

# DDAS Accident Report

## Accident details

<b>Report date:</b> 12/01/2008	<b>Accident number:</b> 467
<b>Accident time:</b> 08:43	<b>Accident Date:</b> 05/09/2006
<b>Where it occurred:</b> Sheydayee, Karokh District, Herat Province	<b>Country:</b> Afghanistan
<b>Primary cause:</b> Management/control inadequacy (?)	<b>Secondary cause:</b> Field control inadequacy (?)
<b>Class:</b> Handling accident	<b>Date of main report:</b> 10/09/2006
<b>ID original source:</b> 01/03/031-339	<b>Name of source:</b> UNMACA
<b>Organisation:</b> [Name removed]	
<b>Mine/device:</b> Fuzes	<b>Ground condition:</b> dry/dusty rocks/stones
<b>Date record created:</b> 12/01/2008	<b>Date last modified:</b> 12/01/2008
<b>No of victims:</b> 5	<b>No of documents:</b> 3

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b> Not recorded	<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

inadequate medical provision (?)  
inadequate training (?)  
visor not worn or worn raised (?)  
protective equipment not worn (?)  
inconsistent statements (?)  
safety distances ignored (?)

## **Accident report**

The reports of this accident were made available in August 2007 as a PDF file. Its conversion to a text file for editing means that some of the formatting has been lost. The substance of the BoI and the demining group's internal investigation report are reproduced below, edited for anonymity. The original PDF file is held on record. Comments in [ ] are editorial. The demining group involved in this accident is referred to as the "International demining NGO" throughout this database entry.

[See "Related Papers" for a report of multiple civilian accidents, including fatalities, that occurred as a result of inadequate demolitions by this International demining NGO at the same site around this time.]

## **Accident report**

AMAC HERAT INVESTIGATION ON EXPLOSIVE ORDNANCE ACCIDENT AT SHAYDAEE AMMUNITION COLLECTION POINT, HEART, ON 5TH SEPTEMBER 2006

Investigation conducted by: [Name removed], Field Technical Officer, [Name removed], Area Manager Herat, and [Name removed], Operations Associate. Herat

From: AMAC WESTERN REGION

To: PROGRAMME MANAGER, UNMACA, Kabul, Afghanistan Report submitted: 10 September 2006

EXPLOSIVE ORDNANCE ACCIDENT AT SHAYDAEE AMMUNITION COLLECTION POINT

References:

- A. Afghan Mine Action Standards (AMAS)
- B. Initial Incident report [Demining NGO]
- C. TTN 9.43 'Usage of PPE by EOD BAC teams'

## **SUMMARY**

Organisation: [International demining NGO]

Team: WAD Team 2

Supervisor: [Name removed]

Location: Shaydaee Storage Area, Herat

Approximately 08:40hrs 5th September 2006

Incident: Explosion

## **Details of Accident**

At approximately 08:40 hrs on Tuesday the 5th September 2006, [International demining NGO] Weapons and Ammunition Disposal (WAD) Team 2 were involved in an accident at Shaydaee Ammunition collection point east of Herat City in the Western region.

The accident occurred while the team were separating bulk storage boxes of fuses into serviceable and unserviceable stacks. The accident occurred in the open.

Injuries to the team members occurred when a box of M6 82mm Russian Mortar fuses exploded when being moved.

[Victim No.1] led the team and as a result of the explosion all five members of his team received minor injuries.

The injured personnel received first aid and were evacuated to hospital. All injured personnel are recovering.

A copy of the [International demining NGO] SITUATION REPORT submitted by [Name removed], WAD Manager is attached at ANNEX A. This report details the injuries to team members.

### **Incident Site Worksite layout**

The worksite is rectangular in shape approximately 8.5m long and 3m wide. Boxes of various types of fuses enclosed the worksite. The Team members had formed a chain and were passing boxes of fuses from the bottom of the worksite to the team leader, whom we believe, was located toward the other end of the rectangle near or slightly past the halfway point. The team leader was deciding which boxes would go into serviceable and unserviceable stacks. Each box contains 25 M6 fuses.

The ground is dry powdery soil with some small patches of dead grass and some small rocks. The weather was warm and sunny. All stacks of boxes are in direct contact with the ground and are not on raised platforms. [Photographs of the site are in the Internal demining group investigation report that is appended to this report.]

### **Other information**

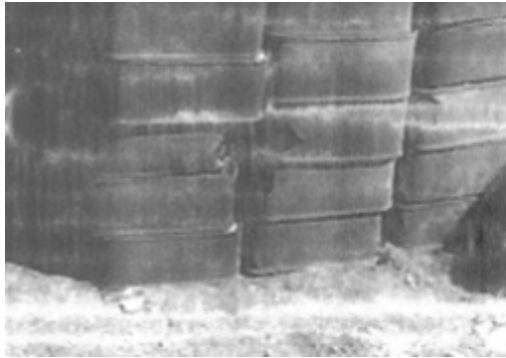
As a result of the explosion the team leader lost the tops of two of his fingers. This indicates that his hand was close to the point of detonation and that he was handling or had his hand in very close proximity to the box when it exploded. Up to five fuses are believed to have detonated. Debris, consisting of partially damaged and undamaged fuses, pieces of the container and associated packing materials were spread in a fan shaped debris cone up to distances of 25m from the point of detonation. Most of the fuses are located within 10-15m, however one was found 20m from the site. The most distant pieces of debris were two portions of the container found at the top of the cone approx 25m away. All the full fuses were found with safety pin intact.

