorial. This record will be revised if more information becomes available.

The document is reproduced below, edited for anonymity.

File date: 20.02.2006

## **INVESTIGATION REPORT OF DEMINING ACCIDENT IN JAFFNA 19 FEBRUARY 2006**

### **Summary**

Accident date: 19th February 2006, Time: 13:20

Location: Mine collection point in minefield LK-241, SL Grid 0113885 0507031, Periyavillan, Valikamam Southwest, Jaffna

Event: P4 MK1 booster blast in the hands of the team leader

Casualty: [the Victim] [Demining group] ID No 170, Position: Demining team leader

Organisation: [Demining Group]

### **Introduction**

This report covers the findings of an internal investigation into the circumstances and events of an accident to a team leader, [the Victim] who was carrying out mine clearance duties with [Demining Group] in Jaffna District on the 19th February 2006.

### **History of the Minefield**

The minefield LK-241 is a defensive barrier laid by the Sri Lankan Army (SLA) some time during 1993. The mines were laid in accordance with methodology employed widely by SLA Engineers throughout Sri Lanka protecting a Forward Defence Line (FDL). Most of the terrain is open ground with few trees and bushes. The mine type laid into the minefield is Pakistan P4 MK1 type antipersonnel mine.

Some demining has taken place by untrained independent local labour. According to the survey information ([Demining group] minefield report LK-241, task ID JA-11), the local labour removed and destroyed 50 mines in the past from the area. During their clearance process, an accident occurred to one of the local labour. Further, 5 bulls have stepped on a mine in the minefield. The [Demining group] had been carrying out mine clearance activities for 2 months on this task when the accident occurred.

### **Details of the Accident**

On 19th February 2006 at 13:20 hours, team leader [the Victim] was carrying out an inventory of found boosters of P4 MK1 antipersonnel mines in a mine collection point located in the minefield LK-241, in Periyavillan village. He had started the work day normally at 08:00 and ever since worked 50 min at a time following a ten minute break and had a 30 min breakfast break in the minefield as well.

Already in the morning start up, together with the team members he discovered new piles of emptied shells of the P4 antipersonnel mines and boosters lying on the ground in the minefield, abandoned to the area by an unknown person. The bodies of the antipersonnel mines were emptied from explosive content but the separate bottom plates of the mines still contained the explosive booster button attached to them. Team leader [the Victim] ordered the section leaders to collect the boosters carefully into plastic buckets from the cleared lanes of the minefield and transport them to the mine collection point.

Altogether 75 boosters were collected from these piles during the work day and moved to the mine collection point. At 13:20 hours, he was counting the total amount of the found P4 boosters before being transported away from the minefield, to be later disposed in a central demolition site. While handling one of the P4 boosters, it exploded in his hands.

The explosion caused injuries to his left hand and right hand fingers and to the top of his left eye. The team members heard the explosion and the emergency whistle blast by the section leaders. The paramedics arrived to the minefield in a minute and gave first aid to [the Victim]. The operational headquarters was informed about the accident. The medical procedure continued with an evacuation by an ambulance to the Jaffna Teaching Hospital according to the [Demining group] standing operating procedures.

In the hospital, a doctor conducted a full medical examination, treated minor injuries in his face and X-ray photos were taken. At 16:30 hours, the Victim's hands were operated.

### **Demining Site**

In the internal investigation, the demining site was found well laid and marked in accordance with the [Demining group] SOP. The site was non-operational in the late afternoon of the inspection and therefore the tools, personal protective equipment and recovered explosive accessories had been removed from the accident location.

As anticipated, there was no crater caused by the blast in the mine collection point due to the small explosive content and the fact that the explosion occurred in the hands of the team leader. Altogether four piles of abandoned emptied plastic bodies of the landmines were witnessed on site, containing approximately remains of 200 P4 MK1 antipersonnel mines. The boosters with yet explosive content, had been transported by the demining team from the site away to the [Demining group] mine store.

[Demining group] will leave the investigation of this unauthorized and dangerous, private disarming project to the police. There are rumours of an unknown young person appearing to the area after [Demining group] demining team is not present on site, and by using a small mammoth [sic], the stranger removes antipersonnel mines and removes explosives from them. [Demining group] has handed out a report to the police in the issue.

### **Personal Protective Equipment**

It is a standard practise in the [Demining group] to wear personal protective equipment whilst operating in the mined area. At the time of the incident, the injured team leader was wearing standard uniform trousers and shirt, leather canvas boots and a fragmentation vest. The team leader indeed was found not wearing a visor. The team leader experienced minor injuries to his head and injuries to his hands. There is not protective gear to safeguard the hands of the demining personnel in use in the demining. Furthermore, it is advised not to wear gloves when handling landmines, to ensure a firm and yet gentle grip of the device in hand, in order to not drop it during handling.

