

# DDAS Accident Report

## Accident details

<b>Report date:</b> 19/05/2006	<b>Accident number:</b> 331
<b>Accident time:</b> 07:45	<b>Accident Date:</b> 19/11/2000
<b>Where it occurred:</b> Ward 7, Chilseton Village, Kabul	<b>Country:</b> Afghanistan
<b>Primary cause:</b> Management/control inadequacy (?)	<b>Secondary cause:</b> Inadequate training (?)
<b>Class:</b> Missed-mine accident (survey)	<b>Date of main report:</b> 15/12/2000
<b>ID original source:</b> MMI/06/00	<b>Name of source:</b> IGM/DK
<b>Organisation:</b> Name removed	
<b>Mine/device:</b> Ordnance	<b>Ground condition:</b> ditch/channel/trench
<b>Date record created:</b> 20/02/2004	<b>Date last modified:</b> 23/03/2004
<b>No of victims:</b> 3	<b>No of documents:</b> 2

## Map details

<b>Longitude:</b>	<b>Latitude:</b>
<b>Alt. coord. system:</b> Task No. 01-0101-007	<b>Coordinates fixed by:</b>
<b>Map east:</b>	<b>Map north:</b>
<b>Map scale:</b> MF669	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b>
<b>Map name:</b>	

## Accident Notes

dog missed mine (?)  
mine/device found in "cleared" area (?)  
safety distances ignored (?)  
inadequate training (?)

## Accident report

Access to the MAC accident data was denied by the MAC programme manager. A brief summary of the accident was provided by a professional researcher who had access to the original documents. That summary is reconstructed below Following the summary is the internal investigation made by an International Demining NGO (the NGO made its report available on request). Under related papers is a follow up to the Board of Inquiry report obtained from another source.

## **Accident report 1**

[Map references are not recorded in the MAC records, so the minefield task number (when available) is entered in the Map Ref field at the Incident/Accident tab as an identifying feature.]

The accident occurred in an area that had been surveyed by a [Survey agency] team (No.13) on 17/08/00. It had been cleared by [Dog agency] team No. 6 one or two days before the accident. The area was grazing land that had been sown with mixed AP and AT mines. A TM41 anti-tank mine had been located and destroyed six meters South of the accident site and an investigation of a dog indication had taken place six meters North of the accident site.

The Section Leader from this half team was absent from the site for 4 days prior to the accident and had not returned to work. Thus the team mostly worked without senior supervision, and had done so on the day the device was missed. Weather conditions were cold with strong winds and the team had been told to deploy to the clearance lanes but not to start work.

The three victims were resting in a ditch 10 meters outside the mined area just before the accident. The Team leader and assistant team leader had passed within a few metres of the ditch shortly before the accident but seen nothing to explain what occurred.

The investigators identified the device as a Chinese 82 mm DK-82 HEAT (type 65) recoilless projectile. It is not recorded how the identification was made. The device, which requires disturbance to initiate, was either on or just below the ground surface at time of detonation.

The investigators determined that the likely cause of explosion was that the Victims discovered the device by accident as they were resting in the ditch. One dog handler was attempting to remove it from the ground by the tail fins at the time of the explosion, and caused the explosion. Touching of devices in this way is against the SOP of the organisation. It was thought possible that the men intended to remove the device to the nearby minefield so that it could be "found" later that morning.

The investigators determined that Victim No.1 was in a kneeling or standing position facing the detonation at a distance of around 1-2 meters. Victim No.2 was in a squatting position facing the detonation at a distance of 50-75 cm. Victim No.3 was closest to the blast, in a squatting position at a distance of few cm.

Victim No.1 received fatal fragmentation wounds to his chest and both shoulders.

Victim No.2 received fatal fragmentation wounds to his chest, both shoulders, and lower leg including a traumatic amputation of his right leg. He also had fragmentation wounds to his right thigh, groin and right eye.