Other portions of the container packing material and some fuses were found in the general location of the accident. Some debris was spread in all directions as the personnel away from the direction of the blast also suffered minor injuries. There was a secondary explosion.

### **Secondary explosion**

General area of the accident site showing debris and location of secondary explosion

It is probable the secondary explosion occurred as a fuse ejected from the box struck the long stack of fuse boxes on the right side of the worksite, detonating and opening two containers. The explosion was not sufficient to cause sympathetic detonation. If this occurred the situation could have been far more serious.



Stack of other fuses on right side of worksite showing secondary explosion located at rows two and three from the bottom

This diagram shows the location of fuses, other debris, serviceable and unserviceable stacks and the general fan shaped debris zone. Two small metal fragments of the fuse box are the furthest items at approximately 25m. [Pencil sketch removed]

### **Team member Statements**

The statements of all five personnel are attached and should be read before proceeding.

All five statements are attached at [See Statements]. The statements have been translated from Dari to English for this report. The original Dari versions will be sent with hard copy via pouch.

### **Assessment of statements and other considerations**

The statements indicate the team members were approx 1 m to 1.5m apart when passing the fuse boxes to each other.

All team members said they were passing the boxes and not throwing them. There is no direct evidence to disbelieve this statement, but it is possible they were throwing the boxes.

The team leader said he was inspecting each box as it came to him. Prior to giving his written answers to questions asked by [Name removed], he mentioned to him in general conversation that the box was originally located on the bottom of the stack, and he turned it over and noticed rust. He also said that he removed some of the rust, trying to open the box, exposing some of the fuses, when he heard a small noise and then placed it on the ground. It then exploded. When formally asked the questions he changed his statement. There is evidence on the ground at the site that the box was very close to the ground when the accident occurred. The ground near the Team leader's location shows signs of having been subjected to shockwave.

While removing rust should not be enough of an external influence to detonate a fuse with safety pins, consideration should be given to the amount of pressure or other action the team leader put on the rust or fuses, which may have exacerbated the state of the fuses having already been exposed to weather elements entering the box over time. Add to this the fact it was in direct contact with the bare ground during that time and in extreme weather conditions during Afghanistan's summers and winters. These elements could have affected the fuses.

Although it is unknown exactly how long these fuses have been in this location it must be a reasonable amount of time for the bottom of the box to have rusted through. It is very possible other boxes of fuses are in a similar state.

As the box was on the bottom of the stockpile it was also subjected to the weight of all the other boxes on top of it. There is no proper storage of these items and they are exposed to the elements 24/7. There are many boxes of fuses showing signs of weight effect and this is borne out by nose and booster impressions on the top and bottom of the use boxes. These boxes are normally placed in the unserviceable stacks.

The investigation team have no explanation for the first noise the team leader and one other person heard before he placed the box on the ground. The fuse has a simple point detonating nose cap and spring loaded firing pin mechanism that strikes the internal detonator attached to a 6.5mg Tetryl booster protruding from the base. There are no other pyrotechnic elements in the fuse. It should not have made a pre detonation noise.

Even though weather is mentioned as a major consideration, Tetryl is a very stable high explosive and requires the shockwave from a detonator to cause it to detonate or, as shown by the secondary explosion a considerable external force. It does not spontaneously detonate. If by chance a booster had been corroded by weather and the detonator was exposed it would still normally require an invasive external action to cause detonation.

If the team leader did hear a noise and consider the box unsafe to handle why did he place the box on the ground at his feet? Surely if he believed the box a possible threat this would not be considered a safe thing to do. Why didn't he place it away from his team, or at least tell them to run away and get out of the area as he placed it on the ground? This part of his story is inconsistent with what would be expected to be a reasonable reaction to a possible explosive situation. I can think of no one who would calmly place a box or fuses on the ground after hearing a noise coming from the box.

It is also possible the box was dropped and the team leader attempted to catch the box or exposed it to some other form of external shock. We will never know and there is no direct evidence to determine exactly what the sequence of events was. All this would have happened within a few seconds.

A manufacturing fault could also be a consideration, however the fuses have been transported and moved many times in the past without incident.

As mentioned earlier in this report there was a secondary explosion when one of the fuses struck adjacent fuse boxes on the right side of the worksite. One team member said he heard two explosions. This could account for that recollection.

## **Equipment**

The team were not wearing PPE during this operational task. The injuries to the head, chest and abdomen would have been avoided if PPE were worn.

This is a contravention of the AMAS 'Chapter 22 Personal Protective Equipment' and 'TTN 9.43 Utilization of PPE by EOD and BAC teams'. As a result of this the AMAC Herat has given an electronic copy of the TTN to the [International demining NGO] Herat. The TTN was issued to all IP after a Technical Working Group in February 2006, which was attended by [International demining NGO].

## **Reporting procedure**

The AMAC became aware there had been an accident approximately one hour after the incident when all injured personnel were being treated at the hospital.

The correct procedures in accordance with the AMAS Chapter 24 Reporting and Investigation of Demining Incidents were not carried out by [International demining NGO]. The relevant excerpt is set out below:

#### *6.1. Initial Demining Incident Report*

The Initial Demining Incident Report' is to be made in two parts:

a. Part one is the formal notification of the incident to the AMAO by radio or telephone. This is in addition to the immediate notification required from the demining worksite in the case of an accident. The formal notification advises of the incident and as many details as are currently available. All incidents are to be reported within 30 minutes of the incident occurring.

As a result of this the AMAC has redistributed an electronic .pdf copy of the latest version of the complete AMAS to the [International demining NGO] Herat.

