

# DDAS Accident Report

## Accident details

<b>Report date:</b> 18/01/2008	<b>Accident number:</b> 483
<b>Accident time:</b> 09:50	<b>Accident Date:</b> 13/11/2007
<b>Where it occurred:</b> 1.5 km from Kirgochak, Rudaki District	<b>Country:</b> Tajikistan
<b>Primary cause:</b> Field control inadequacy (?)	<b>Secondary cause:</b> Management/control inadequacy (?)
<b>Class:</b> Handling accident	<b>Date of main report:</b> 20/11/2007
<b>ID original source:</b> None	<b>Name of source:</b> TMAC
<b>Organisation:</b> [Name removed]	
<b>Mine/device:</b> Fuze AP blast	<b>Ground condition:</b> not applicable
<b>Date record created:</b>	<b>Date last modified:</b> 18/01/2008
<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>	<b>Coordinates fixed by:</b> GPS
<b>Map east:</b> E 068 29.952	<b>Map north:</b> N 38 13.3700
<b>Map scale:</b>	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b>
<b>Map name:</b>	

## Accident Notes

inadequate training (?)

protective equipment not worn (?)

visor not worn or worn raised (?)

## Accident report

The report of this accident was made available in 2007. Its conversion to a DDAS file has led to some of the formatting being lost. The text of the report is reproduced below, edited for anonymity. The original files are held on record. They do not include the Annexes at this time. They have been requested. Text in [ ] is editorial.

## BOARD OF INQUIRY INTO DEMINING ACCIDENT

AT KIRGOCHAK ON 13 NOVEMBER 2007

Dushanbe, 20 November 2007

## INTRODUCTION

1. A mine accident occurred approximately sixty kilometres south of Dushanbe, one-and-a-half kilometres from the village of Kirgochak, in Rudaki district, at approximately 0950hrs on 13 November 2007.
2. One person was injured in the accident; twenty-year old [the Victim], an inhabitant of Rudaki district, got injuries in his left hand and right eye during 10 minutes' break out of the demining site where he was working as a deminer for [International demining group]. The accident occurred in the result of detonation of Russian manufactured capsule detonator Mines-1. After the accident he was immediately evacuated to the Russian Military Hospital in Dushanbe. See Initial Report of Mine Accident, at Annex A and Landmine Accident Information Bulletin at Annex B.
3. A Board of Inquiry appointed by the Tajikistan Mine Action Centre (TMAC) interviewed all team members, medic, section leaders and team leader as well as [International demining group] managers. The Board also inspected all equipment involved in the accident and visited the task site three times to assess the causes of the accident. See Terms of Reference for Board of Inquiry at Annex C.

## SEQUENCE, DOCUMENTATION AND PROCEDURES OF TASKING

4. The task was selected after a tasking from TMAC to [International demining group] and a subsequent deployment by [International demining group] mine action teams from Dushanbe. [International demining group] first arrived at this task site on 7th November 2006. The team's work in the minefield actually started on 13 November 2006. After a break of some weeks due to poor weather conditions during the 2006-2007 winter season, the teams restarted works at the site on 23 May 2007 and have been working up to 1 August 2007. Then according to TMAC instruction, Kirgochak minefield was temporary stopped and the team was deployed to another site. On 10 October 2007 the demining team has started its activity in Kirgochak again. [International demining group] teams have cleared some 5,510 square metres of land so far at this site and destroyed some 1445 PMN anti-personnel mines there. 46 PMN antipersonnel mines had been destroyed by explosive demolition on the site on 9 November 2007.
5. Works on the site were regulated by [International demining group]'s Implementation Plan, TS IS #425, which provides methodology and a schematic illustration of a clearance method.
6. On Tuesday 13 November the team was checking the cleared area and collecting fragmentation and debris caused by the demolition of mines on the area on 9 November 2007. [From previous experience, it was known that some of the discovered mines were still "pinned", so would not detonate as designed. Detonators and boosters could be expected to be among the debris found after a "line-demolition" of multiple mines.]