Victim No.3 suffered severe blast and fragmentation injuries but survived for 12 hours. His left leg below knee was traumatically amputated. He received fragmentation in his right leg above the knee, and severe blast and fragmentation injuries to the back of his thighs, groin, anus, abdomen, face, right wrist and forearm, upper left arm. There was Blast and smoke damage to his clothing.

Following the accident there was "rapid" preliminary medical treatment on site followed by a ten minute drive to hospital, which suggests an evacuation time of less than 1 hour. The actual time was not recorded.

## **Conclusion**

The accident was caused by a missed UXO which was disturbed by the three men, who were resting in a ditch in a cleared area 10 m short of the minefield at the time. The accident occurred in an area that the team had cleared one or two days before the accident. That clearance had not been supervised and lack of supervision was viewed as a significant contribution to the device being missed.

The accident was considered to have been "preventable".

## **Recommendations**

Dog handlers are not trained for recognition and associated hazards of mines and UXO, and should receive such training.

Next of kin should be paid full compensation, pay, pension and other allowances due to the men.

An independent analysis and report was provided by a [demining NGO] team on 25 November. Access to the original report was not made available.

## **Accident report 2**

The following report was made available by a third party International Demining NGO (not the demining group involved in the accident).

The report is dated 22/11/00.

The report covers the accident that occurred in MF #669 Kabul, on Sunday 19/11/00 at 07:45

## **Background**

On request from a Technical Advisor UN Mine Action Programme for Afghanistan on the 21<sup>st</sup> of November 2000 the undersigned hereby state our observations and conclusions, on accident occurred 07.45 19/11/00 in mine field #669, based on briefing by [the Technical Advisor], technical evidence collected at the accident point, investigation of the accident point and personal education and knowledge on Explosive Ordnance (EO) and medical evaluation of casualties.

## **Technical evidence**

[The Explosive Ordnance] found at the accident point was the base plate of a Russian PG-9 rocket. This had been hit by the explosion but is not believed to have been involved in the initiation.

Found approx. 25 m West (285 degrees) of the accident point was the tail part of an EO. Length ca. 220mm, diameter 82mm, Olive Drab colour and made of steel. The front part of the item was slightly bent (ca. 20 degrees) with 10 gas ports, the rear part had 6 gas ports and the tail boom tube, usually containing the propellant, was empty.

The 4 aluminium stabilizing fins at the rear end were present but had minor damage. At the rear the retainer cup holds the ignition cartridge, which was intact. The ignition charge inside the ignition cartridge was burnt out along with the propellant but the two caps covering the ignition charge were completely undamaged, i.e. not hit by a firing pin.

Several steel fragments approx. 1mm thick were found at the site.

The EO found at the accident point has been positively identified as the tail boom assembly of a Chinese 82mm DK-82 (type 65) HEAT recoilless grenade. The fibre disk (thrust augments) was missing.

The DK-82 contains 438g of RDX explosive and weighs a total of 3,50kg.

The DK-82 is designed for a smoothbore recoilless gun (i.e. B-10) and the HEAT version is intended for use against armoured targets.

The stabilizing fins are made of Aluminium, the tail boom is steel, the back part of the grenade, containing the shaped charge and the fuse, is made from 4-6 mm steel and the front part, the windshield, is made from 0,5-1 mm steel. The latter delivered the fragments found in the area. The 4-6mm steel would not cause fragments as it is in full contact with the charge, which causes the steel to disintegrate completely.

The DK-82 is furthermore fitted with a Type 4 Fuse (Impact-Inertia-Fired, Base Detonating fuse) made of plastic and completely concealed in the base part of the grenade.

The Type 4 fuse has a cocked striker. A cocked striker is a striker/ firing pin/ detonator that is held in a ready-to-fire position under spring tension and could function when disturbed or released.

The gun firing the DK-82 grenade is a "line of sight" weapon meaning that the grenade's trajectory is an almost straight line as opposed to a mortar that has a curved trajectory.