### **Conclusions**

1. The accident appears to be a combination of factors;
  - a. Extreme long-term weather conditions affecting the integrity of the fuse box,
  - b. Possible weathering effecting fuses in the box,
  - c. Excessive pressure acting upon the fuse box located on the bottom of a stack,
  - d. It is possible the team leader placed excessive external force on the box or the box was dropped, or excessive force was used to open the box.

Some or all of these factors may have contributed to the accident. The exact cause will never be known.

2. Injuries to some members of the team would have been prevented if PPE were worn. PPE was not worn by team members and is in direct contravention of AMAS and UNMACA TTN.
3. [International demining NGO] did not conduct proper reporting procedures in accordance with AMAS Chapter 24 Reporting and Investigation of Demining Incidents. Although none of the injuries were life threatening, timely passage of information to the AMAC in any accident situation could mean the difference between life and death. These procedures have been established for that very reason, to allow the resources of the AMAC/UNMACA to assist with rapid medical evacuation if required.

### **Recommendations**

1. [International demining NGO] and ANBP reassess the current criteria for selection of serviceable and unserviceable fuses.
2. All members working in munitions removal/separation at the Shaydaee complex must wear PPE.
3. [International demining NGO] reassesses the number of personnel required for specific types of tasks.

4. [International demining NGO] and ANBP develop a risk and disposal strategy to deal with all remaining varieties of fuse boxes within Shaydaee. Once developed present the plan to UNMACAJAMAC for scrutiny.
5. All [International demining NGO] WAD teams undergo refresher training on the safety and handling of explosive stores.
6. [International demining NGO] conduct training to all country staff on the contents of all chapters of AMAS and UNMACA TTN documents, particularly their responsibilities on reporting procedures and PPE.

ANNEXES:

- A. [International demining NGO] Situation Report
- B. Statements of WAD Team 2 (5)

**ANNEX A: [Demining Group] SITUATION REPORT**

Accident at Sheydayee Ammunition Collection Point, Herat

DATE: 5th September 2006, TIME: Approx. 08:40, LOCATION: Sheydayee ACP, Herat Province

CASUALTIES: Five

FATALITIES: Nil

**SUMMARY:**

Members of WAD team 2 were sorting boxes of M6 fuses (for 82mm mortars) at Sheydayee, when an explosion occurred. All 5 people in the immediate vicinity were injured. They subsequently received treatment at Sheydayee from [International demining NGO] medical staff, and were then transported to Herat City Hospital.

All five patients are stable, however one individual has received some wounds to his lower abdomen which are currently being carefully monitored. There is possibly the requirement for an explorative laparotomy to repair some abdominal viscera.

Two Senior Medics from the [International demining NGO] teams are currently at the hospital and have everything that they require. There is currently no requirement for a further casualty evacuation.

**INITIAL INVESTIGATION**

A brief investigation was conducted at the site. There are some 15 fuses scattered around the area, which have not detonated, but which appear intact. This indicates that the explosion may have consisted of up to 5 M6 fuses which detonated sympathetically. Initial interviews with [International demining NGO] staff do not explain the cause of the explosion.

A further investigation will be conducted in due course. Work at Sheydayee will not recommence until this investigation has been completed.

[Name removed], WAD Manager, The [International demining NGO], Herat

## **Letter commenting on inquiry**

To: [Name removed], Director [International demining NGO] Kabul, Afghanistan

[Name removed] Mohan ANBP/Operations Manager

From: [Name removed], Chief of Operations/Deputy Program Manager, MAPA/UNMACA, Kabul

File: Ops/05/08-01

Date: 14 September 2006

**Subject: Investigation report on explosive ordnance accident in Shidayee Ammunition collection point, Herat province.**

Reference: Investigation report of UN-AMAC West dated: September 10, 2006, File: 01/03/031-339.

On 5th September 2006 an UXO accident occurred to the [International demining NGO] WAD-02 in Shidayee Ammunition Collection Point (ACP) while they were busy in separating bulk storage boxes of fuses into serviceable and unserviceable stacks, causing multiple minor injuries to the team members.

The investigation team outlined the following recommendations to be considered and action taken accordingly.

### **Recommendations**

1. [International demining NGO] and ANBP reassess the current criteria for selection of serviceable and unserviceable fuses.
2. All members working in munitions removal/separation at the Shaydaee complex must wear PPE.
3. [International demining NGO] reassesses the number of personnel required for specific types of tasks.
4. [International demining NGO] and ANBP develop a risk and disposal strategy to deal with all remaining varieties of fuse boxes within Shaydaee. Once developed, present the plan to UNMACA/AMAC for scrutiny.
5. All [International demining NGO] WAD teams undergo refresher training on the safety and handling of explosive stores.
6. [International demining NGO] conduct training to all country staff on the contents of all chapters of AMAS and UNMACA TTN documents, particularly their responsibilities on reporting procedures and PPE.

Best regards, [Name removed].

## **Internal accident report**

The [International demining NGO], Afghanistan



Accident Report (non-fatal)

Herat Province, Karokh District, Sheydayee Ammunition Collection Point

### **Task Information**

a: Site: Sheydayee Ammunition Collection Point, Herat

b: Directions: Sheydayee ACP is 11 km east of the outskirts of Herat city.

c: Task Code: 62

### **Executive Summary**

At 08:43 on the 5th September 2006, an uncontrolled explosion took place inside Sheydayee Ammunition Collection Point (ACP), while [International Demining NGO] WAD (Weapons and Ammunition Disposal) Team 2 was sorting boxes of M6 82mm mortar fuses.