## GEOGRAPHY (AREA OF ACCIDENT)

7. The accident occurred near to the village of Kirgochak in the Rudaki District, approximately 60 kilometres south of Dushanbe, at a Tajik Border Force ammunition storage depot, close to the headquarters of the Russian 201st Motor Rifle Division. Lat/Lon N 38 13.3700 E 068 29.952 Elevation is approximately 981 metres above sea level. See maps and satellite images of site and general area at Annex D.

8. The general area where the accident occurred is grassy pastureland, wheat fields and rolling hills. The point of detonation was on an area of ground on a slight incline, at the distance of 13 m. from the minefield. [The picture below shows the general area.]



[The picture above shows the accident site.]

9. Soil in this region is mostly sandy loam or clay, with few stones or other schist.
10. An unsurfaced track/road onto the area is an extension of a metalled road from the main Dushanbe-Kurghonteppa road and the task site is easily accessible along this road.
11. Other than the garrison of the Russian Motor Rifle Division, (mostly unknown to [International demining group] or the Board of Inquiry), the nearest inhabited buildings are at the village of Kirgochak, approximately one-and-a-half kilometres away to the northwest from the accident site.
12. Weather conditions at the site on the day of the accident and during the inquiry were dry (around 16° Celsius) and there was dusty wind and there had been no rain or cold weather during the preceding week. The ground was dry at the time of the accident.
13. Further images and of the site and the general area are shown at Annex E.

#### PRIORITY OF TASK

14. The mines at Kirgochak were placed to protect a weapons storage site, and that "protection" is no longer required. The fencing protecting the minefield has aged and broken in places. The surrounding land is used by local people and there have been accidents involving livestock when they enter the mined area through holes in the fencing.

There is a concomitant risk of people entering the area in pursuit of valuable livestock. Although a rural area, Kirgochak is at low altitude, close to populated areas and only an hour from the city of Dushanbe.

15. The priority of the minefield is "low", but its relatively low altitude and proximity to Dushanbe makes it possible to work there during the months before the weather in the mountains allows deminers to deploy to high altitude sites. For this reason, the site is worked on when there is spare capacity due to difficulty accessing higher priority sites.

#### SITE LAYOUT AND MARKING

16. The minefield is situated within a strip of ground, approximately ten metres wide and lined on each side by strands of barbed wire fence, suspended on angle-iron pickets, which are spaced at ten metre intervals around the minefield. It consists of three rows, each about two metres apart, of PMN antipersonnel landmines. Mines are spaced approximately 50cm to one metre apart, and the rows continue all around the entire perimeter of the ammunition storage depot.
17. The minefield is well marked.
18. It was noted during the Board of Inquiry's investigations at the site, that the clearance lane where [the Victim] was working, was well marked and was closed.
19. [The Victim] knew his task on that day clearly that he is supposed to collect fragmentation and debris caused by the demolition of mines on the area on 9 November 2007.
20. The [International demining group] demining team at Kirghochak are living in a tented camp approximately seven hundred and fifty metres from the minefield. The team have set up their living area in a field camp with accommodation tents and two field kitchens. Although it is separated by a barbed wire fence and raised earthworks, the [International demining group] camp is located adjacent to the Border Force detachment which guards the ammunition depot. [International demining group] teams at this location are supported by [International demining group] with sufficient primary health care, shelter, water and food.

#### SUPERVISION AND DISCIPLINE ON SITE

21. Ten [International demining group] deminers had been working at this site on this day and they were managed and monitored by expatriate technical advisor [Name removed], national supervisor [Name removed] and Team Leader [Name removed].
22. A demining team site logbook was available to record visitors and routine daily events at the site. See Annex G.
23. [International demining group] report that their managers routinely visit their teams and work sites on an occasional basis, usually more than once each week. This includes visits either by the expatriate Project Adviser, the local national Project Manager or the expatriate Operations Officer or his local national Operations Officer as well as oversight from expatriate EOD Technical Advisers. Recorded visits from [International demining group] senior managers and expatriate advisers to this task site prior to 13 of November were as follows. [Chart containing names removed. Visits were made almost daily by expatriate Technical Advisors and on 8th November by the TMAC QA Officer.]
24. As it is seen [International demining group]'s expatriate technical advisor was almost everyday at the site till 8 November. There were no records about the visits by any senior

officials in the site log book on 9 (46 mines were destroyed), 12 and 13 of November (the day of accident).