## **Crater**

The crater caused by the detonation was at the time of investigation *not* the original size as at least 3 investigation teams (1. Senior Management of [the Demining group involved] on the morning of the accident, 2. RMAC with Director of [Demining group], the Deputy Director of ODP and a delegation from the Ministry of Internal Investigations Branch in the afternoon after the accident 3. The Board of Inquiry with {MAC TA} on the 21<sup>st</sup> of November) had been digging in it before our arrival.

The crater was approx. 40 by 40 cm and 30 cm deep at the time of investigation but it had been measured immediately after the accident to a depth of 10 cm, which was documented by a photo.

No burn marks (as expected this late after the accident) could be found on the ground.

The crater indicates a surface detonation with the DK-82 grenade in a position parallel to the surface and pointing in a direction of around 105 degrees.

A subsurface detonation would have caused a larger crater and an air detonation would have caused significantly different kinds of signs on the ground.

The position of the grenade must have been parallel to the surface as a detonation of the grenade in a position pointing downwards below 0 degrees would have shown a significant, small but deep hole in the crater due to the shaped charge in the grenade.

Had the grenade been detonated in a position pointing upwards in an angle above ca. 20 degrees the tail part and the fins most likely would have been very damaged and either the tail had been located in or very close to the crater or the tail would have bounced off the ground thus leaving significant signs in the surface soil. The latter signs were not found.

The grenade detonating, pointing in a direction of 105 degrees is indicated by, amongst other things, the bearing from the crater to the point where the tail part was found.

## **Casualties**

The casualties had been buried when we arrived on the 22<sup>nd</sup>, the autopsy report was not present, and the photos taken of the casualties were of poor quality and not comprehensive.

We were though, able to determine the nature of the injuries on 2 of the 3 casualties.

We were briefed that the casualties were located to the Southeast of the detonation and they were said to be placed beside each other on a tarpaulin.

Placed from East to West were the 1<sup>st</sup> de-miner, the 2<sup>nd</sup> de-miner and the dog handler.

We were presented 3 pairs of shoes from the casualties and the tarpaulin they supposedly sat on.

There was somewhat insecurity about the positions of the casualties. No eyewitnesses had so far reported having observed the accident point immediately before or during the explosion.

## **Trauma observed**

The 1<sup>st</sup> deminer had injuries on his left arm and on the left side of his chest. It was not possible to determine the exact nature of the injuries based on the photos. All photos were taken from the right hand side of the de-miner. The shoes said to be worn by this person were without signs of the explosion.

The 2<sup>nd</sup> deminer had severe trauma to the front of his lower, left leg, to his groin and to the front of his upper body. The shoes said to be worn by this person showed minor signs of the explosion.

The dog handler had severe trauma to both lower legs, some trauma to the upper legs, to the lower right arm, the front upper, left arm and to the front of the left shoulder and finally some injuries to the face. Both shoes said to be worn by this person showed severe signs of the explosion. Especially the right shoe showed signs of burns and was damaged more than the left.

## **Trauma indications**

The dog handler has been in a squatting position, facing the explosion with his right foot closest to the explosion. Indicated by the burns his right foot has been within a few centimetres of the grenade during the explosion.

The dog handler was the person closest to the explosion but based on the injuries to his upper limbs, he has not been holding or touching the grenade with his hands during the explosion.

The 2<sup>nd</sup> de-miner has been in a squatting position, facing the explosion. The shoes and the lower limb trauma indicate a distance farther away from the explosion than the dog handler – possibly about 50 cm.

The 1<sup>st</sup> de-miner has been in a position where he had the explosion in front and to the left of him. He has been in a distance of 1, possibly 2 meters from the explosion.

The damage to the tarpaulin indicates the explosion right in front of its centre in a distance of 20 to 30 cm. The tarpaulin was flat on the ground to the Southeast of the explosion.

## **Conclusion**

The following conclusion is the opinion of [the two independent investigators from the International Demining group] and is based on the above-mentioned facts and evidence.

## **Accident**

At some point in Mine Field #669 the [Demining group] Team decided to stop work due to weather conditions and 2 de-miners and a dog handler sought cover in a ditch.