Five [International Demining NGO] employees suffered various natures of fragmentation wounds. All received first aid on the scene and were then transported to Herat City Hospital for further treatment. All bar one member of the team were released before the end of the day.

As a safety measure, all [International Demining NGO] teams working in Herat were instructed to stand down, pending an investigation.

Following the incident, the site of the blast was investigated. Six M6 mortar fuses were found to have detonated, while the remaining 19 undamaged fuses were found scattered around the site. Each box contains 25 fuses.

The blast is likely to have been caused by some contact with the ground. It is not known for sure whether the box was actually dropped, although there is evidence that the blast occurred in close proximity to the ground (fragmentation on surrounding boxes).

The boxes were being sorted according to MoD classifications into separate 'serviceable' and 'unserviceable' piles. The box which exploded appears to have been crushed, or pressed, presumably during transport to the ACP, which probably contributed to the fuses having been unstable.

None of the team members were wearing PPE.

[International Demining NGO] will need to review its SOP on the requirements for wearing PPE when handling boxed items. The current [International Demining NGO] SOP states that PPE should be worn when handling fused ammunition. It makes no mention of boxes of individual fuses. There appears to have been some confusion in this respect.

The management of boxed fuses classified as 'unserviceable' will also need to be reviewed.

### **Background Information**

The [International demining NGO]'s Weapons and Ammunition Disposal (WAD) project is charged by UNDP (ANBP) with the disposal of old and poorly maintained ammunition which could pose a threat to public safety and security. Amongst other tasks, [International Demining NGO] WAD teams have been involved in clearing the unserviceable ammunition from the ACP at Sheydayee. [International Demining NGO] was deployed to Sheydayee by ANBP after a directive by General Hotak, to speed up the clearance of Sheydayee so that the

site may be closed as soon as possible. The site itself is outside of Herat city, but is secured only by a single chain link fence and a 24 hour MoD skeleton guard. All serviceable ammunition will be moved in due course to a new Bulk Live Ammunition Holding Area (BLAHA) south of the Herat airport in 207th Corps.

A housing project for families of ex-military personnel is being established some 150 metres from the ACP, which is another pressing factor for the clearance of this site.

The Sheydayee ACP was established as a temporary holding area in 2003, where ammunition procured from the DDR and DIAG processes in the provinces of Herat, Farah, Badghis and Ghor would be stored until sorting was possible. The site contains items ranging in size from 5.45mm Small Arms Ammunition (SAA), to 500kg aircraft bombs.

[International Demining NGO] WAD teams are funded through UNDP and by bilateral donors including US DoS, UNDP, Norway, Germany and the UK.



Illustration 1 — Photograph of Sheydayee general layout

Ammunition in Sheydayee has been delivered by ANBP, [other Demining NGO] and [International Demining NGO] teams over the past three years. A substantial proportion of the ammunition on this site has been declared unserviceable by MoD and [International Demining NGO] staff. Originally, it was sorted into blocks of specific calibres, but over the past three years, the system has deteriorated and the ammunition blocks have become muddled and as such are difficult to properly assess. Illustration 1 shows the typical layout of much of Sheydayee. Much of the ammunition is over 20 years old, and in many cases it has changed hands more than once. Whilst there is no way of knowing the history of any individual item, it is clear that most of the ammunition encountered by [International Demining NGO] has not been properly stored, transported or accounted for. [International Demining NGO] teams have removed and destroyed the most volatile and potentially re-useable items from the site already. Almost all the ammunition that now remains is boxed, although most boxes have been opened at some stage.

The scene of the accident is no different from any of the other areas in the ACP; the ammunition is old, but boxed, and stacked in piles. [International Demining NGO] teams have been removing up to 1000 fuses, both boxed and unboxed, and in various states, on a daily basis since the start of May 2006.

Since 1st May 2006, [International Demining NGO] teams have removed and destroyed over 1000 metric tonnes of unserviceable ammunition from Sheydayee ACP.

#### **Accident Details and Immediate Actions**

On 5th September, [International Demining NGO] deployed one WAD team (WAD 2) to Sheydayee ACP. This team was tasked to sort serviceable boxed fuses from unserviceable, in order to allow for better preparation of demolitions. The team members were passing boxes to each other along a line. The boxes were being removed from a large stack of unsorted M6 mortar fuses and passed hand to hand. At the end of the line, the decision was made whether the boxes were serviceable or unserviceable, and the box would be put in the relevant pile.

INS No 915, [Name removed] was the [International Demining NGO] supervisor on the task at the time, but was some distance from the site of the blast. Colonel [Name removed], a member of ANBP Ops Group MoD staff was also on the site, although at the time of the blast he was at the container at the main entrance of Sheydayee. The [International demining NGO] had previously requested that a member of MoD be present at Sheydayee on a daily basis, to ensure that the [International Demining NGO] teams were sorting items correctly.

At approximately 08:43, a blast occurred, resulting in the injuring of five members of WAD 2. Three of the team record hearing an initial 'crack' sound, then the actual blast itself. The five members of the team at the site immediately moved as far away from the site of the blast as possible.

### **Medical Procedures and Casualty Evacuation**

Initial treatment was given to the personnel by the onsite paramedic, Ins No 3720, [name removed], who approached the scene of the accident, checked the condition of the injured men and organised the removal of the Team Leader, Ins No 1746, [Victim No.1], by stretcher. He was joined by the Senior Medic, Ins No 4433, [Name removed], who had arrived in a [International Demining NGO] ambulance and was at the main gate of Sheydayee by the time the stretcher had been moved.

Both medical staff tended to the casualties on site, and approximately 20 minutes later, the injured personnel were transported to Herat City Hospital.