25. At the moment of the accident, after inspection of the deminers, the [expatriate TA] was near the ambulance about 110 m. far from the minefield. [Name removed] and Section Leaders [two Names removed] were at the distance of about 60 metres away observing four deminers. The team leader [Name removed] who was responsible to observe two deminers was near the second deminer, about 200 m. far from the location of [the Victim]. It is strange how [Name removed] was able to observe these two deminers [at such a distance]. [Name removed] together with team leader [Name removed] were observing four deminers at the main entrance. In general 7 observers/supervisors were observing 10 deminers.

#### QUALITY ASSURANCE

26. On-site management, supervision and Quality Assurance (QA) of works at the task site are the responsibility of the [International demining group] Team Leader. In support of this on-site supervisor there is normally a formal regime of internal supervision and inspection for the work of all of [International demining group]'s Mine Action Teams. Their work is also regulated by UN International Mine Action Standards (IMAS), Tajikistan National Mine Action Standards (NMAS) and the organisation's own Standing Operational Procedures (SOP).
27. As part of internal Quality Control (QC) procedures, the Supervisor, Team Leader or Section Leader at the task site is required to check each area cleared to ensure that no signals are received from a metal detector when it is passed over areas which have been cleared by a deminer. Such procedures should be recorded on specific Quality Control reporting forms, which should be part of the on site logbook. In the Logbook not all the deminers are recorded and not everyday. At the time of writing, no QC reporting forms have been delivered.
28. As well as [International demining group]'s internal Quality Control, TMAC normally inspects all task sites through the national Quality Assurance Officer. The most recent inspections by the TMAC QA Officer were on 8 November 2007. See TMAC QA Reports at Annex H.

#### COMMUNICATIONS

29. [International demining group]'s on-site communications network is based on handheld VHF radios for internal contact within the task site area and on mobile telephones and satellite telephone for external contact. On site vehicles, normally parked at the camp site are equipped with CODAN High Frequency radios and are therefore able to communicate with [International demining group]'s Dushanbe office from Kirgochak camp site.
30. Routine twice-daily reports are made to [International demining group]'s Dushanbe HQ office from the Kirgochak task site by mobile telephone or Satellite telephone.
31. On the day of the accident, Team Leader [Name removed] called the Russian Military Hospital at Dushanbe to inform that a casualty would soon be on the way to them.

#### MEDICAL AND EMERGENCY SUPPORT

32. All [International demining group] operations normally deploy with a qualified medic as part of the team; a comprehensive trauma and first aid pack and a fully equipped ambulance vehicle appropriate to demining operations is provided at every task site. All

deminers receive twenty-four hours of first aid instruction as part of basic deminer training and a further 16 hours as part of annual refresher training. Medical and emergency support provided to the team involved in this accident was adequate for the circumstances.

33. The medic was stationed inside the ambulance. The ambulance was conveniently placed, inside the perimeter of the ammunition depot and about one hundred metres away from where the deminers were working. See satellite image at Annex D.
34. National Mine Action Standards require that a casualty evacuation exercise should be carried out *immediately on first arrival at any task site* and routinely at least once each month. This task started on 10 October. The on-site log book records that exercises were carried out on 10 October and 2 November.
35. Immediate treatment. [International demining group]'s qualified, professional medical assistance was available to assist and treat [the Victim] within a few minutes immediately after the accident, before he was evacuated by [International demining group] ambulance towards the Russian Military Hospital in Dushanbe .
36. After the accident [the Victim] called team leader [Name removed] and informs him not to worry and he feels well. [The Team Leader] was the first to reach the location of the accident. [Two names removed] came and tied [the Victim]'s left hand with a rubber and carried him to the doctor on a stretcher. The team medic [Name removed] after hearing the explosion and radio communication with [Name removed] (at the distance of 100 m.) came nearer towards the location of accident, approx. at the distance of 45 m.
37. When the victim was evacuated to the medic, the medic examined his pulse. It was 80 and his blood pressure was 110/70 . [The Victim]'s general condition was normal.
38. At 1000 hours the casualty was removed from the area in the team's ambulance vehicle, driven by [Name removed], and taken to the Russian Military Hospital in Dushanbe, approximately sixty-five kilometres from the site. Immediately on arrival at the hospital, the doctor of the hospital examined [the Victim] and took him to the surgeon. At the result of pressing the capsule detonator Mines-1 of the PMN mine by left finger it exploded and injured the left finger and right eye.