### **Training and Experience of Personnel**

The responsibilities of [Demining group] demining personnel are clearly outlined in [Demining group] SOP for Sri Lanka. Team Leader [the Victim] was trained as a deminer in October 2003 and has been given bi-annual refresh training sessions until the present day. He has operated as a section leader from July 2004 and as a team leader March 2005. He is an experienced deminer and a leader.

### **Medical Support**

The [Demining group] methodology detailed in Sri Lankan SOP calls for at least one trained paramedic working on the site to be able to provide first aid. In this case, there were two paramedics and an ambulance ready and waiting with a designated driver. The level of medical support and evacuation available on the day of the accident was appropriate to the needs and was in accordance with the SOP.

## **Contributing Factors of the Accident**

### **1. [Demining group] SOP**

The internal investigating team finds that the methodology detailed in [Demining group] SOP did not contribute to the accident.

### **2. Application of SOP by the team leader involved**

It is the opinion of the internal investigating team that the application of the SOP by the injured team leader, did not contribute to the accident. However, by wearing a visor according to the SOP, occurred facial injuries might have been avoided.

### **3. Command and control structure**

The structure was found to be in order and in line with the SOP. The communication from the field to the operational headquarters was appropriate and accurate, however the investigating team did not witness a phone call taken to the Jaffna Teaching Hospital prior the transportation of the injured team leader. The experienced delay in taking an X-ray photo before the operation, might have been avoided by calling the hospital emergency already from the minefield or during the evacuation. According to the doctor however, the lack of prior communication between the paramedics and the hospital personnel did not affect the treatment.

### **4. Environmental conditions**

There is evidence to suggest that environmental conditions were a contributing factor to the accident, such as:

The unauthorized and untrained person(s) have removed landmines in the area, possibly applying a rough removal method (a mammoth). A rough removal of the antipersonnel mine itself may damage the booster and thereby make it more sensitive.

If the internal components of the mine are damaged prior or during the demining process, mine can function in an unpredicted way.

If the pressurized spring and firing pin have unsuccessfully functioned and are thereby leaning against the explosive button prior to unscrewing the booster, unscrewing it will damage the booster.

Trails of seemingly violent disarming technique of the landmines was witnessed on site. The disarming was carried out by unscrewing the booster from the bottom and cutting the pressure plate off by knife to separate the top and bottom parts of the mine body in order to remove the explosives.

Abandoning the remaining parts of the landmines by throwing them away to the minefield under a direct sunlight. Exposing the booster to a direct sunlight, will have an effect on the booster by heating it up and in theory, make it more sensitive.

## **Conclusions**

The cause of the explosion is unknown. The booster was finally initiated by the hand of the team leader. There is no evidence nor there is a reason in vicinity, why that handling would have been rough. It is common knowledge within the demining team leaders, that the explosive content in the small booster button, is more sensitive than the one used in the body of the mine; in fact it is called an initiation charge in the training. However, a normal handling of the booster should not be dangerous at all.

One or many of the environmental conditions mentioned above, may have caused the booster explosion.

Internal Investigation Team, Jaffna 20.02.2006

Signed [Name removed] Operations Manager, [Name removed] Internal Quality Assurance Officer

Attachments: [held on file]

Annex A: Map of the accident location

Annex B: Photos of injured team leader [showing fragment injuries on the left eyelid, right cheek, left upper lip and chin. See medical report.]

Annex C: Statement by the injured team leader

Annex D: Photos of disarmed antipersonnel mine plastic bodies

Annex E: Medical Report page 1

Annex F: Medical Report page 2

Annex G: P4 MK1 AP mine: Excerpt from Jane's Mines 2002

### **Victim Report**

**Victim number:** 585

**Name:** [Name removed]

**Age:**

**Gender:** Male

**Status:** supervisory

**Fit for work:** not known

**Compensation:** Not made available

**Time to hospital:** Not made available

**Protection issued:** Frontal apron

**Protection used:** Frontal apron

Long visor

#### **Summary of injuries:**

INJURIES: minor Face; severe Hands

AMPUTATION/LOSS: Fingers

COMMENT: See Medical Report

#### **Medical report**

"...injuries to his left hand and right hand fingers [hands required surgery] and to the top of his left eye".

A medical report included the note:

Code	Meaning	Check mark
A	Abrasions	X
AM	Amputation	X
B	Burn	
D	Dislocation	
F	Fracture	
FR	Fragment	X
H	Haemorrhage	X
IF	Internal Haemorrhage	
L	Laceration	
LO	Loss of function	X

And recorded that the tips of fingers had been amputated.



## Analysis

The primary cause of this accident is listed as *Unavoidable* because the investigators found that the Victim was working correctly to approved SOPs and that the detonation was most likely caused by unpredictable damage to the fuze rather than inappropriate handling. However, the Victim was not wearing a visor and as a field supervisor it was his responsibility to set a good example, so the secondary cause is listed as *a Field Control Inadequacy* because the Victim was not wearing the required PPE.

The demining group's internal investigation appears to show a professional desire to be objective which is appreciated, and the quality of the report is unusual for Sri Lanka, where detailed accident reports are rare.