### **Communications**

Radios and mobile phones are not allowed to be brought into Sheydayee, in order to minimise the possibility of radio signals, or static electricity being transmitted and initiating one of the items within.

All communications devices are kept in the container at the main entrance. The Sheydayee storeman ensures that all items are handed in, before a person may enter the site.

There was a 17 minute delay between the accident and initial contact between [the medic] and the WAD Manager. In his interview, [the medic] states that he was organising the treatment of the casualties and their movement to the ambulance. He contacted the WAD Manager by telephone once he had the situation under control.

[Name removed], ANBP AST-2 Associate was informed of the accident 42 minutes after the blast occurred by the [International Demining NGO] WAD Manager.

### **Accident Investigation**

Inspection of the accident site 5-6 September 2006

The [International Demining NGO] investigation was led by WAD Manager [name removed] ([International Demining NGO] EOD Class 2, equivalent to IMAS level 3). An initial investigation was conducted on 5th September with [name removed] (ANBP AST Associate), and a second was conducted on the morning of the 6th September with UNMACA representatives [names removed]. Moreover, on the 10th September, [International Demining NGO] Senior WAD Officers [two names removed] also visited the site.

On 8th September, all the casualties were interviewed by WAD Manager [name removed]. [Victim no.1] was interviewed briefly, but the interview was terminated until the subject had properly recovered. He was re-interviewed by [name removed] on 10th September 2006.

### **Physical Evidence**

The area surrounding the blast was scattered with fuses, both damaged and undamaged, the location of some of which indicated the direction of the blast. Some disturbed ground was evident at the approximate scene of the blast, as well as some low level fragmentation on the boxes of fuses to either side of the worksite. Discarded boxes indicate the rough location of the team members who were handling boxes at the time. Boxes were being removed from [a] stack, and being passed along in a line to either the pile of boxes on the left (serviceable), or to [a] small pile (unserviceable). In the [detonation] area, the ground was slightly disturbed, with remnants of fuses scattered in close proximity.

Some blood was discovered on the stack of unsorted boxes. Following interviews with the staff on the scene of the accident, this blood reflects the route taken by [Victim no.1] following the blast.

### **Box Specifics**

The box, which contained the fuse(s) that detonated, was found on the ground in the area of the blast. Close inspection reveals the possibility that the actual box had been pressed, thus damaging the fuses. It is speculative as to whether this damage occurred during the blast or at some time prior to the event; however other boxes from the same pile showed some evidence of pressing and compacting. [Victim no.1] testifies that the bottom of the box was badly rusted, and that the outline of the fuses could be easily seen. These factors are likely to have made the fuses more volatile and likely to detonate. Note the outline of a fuse cap at the corner of the damaged box shown in illustration 4.

[An unclear photograph showing the imprint of the fuzes on the box has been removed.]

The position of the fuses found on the site following the accident helps to demonstrate the likely position of the box at the time of the blast. It is most probable that one of the corners of the box made contact with the ground. This corner was also the point where the fuses were at their most volatile, having been pressed. The majority of the fuse caps and damaged fuses were found to the right hand side of the pile of unserviceable ammunition, whereas a line of undamaged fuses were found leading from the location of the blast to the left hand side of the stack of unserviceable ammunition.

Illustration 5- freehand sketch of the layout of the site after the detonation, demonstrating the fuse layout and probable direction of the blast. [Illegible, removed.]

### **Injuries:**

A significant proportion of [Victim no.1]'s injuries were inflicted to the right side of his body. He was probably stepping forward with his right leg at the time the explosion occurred. While the fragmentation peppering of his body indicates his close proximity to the blast, it also explains the relative lack of injuries to other team members; [Victim no.1]'s body deflected the blast. The blast happened while [Victim no.1] was en route to the stack of unserviceable ammunition having taken the box from [Victim no.4]. The injuries to his fingers indicate that his hand was probably close to the box, but whether he actually had his hands on the box at the time of the blast is not clear. Either way, some contact forced the detonation of at least one fuse, which subsequently kicked out the remainder and scattered them over the area.

Illustration 6- [Victim no.1] after medical treatment. Bandaging and blood stains indicate the majority of the shrapnel and blast absorbed by the right side of his body. [See Medical report for picture.]

### **Fragmentation Damage:**

There is evidence of fragmentation on both the unsorted and the serviceable stack of fuses. The fragmentation is limited, so it is possible to calculate the approximate location of the box when it exploded.

Illustration 7 - The picture shows the result of a fuse being ejected onto the stack of boxes and then detonating. The mark on the left corner of the box is actually from a piece of fragmentation which travelled through the box, and punched a hole outwards. [Photograph removed].

Punctures have been made in the boxes as a result of low-flying fragmentation, which is most likely to have occurred if the fuses detonated at a low level.

### **Witness Statements:**

The testimony from the personnel involved in the accident was the same; the team were passing unsorted boxes in a line in order to sort the serviceable from unserviceable. At some point a blast occurred (there was an audible click before the explosion), the team members scattered and were subsequently treated by paramedic staff.

The click sound before the blast is likely to have come as a result of the box being dropped or hit against something which resulted in the detonation of the fuses. It is considered extremely unlikely that the fuses initiated without any contact at all. Although all the staff testify that they were passing single boxes to each other, and carrying them with both hands, the position of an unserviceable box close to the detonation site reveals the possibility that [Victim no.1] may have actually been carrying one box in each hand; alternatively this box could have been dropped by another team member in his haste to evacuate the scene. The Team Leader does not specifically recall the incident and as such may have dropped or partially dropped a box.