See initial examination report at Annex I.

39. There were light injuries to the victim's upper lip and above his left eye.

#### PERSONALITIES INVOLVED

40. [International demining group] expatriate management and advisory team in Dushanbe consists of four persons:

- Programme Adviser
- Operations Manager
- 2 x EOD Technical Advisers

National management team consists of:

- Project Manager
- Operations Officer

41. Level of training and experience of supervisory and managerial staff. The EOD specialists are well qualified and experienced and have been working as Technical Advisers in many mine action programme. CVs were received from [International demining group] for the

expatriate Operations Officer. Both national managers have worked for [International demining group] Dushanbe for more than four years and are consequently very knowledgeable and experienced about the programme. National Project Manager [Name removed] is qualified from an International Mine Action middle managers' course in Bangkok, 2005.

42. All team members are trained and qualified deminers and all are long-term, experienced employees of [International demining group]. All personnel have completed and passed at least one [International demining group] basic deminer training course. Deminers' Job Description is shown at Annex J. The level of training and experience of the demining personnel involved in the incident was adequate. Last deminer refresher training, which was completed just prior to this team deploying to this work site, was from 07 May to 18 May 2007. Dates and subjects covered during last refresher training are shown at Annex K.
43. Leave periods and days off work. The team personnel involved in the incident had been working at the area for one month and their last days of rest were on 24 -29 October. See attendance record at Annex L.
44. Deminers of Section 4 were not in the site on this day, but the Section leader [Name removed] was present at the site.

#### EQUIPMENT AND TOOLS

45. The deminer involved in this accident was deployed with a standard-issue [International demining group] deminer's toolkit. The items mentioned below were found at the scene of the accident.
46. Bucket. A bucket for collecting fragments and debris of mines and other types of metals was found at the location of the accident. There were 2 pieces of glass, a metallic pin and a spring from PMN mine, a piece of wire and some other items in the bucket. According to the statement of [the Victim], during the break at the minefield, when he was putting the capsule detonator in the bucket, the accident happened.

#### DETAILS OF THE EXPLOSIVE ITEM - CAPSULE DETONATOR M-1

47. During the investigation it became clear that the explosive item involved, was a capsule detonator M-1 which is part of MD-9 from PMN mines. For more detailed information, see Annex M.
48. PMN anti-personnel mines are among the biggest and most powerful antipersonnel mines deployed anywhere in the world. A PMN is loaded with 240 grams of high explosive and a 9 gram booster charge. It is designed to be operated by 8 to 25Kg of pressure from above, first by the explosion of capsule detonator M-1 which is part of MD-9. Mine explosion mainly begins from detonation of M-1.

#### DRESS & PERSONAL PROTECTIVE EQUIPMENT

49. The Personal Protective Equipment (PPE) issued by [International demining group] to their deminers is manufactured by the ROFI company, of Norway <http://www.rofi.com/>. All personal protective equipment (PPE) at the site conformed to Paragraph 4 of UN International Mine Action Standard 10.30, in that it was capable of protecting against the effects of an explosive blast as follows:
50. Frontal protection. Appropriate to the activity, capable of protecting against the blast effects of 240g of TNT at 30cm from the closest part of the body.