They spread out a tarpaulin and lay down to rest. Right in front of the tarpaulin, close to the bottom of the ditch, was a UXO. All three sat up to have a look at it and they formed a semicircle around the grenade. The 1<sup>st</sup> deminer kept 1,5m distance from the grenade, probably sitting or squatting, but the 2<sup>nd</sup> deminer and the dog handler sat in a squatting position right next to it.

The dog handler moves his right foot and touches the grenade, which rolls a few centimetres and detonates, injuring and killing all three persons present.

This *could* have been what led to the accident.

## **Questions**

This leaves a few questions open:

Q: Was the grenade fired from a gun?

A: No!

1. The primer has not been struck by a firing pin.
2. There are no indications on the tail boom assembly indicating the grenade should have been propelled through a gun barrel.
3. The B-10 recoilless gun firing the DK-82 would have been placed West of the accident point just North of the village, thus firing over the Survey Team present in this area.
4. With the line-of-sight trajectory of the DK-82 it would have been almost impossible to hit down into the ditch.
5. The B-10 or similar would have been transported through the city, fired 1 shot and transported out again in broad daylight without any witnesses.

Q: How did the DK-82 end up in the cleared area in the ditch?

A:

1. It was in the ditch when the three persons entered (But why wasn't it then discovered by the dogs or the personnel?)
2. One of the three involved carried it to the ditch.
3. It was thrown in to the ditch while the three persons were there.

Q: How was the detonation initiated?

A:

1. The grenade was damaged, e.g. by small arms fire, and the fuse was left very sensitive to mechanical impact as it has a cocked striker.
2. The TNT had due to age and temperature changes released Nitro-glycerine and was therefore very sensitive to heat and mechanical impact.

Q: Was the UXO booby-trapped or dropped on a missed mine?

A: The crater does not indicate a mine detonating in the ground unless this would have been very small (i.e. PFM-1 mine or similar) and buried very superficial.

### **Facts**

1. The DK-82 was not fired from a gun but was initiated and detonated in situ.
2. The DK-82 detonated on the surface in front of the three casualties.
3. The dog handler was the person closest to the explosion and none of the casualties were lying down at the time of the explosion.
4. Dog handler and 2. deminers were squatting at the time of the explosion.
5. None of the three casualties were holding the grenade at the time of the explosion.

### **Victim Report**

<b>Victim number:</b> 415	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> DECEASED
<b>Compensation:</b> not made available	<b>Time to hospital:</b> 1 hour
<b>Protection issued:</b> Helmet	<b>Protection used:</b> none

Thin, short visor

**Summary of injuries:**

INJURIES

severe Chest

severe Shoulders

FATAL

COMMENT

See medical report.

**Medical report**

The independent accident investigation included the following medical observations:

The 1<sup>st</sup> deminer had injuries on his left arm and on the left side of his chest. It was not possible to determine the exact nature of the injuries based on the photos. All photos were taken from the right hand side of the deminer. The shoes said to be worn by this person were without signs of the explosion. [Photographs not made available.]

**Victim Report**

<b>Victim number:</b> 416	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> DECEASED
<b>Compensation:</b> not made available	<b>Time to hospital:</b> 1 hour
<b>Protection issued:</b> Helmet	<b>Protection used:</b> none
Thin, short visor	

**Summary of injuries:**

INJURIES

severe Chest

severe Eye

severe Genitals

severe Leg

severe Shoulders

AMPUTATION/LOSS

Leg Below knee

FATAL

COMMENT

See medical report.

### **Medical report**

The independent accident investigation included the following medical observations:

“The 2nd deminer had severe trauma to the front of his lower, left leg, to his groin and to the front of his upper body. The shoes said to be worn by this person showed minor signs of the explosion.”

### **Victim Report**

<b>Victim number:</b> 417	<b>Name:</b> Name removed
<b>Age:</b>	<b>Gender:</b> Male
<b>Status:</b> dog-handler	<b>Fit for work:</b> DECEASED
<b>Compensation:</b> not made available	<b>Time to hospital:</b> 1 hour
<b>Protection issued:</b> Helmet	<b>Protection used:</b> none
Thin, short visor	

### **Summary of injuries:**

#### INJURIES

severe Abdomen

severe Arms

severe Body

severe Face

severe Genitals

severe Legs

severe Shoulder

#### AMPUTATION/LOSS

Leg Below knee

#### FATAL

#### COMMENT

See medical report.