### **Conclusions**

The blast probably consisted of an initial fuse detonation, when the box made contact with ground, which was followed by the subsequent kick out and sympathetic detonation of 5 other fuses, which had been pressed while inside the box. The remaining 19 fuses were blown out, but not detonated.

Whatever happened to force the blast was most likely to have been a result of human error, the most probable error being a dropped box. Whether this was caused by carrying multiple boxes, carelessness, tripping over something on the ground, or carrying the box in one hand is purely conjecture.

The team was not wearing PPE. [International Demining NGO] SOP (see Annex B) state that PPE must be worn when handling fused ammunition. The SOP does not mention boxed fuses.

The team had not been adequately briefed on the task and had failed to effectively distribute the operators to minimise risk and maximise efficiency. By deciding the state of the boxes (serviceable or unserviceable) after they had been handled multiple times, by having too many people working in very close proximity, and by having the unserviceable ammunition pile further away than was necessary the team was at greater risk than needed.

### **Recommendations/Actions**

All [International Demining NGO] WAD teams will undergo refresher training as to when PPE is required.

The SOP will be amended to state clearly that PPE is to be worn when handling boxed fuses

All teams will be instructed that when carrying any boxes of ammunition, they will carry said box with two hands. Under no circumstances may individuals hold a box in one hand.

On similar tasks, teams will be broken up into smaller groups, to reduce the risk of multiple casualties.

On similar tasks the classification of serviceable and unserviceable shall occur at the start of the sorting process. The aim shall be to minimise the movement of the unserviceable ammunition. The treatment of the unserviceable ammunition will need to be reconsidered.

Reporting of an incident at any site must be done within minutes of the incident occurring. There are usually personnel available who are capable of using a phone or radio. During monthly Casualty Evacuation practice, more emphasis will be made on the initial reporting procedures.

The accident site will be cleared of kicked out fuses which will be destroyed in due course. The boxes that may have been damaged will be left, either to be destroyed in situ at a later date, or to be moved by [International Demining NGO] mechanical assets.

Supervisors will be briefed on these points in detail in the next WAD meeting on 18th September 2006.

## Victim Report

<b>Victim number:</b> 623	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> supervisory	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not recorded
<b>Protection issued:</b> None	<b>Protection used:</b> None

### Summary of injuries:

minor Leg

severe Abdomen

severe Arms

severe Hands

severe Head

severe Leg

AMPUTATION/LOSS: Fingers

COMMENT: See Medical report.

### Medical report

No formal Medical report was made available.



The Victim's injuries were listed in the Internal demining group investigation as:

"Three Fragmentation wounds to forehead. One of these wounds has forced his right eye to close. although the doctors are confident that no foreign bodies entered the eye and that this is just associated swelling

"Deep laceration to left bicep (approx. 3cm deep). No arterial damage.

"Approximately half a centimetre was shorn off from two of the fingers from his right hand (2nd and 3rd fingers).

"Left hand and forearm fragmentation injuries

“Deep lacerations to right side of lower abdomen and top of thigh (close to groin). Following X- Rays, there is some fragmentation lodged in these wounds. Hospital personnel are monitoring closely and may operate before the end of the day.”

“...There is possibly the requirement for an explorative laparotomy to repair some abdominal viscera.”

## Victim Report

<b>Victim number:</b> 624	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not recorded
<b>Protection issued:</b> None	<b>Protection used:</b> None

### Summary of injuries:

severe Arm

severe Hand

COMMENT: See Medical report.

### Medical report

No formal Medical report was made available.

The Victim's injuries were listed in the Internal demining group investigation as:

“Received a deep cut to the inside joint of his right arm. Artery was not cut. Bleeding was successfully stopped at Sheydayee.

“Fragmentation wound to back of right hand. X Ray indicates that fragmentation is still embedded.”





## Victim Report

<b>Victim number:</b> 625	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not recorded
<b>Protection issued:</b> None	<b>Protection used:</b> None

### Summary of injuries:

severe Chest

severe Hand

severe Legs

COMMENT: See Medical report.

### Medical report

No formal Medical report was made available.

The Victim's injuries were listed in the Internal demining group investigation as:

"Multiple shallow fragmentation wounds to chest.

"Multiple shallow fragmentation wounds to the front of right and left thighs.

"Cut to right calf.

"Deep cut to left hand."

## Victim Report

<b>Victim number:</b> 626	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> supervisory	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not recorded
<b>Protection issued:</b> None	<b>Protection used:</b> None

### Summary of injuries:

minor Head

severe Chest

severe Leg

COMMENT: See Medical report.

### Medical report

No formal Medical report was made available.

The Victim's injuries were listed in the Internal demining group investigation as:

"Cut to interior of left calf.

"Fragmentation to left pectoral. X Ray indicates some fragmentation still embedded.

"Single wound to forehead. Hospital staff do not consider it to be serious."

## Victim Report

<b>Victim number:</b> 627	<b>Name:</b> [Name removed]
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> not known
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not recorded
<b>Protection issued:</b> None	<b>Protection used:</b> None

### Summary of injuries:

severe Legs

COMMENT: "Deep cuts to front of right and left lower calves." No Medical report was made available.

## RELATED PAPERS

### Related civilian accidents

[The file of this accident was included in the Bol \*.pdf file. It is relevant because the civilian accidents happened in the same area, and may imply that the demining group did not learn appropriate lessons from the incidents. Civilian names are deliberately left in place.]