51. Eye protection. Capable of retaining integrity against the blast effects of 240g of TNT at 60cm, providing full frontal coverage of face and throat as part of the specified frontal protection ensemble. Facial visors used by [International demining group] in Tajikistan are manufactured by Security Devices of Zimbabwe. <http://www.secdevinc.com/>
52. Visor. Activities it was break time.[The Victim]'s visor was beside him, therefore he got injuries in his face and his right eye. If he wore his visor his eyes could be protected 100%.

#### DETAILED ACCOUNT OF ACTIVITIES ON DAY OF ACCIDENT

53. Activities on the night before the accident followed a normal routine pattern and after eating dinner at between seven o'clock and eight o'clock, team members, including Daler, went to their beds between nine o'clock and ten-thirty, the same time as usual.
54. Five deminers were ill. No alcohol or drugs are permitted on the task site area and deminers are forbidden to consume alcohol during their tours of duty on operational tasks. During the working hours [the Victim] was also sober.
55. On the day of the accident, team members awoke and arose, as usual, at between six and six-thirty in the morning. After morning breakfast a routine morning safety briefing was delivered by the Team Leader and all team members were at work in the minefield by 8000 hrs.
56. During interviewing the team members, the Board of Inquiry attempted to find out what subjects the Team Leader had briefed the deminers about during his morning safety briefing. But the answers were inaccurate, inconsistent and/or contradicted each other or were not concomitant with known facts or observations. When pressed on this subject, some deminers stated that the briefing had covered 'safety in the working lanes', but were unable to further elucidate about exactly which safety subjects they had been briefed upon.
57. The nearest deminer to [the Victim] was at the distance of 70 m. and the other deminer [Name removed], who together with [the Victim] were supervised by [Name removed], was working at the distance of about 200m.
58. As [the Supervisor] was near [Name removed] and was not able to observe [the Victim] at the same time, therefore it seems that the activities prior to the accident were not according to [International demining group]'s SOP.
59. [The Victim] and the other deminer from the section [Name removed] continued working until 0950hrs and left the site for 10-minutes' break.
60. Section Leader [Name removed] states that he was supervising deminer [Name removed] because he had found a mine. As the distance between the two deminers was about 200 metres, he was not able to observe [the Victim] while he was leaving the site and to see what he had in his hand.
61. No one was observing or supervising [the Victim] that morning and he was working alone. Informed conjecture based upon observations at the site and interviews with team members, supervisors and managers suggests that this is what happened:
62. Up to the time of the rest break, [the Victim] worked the same as everyone else, clearing up pieces of fragmentation and debris from 9 November, when 46 PMN antipersonnel mines had been destroyed in situ by explosive demolition.
63. At approximately 0930hrs, [the Victim] found one capsule detonator Mines-1 and informed [his Supervisor] about it.

64. [The Supervisor] picked up the item and left it inside a metal pit approx. 6 metres from [the Victim].
65. Before the break [the Victim] found two more M-1, but he did not inform [the Supervisor].
66. During the break, [the Victim] left his working tools at the lane and took two M-1s in the bucket and left the minefield.
67. [The Victim came to a location about 13 metres from his lane, sat on the ground, left the visor at his left side and the bucket at his right side.
68. [The Victim] picked up one of the capsule detonators M-1, which was covered with a white explosive item M-9, out of the bucket and began to clean it.
69. Then he picked up the second capsule detonator M-1 (which was clean) out of the bucket and began to pry at it.
70. According to [the Victim]'s statement, he took both M-1s with two left fingers (thumb and index finger) and was going to leave them in the bucket and at this moment the detonation of the capsules occurred.
71. At the result of detonation, half of the both fingers were cut and the right eye was injured due to the fragments of the detonator.

#### SUMMARY

72. [The Victim] was part of an [International demining group] Mine Clearance Team clearing an area of ground that they knew was definitely mined with PMN anti-personnel mines, laid very close together, at intervals of less than one metre between one mine and the next. The day was a normal working day, but nothing untoward had happened during the previous twenty-four hours that might affect operations at the site. [The Victim] was working unsupervised in the first row of the site; the drills and procedures he was using were probably not in accordance with SOP, but the site was adequately marked.
73. Injuries sustained by [the Victim] did not damage to his PPE. There were no fragmentations around, the amount of the explosive item was very small and as [the Victim] himself confirms he was injured at the result of detonation of both capsule detonators M-1 from M-9 of PMN mine.