### **Medical report**

The independent accident investigation included the following medical observations:

“The dog handler had severe trauma to both lower legs, some trauma to the upper legs, to the lower right arm, the front upper, left arm and to the front of the left shoulder and finally some injuries to the face. Both shoes said to be worn by this person showed severe signs of the explosion. Especially the right shoe showed signs of burns and was damaged more than the left. “



## Analysis

The primary cause of this accident is listed as a "*Management/control inadequacy*" because the team had been working at the site without the required level of senior supervision for some days. The Victims may have been in breach of SOPs when they initiated the device.

Had appropriate controls been in place they may have been expected to obey the rules more closely. The secondary cause is listed as a "*Field control inadequacy*" because the supervisors in the field had allowed inadequate clearance to take place on previous days, then allowed the resting men to act in breach of basic safety rules.

There is no mention of PPE and, because the Victims were resting, it is presumed that no PPE was worn.

The failure of the MAC to allow access to accident reports means that the report made here is acknowledged to be unsatisfactory. The MAC's follow-up letter was sourced from elsewhere and criticises all the agencies involved in this accident. See Related papers.

## Related papers

The following is a letter from the Director of the MAC to the demining group that missed the mine dated 3<sup>rd</sup> January 2001. The letter has been summarised and edited for anonymity.

**Subject:** Follow-up action on BOI concerning accident involving the deaths of [Demining group] staff at MF No.669 on 19<sup>th</sup> November 2000

The BOI investigation report had concluded that this accident involved a missed device in a cleared area and caused the death of three of [Demining group] staff. The seriousness of this accident cannot be overstated.

In its role as the coordinator of mine action activities for Afghanistan, The Mine Action Centre for Afghanistan has given consideration to the closure of the [Demining group] until the factors outlined in the References have been rectified. As an interim measure the [Demining group] is given a probationary funding agreement period of three months, starting as of the 01 January 2001, to correct the below mentioned areas of concern. If all of these measures have not been corrected by 30 March 2001, UNOCHA funding for [the Demining group] will be terminated.

## The major factors leading to this device being missed

6. The statement of the witnesses and other evidences indicate that the lane between the Bench mark and the Start point had not been checked/cleared by dogs, nor by the survey breaching party. This is a clear ignorance of the minefield survey SOP.
7. Very poor team building relations between survey Team Leader and Assistant Team Leader/Set Leader of Team 9 that directly affected the proper implementation of survey procedures during minefield survey operations.
8. Incorrect judgement for the identification and reporting of task No 025 as an anti personnel minefield. If the survey procedures were carried out correctly this task should be identified and reported as being a minimum metal contaminated task not for a [manual clearance team], but suited for [mine dog clearance].
9. [Demining group] Project-5 Supervisor is also guilty of negligence as he should not allow the driver to drop him very close to the minefield. The vehicle should be parked in the car park which was allocated for this purpose.

MACA concurs with the recommendations made in the investigation report. The following direction is, therefore, given:

1. RMAC Eastern – Reference to Eastern region Initial Investigation on this accident, RM will take action for the re-clearance of this minefield in accordance with para 10 of SOP 7.3.
2. [Demining group] will adjust the database to reflect minefield No 025 as not being cleared until re-clearance operations has been carried out.
3. [Demining groups] should implement and enforce the recommendations given at para a, b, and c of the attached investigation report.
4. [The] Survey Team Leader who is currently working as a survey supervisor should be demoted from his position as a surveyor. Disciplinary action should also be taken against [the Mine Dog] Set Leader and [the] Site Supervisor of project-4 due to poor performance of their duties.

Please advise MACA of the actions and plan for the implementation of the above given directions by 10 Sep 1999.

Signed: Director MAPA