File: 01\*03\*030/06

To: [Name removed] Area Manager UNAMAC Herat

From: [Name removed] OPSA, UNAMAC Herat

Date: 08 March 2006

Subject: Non- Demining Accident Report

AMAC west is investigated the accident point and had interviewee with local elders about accidents, which was happened on 16 Feb 2006. An accident was happened on civilian around the CDS of Deh-Moghul village of Karukh district; reported by ICRC Mine Data Victim Section. In result of the accident a civilian was injured.

Since begging of [the beginning there has been] one civilian killed and 8 more injured because collecting the kicked out UXOs that has made the area around contaminated. The people used to collect the scraps for sell and some time they tried to take the copper that is inside the AGS grenades out and caused the accident.

According to local elders during year 2005 when the demolitions were conducted by [a different demining NGO], few kicked out UXOs were observed the area around the CDS but since [International demining NGO] has started demolition in the CDS, there are so much

kicked out UXO everywhere around the CDS are visible. According to locals, the children and youths are going to the area after demolition is done and start collecting the scraps remnant of demolition and sometime the accident occur on them.

The locals continued that we are facing with problem with these explosions and we shall ask the agency that conduct demolition to stop it.

The list of those who either killed or injured as result of scrap collection are as below:

1. Nazir Ahmad S/O Mohd Afzal Injured
2. Ibrahim S/O Abdul Ghani. Injured
3. Nasir S/o Amir Khan. Injured
4. Ghus Udin S/O Khodad. Injured
5. Ferwz S/O Abdul Samad. Injured
6. Hakim S/O Khan Mohd. Injured
7. Hussain S/O Aga Jan. Injured
8. Sayf Ullah S/O Ghus Udin. Injured
9. Abdul Hadi S/O Abdul Khaliq: Died

These UXOs kicked out on 08 March 2006 during [International demining group] Demolitions.



### **Fatal civilian UXO accident - initial investigation report**

[Civilian names are deliberately left in place.]

From IMSMA report:

E 062.47210

N 34.41133

Fixed by GPS

Azizukllah son of Abdurrahim [was killed].

Civilian UXO Accident The accident occurred about 1 Kilometre away from [International demining NGO] Ammunition Disposal Site (CDS).

### **Description of incident/accident**

According to villagers, on 5th September 2006 at around 16:00 hrs, the victim local found a 100mm artillery from the areas around of [International demining NGO] CDS in Karukh district and attempted to make it empty for sell. Reportedly the accident has occurred when, the victim would hit the UXO on a big rock and caused him death with heads and hands cut off.

#### **CASEVAC intentions**

Following to the accident, a passer by that could be another scrapper saw the victim's dead body and informed the villagers of the accident. Then the people take the body of victim to the village for funeral.

#### **Historical Information:**

Since May 2006, [International demining NGO] selected the area as Central Disposal Site and has had continual ammunition demolition there. The reason for selection of this CDS is because [of] the location of Shaydaee ammunition collection point. The CDS is located in eastern side of Shaydaee ammunition collection point is easy and safer for transportation of ammunition.

#### **Conclusion:**

The UXO, which caused the accident has been a kicked out from **Monday 4th September 2006** demolition. On the investigation day, two more kicked out 100 mm munitions were observed on the area around the CDS (one was laying on the ground and the other was carrying by a local).

[International demining NGO] failed to properly sweep the area around of the CDS after the demolition on Tuesday 5th Sep and also could not manage to apply an effective demolition system to minimize the kicked out.

As stopping scrap collection is now getting to be a challenge, so [International demining NGO] was to prevent the accident by applying an appropriate risk management in their routine daily operations.

The scrapper [recovery of scrap from ordnance] is a country wide problem and difficult to be stopped because they sell the collected metal fragmentation.

#### **Recommendations:**

[International demining NGO] is to properly search and clear the areas around of their CDS before any further demolitions

An effective method should be exercised by [International demining NGO] in their routine demolitions to bring the chance of ammunition flying to zero.

A strong supervision to CDS by the [International demining NGO] operations staff is recommended.

## **STATEMENTS**

### **Statement / Witness Report 1**

Taken at 09:00 am on 7th September 2006.

[Victim no.1], WAD EOD Team Leader [Victim No.1], two years demining experience.

Question-1: What was your activity, while the accident happened?

Answer-1: I would segregate and sort out the fuse boxes before the accident occurred.

Question-2: Please explain, what was the cause of the accident?

Answer-2: While I received the last box from my colleague, I did check and then put it on the ground; suddenly I heard a small sound like bang and after that I do not know what happened.

Question-3: Whether the SOP allow a team leader to take part it physical EOD work in the field as an EOD operator?

Answer-3: I am a team leader and I have to check the damaged boxes segregate the serviceable and unserviceable items.

Question-4: If you worked as EOD operator then who was controlling the EOD operators?

Answer-4: I am team leader and I have to control them.

Question-5: Please explain as EOD professional, if fuses located inside the box and having safety pin, whether it is exploded by itself until an external factor not disturb it?

Answer-5: The fuse, which has fitted with safety pin, would never expect to explode.

Question-6: Did you attempt to open the fuse box before the accident occurred?

Answer-6: No.

Signature at Herat Public Hospital on 07 September 06.

**Note:** At the beginning, the injured team leader verbally told that when he received the fuse box it underneath was rusted and I tried to open the box and see what are inside that suddenly heard a small voice. He continued that he was afraid and put the box on the ground but I do not know what happened later on (I cannot remember it).

### **Statement and Witness Report 2**

[Victim no.4], WAD EOD Operator, in demining since June 2005.

Question-1: What was your activity, while the accident happened?

Answer-1: I was waiting for other fuse box to handle, suddenly the accident happened.

Question-2: Please explain, what was the cause of the accident?

Answer-2: In my opinion probably the booster part of the fuse has previously received an impulse.

Question-3: Were you throwing the fuse boxes to your colleague instead safely giving to his hands?

Answer-3: No

Question-4: Are you an EOD skilled man?

Answer-4: Yes I am an EOD professional.

Question-5: What was cause of the fuses explosion, while having safety pin?

Answer-5: Could be previously impulse or hit with something.

Question-6: Did you have PPE (Personal Protective Equipment) during the work?

Answer-6: No, we did not have PPE during the work.

Question-7: Where was your location while the accident happened?

Answer-7: My location was just near to my team leader.

Question-8: What was the distance between each EOD Operator while passing the fuse boxes to each other?

Answer-8: We had 1.5 meters distances with each other.

Question-9: What is your recommendation to prevent further happening such accidents?

Answer-9: I don't have anything specific for such accidents and I am surprised how the accident occurred.

Signed at the [International demining NGO] Sub-office in Herat on 06 September 06.

### **Statement / Witness report 3**

[Victim no.2], demining since Feb 2004

Question-1: What was your activity, while the accident happened?

Answer-1: I was separating serviceable and unserviceable fuse boxes.

Question-2: Please explain, what was the cause of the accident?

Answer-2: While we were passing the boxes to our team leader suddenly the accident occurred but I do not know about the cause of accident.

Question-3: Were you throwing the fuse boxes to your colleague instead safely giving to his hands?

Answer-3: No, we were passing them.

Question-4: Are you an EOD skilled man?

Answer-4: Yes I am an EOD professional.

Question-5: What was cause of the fuses explosion, while having safety pin?

Answer-5: In my opinion the continual pressure from other boxes on the top to the exploded box could be the reason.

Question-6: Did you have PPE (Personal Protective Equipment) during the work?

Answer-6: No, we did not have PPE during the work.

Question-7: Where was your location while the accident happened?

Answer-7: My location was toward the east side of the accident point toward the fuses being passed.

Question-8: What was the distance between each ECD Operator while passing the fuse boxes to each other?

Answer-8: About 1m to 1.5m apart.

Question-9: What is your recommendation to prevent further happening such accidents?

Answer-9: My recommendation is to all personal to work much carefully.

#### **Statement and Witness Report 4**

[Name removed] WAD EOD Medic Operator, in demining since December 2005.

Question-1: What was your activity, while the accident happened?

Answer-1: I was sorting the fuse boxes.

Question-2: Please explain, what was the cause of the accident?

Answer-2: I don't know the cause of accident because I was far away from accident point.

Question-3: Why were you throwing the fuse boxes to your colleague instead safely giving to his hands?

Answer-3: We did not throw the boxes.

Question-4: Are you an EOD skilled man?

Answer-4: Yes I am an EOD professional.

Question-5: What was cause of the fuses explosion, while having safety pin?

Answer-5: I just heard the small explosion first then a big explosion but I do not know the cause of accident.

Question-6: Did you have PPE (Personal Protective Equipment) during the work?

Answer-6: No, we did not have PPE during the work.

Question-7: Where was your location while the accident happened?

Answer-7: My location was to the east side of the accident point, it means second person from original fuse place.

Question-8: What was the distance between each EOD Operator while passing the fuse boxes to each other?

Answer-8: We had 1.5 meters distances with each other.

Question-9: What is your recommendation to prevent further happening such accidents?

Answer-9: My recommendation is that all personal should work much carefully.

Signed at the [International demining NGO] Sub-Office in Herat on 06 September 06.

#### **Statement and Witness Report 5**

[Victim no.3], WAD EOD Operator, two years experience.

Question-1: Please explain regarding the accident, which took place on 05 Sep 06.

Answer-1: The accident occurred during passing the boxes on to each other but myself did not understand how the accident occurred.

Question-2: How were you throwing the boxes to your colleague?

Answer-2: Just passing the fuse boxes to each other by hand.

Question-3: In your opinion, what can be the cause of the accident?

Answer-3: Probably because of external factor, impulse or friction.

Question-4: Where was your location before the accident happened?

Answer-4: I was located near to my team leader.

Question-5: What is your recommendation to further prevent such accidents?

Answer-5: The personnel must work slow and carefully.

## **Analysis**

The day before this accident, the International demining NGO had carried out a demolition of UXO that spread items around widely. Spread munitions were not collected and a civilian died when trying to take one apart (see Related papers). This civilian accident was just one of 10 that had occurred since this particular International demining NGO had taken over responsibility for destroying the munitions. Their failure to clean up “kick-outs” following demolitions was the direct cause of these accidents and implies an unprofessional carelessness.

The civilian accidents were followed by this event - in which personnel were, according to the demining group’s own internal investigation, operating without PPE, with inadequate separation of personnel or safety distances and with working procedures that needed to be changed. They had allowed a problem with kick-outs injuring civilians to become persistent and not addressed it. As a result, the primary cause of this accident must be listed as a “Management control inadequacy” because the demining group had not put appropriate training and procedures in place to make their own staff (or local people) safe. The secondary cause is listed as a “Field control inadequacy” because the demining group’s own country staff had not recognized and corrected these failings despite the many accidents involving local residents.

The “Inadequate medical provision” listed under “Notes” refers to the fact that the medic was engaged in moving fuzes elsewhere at the site and it was only luck which prevented his having being involved in the accident. This International demining NGO makes it a policy to use medics for clearance tasks to avoid them “sitting around”.