#### CONCLUSIONS

74. Field control inadequacy. There was weakness in command and control, probably because the Team Leader was not on site. The Section Leader had personally instructed each deminer specifically and individually about not removing the explosive items, mines and other suspected items out of the site, activities well about informing him in case of discovering such items.
75. Management inadequacy. [International demining group] Dushanbe's interpersonal communications and briefings as well as their administration and organization were not fully effective. Although [International demining group] state that managers and supervisors visited to the task site several times, only the visits of [one expatriate TA] is recorded in the site logbook during the period of 1-8 November, 2008. During the period of 8-13 November there are no records, even on the day of destruction of 46 PMN mines. [Which should have been conducted under expatriate supervision.]
76. Distribution of working lanes to the the deminers. The working lanes assigned to the the deminers were not adequately distributed by team / section leaders. [The Victim] was

working in a far distance from his partner deminer. The team leader was not able to observe [the Victim] from the location of the other deminer.

77. Although there was no deliberate or demonstrable neglect, carelessness or misconduct by any of the personnel involved, but it is clear that the supervisors at the site were not supervising him correctly.
78. It was possible to appoint 7 observers for observation of 10 deminers in such a way that all the deminers could be under the control of the supervisors all the time.
79. Procedures and drills used on this site are not regulated by or articulated in Standing Operational Procedures and therefore are subject to local interpretation or even disregard. Although [International demining group] Dushanbe issued an Implementation Plan, more detailed descriptions of drills and procedures are required in the document.
80. In all the cases when there is a risk that the deminers cannot tackle themselves, they should immediately address to supervisors or senior officials. This rule was not followed by [the Victim].
81. According to [the Victim]'s statement, the accident occurred due to the violation of safety regulations and his own negligence.

#### RECOMMENDATIONS

82. All members of the team involved in this accident should undergo at least three days' refresher training.
83. More national managers should be trained and deployed to inspect mine action task sites and to supervise teams in the minefields.
84. [International demining group] should interpret in more detail way the operations are conducted and how the deminers should leave the working lane /or minefields.
85. It is necessary to enter the drills and guidelines of leaving the working lane /or minefields in the training materials.
86. On site briefings need to be improved; Deminers listen, but can't remember routine briefings. Briefings should be graphic; use of models, maps and other training aids should be considered.
87. After any demolition of landmines on the minefield, the area should be properly re-marked, under the supervision of the Team Leader, Section Leaders and the Demolition Supervisor.
88. Procedures for supervisors' observation and supervision of leading deminers should be improved and they should undertake closer observation and support to the activities of the deminers who work even in less risky areas (clear metals) .
89. Team /Section Leaders should check the deminers before they leave the minefield and assure the deminers do not take any explosive items with them.
90. [International demining group] should train personnel to be able to deal with the administration required after an accident. E.g. Timeline should have been started by a nominated person on site immediately the unplanned detonation took place and this should be practised as part of CASEVAC drills.
91. As recommended in the Board of Inquiry report for the [International demining group] accidents which have occurred in the past, the Board of Inquiry recommends once again that, in order to better reflect good practices and recent developments in mine action,

[International demining group] Standing Operational Procedures should be reviewed and updated urgently. As [International demining group] have not responded twice before to this same recommendation, we further recommend that TMAC requires [International demining group] to provide an updated and complete SOP by 24 December 2007.

SIGNED: TMAC QA Officer; Acting Head of the Emergency Department of Engineering Unit at the MoD; TMAC Assistant VA Officer.

## Victim Report

<b>Victim number:</b> 646	<b>Name:</b> [Name removed]
<b>Age:</b> 20	<b>Gender:</b> Male
<b>Status:</b> deminer	<b>Fit for work:</b> presumed
<b>Compensation:</b> Not made available	<b>Time to hospital:</b> Not made available
<b>Protection issued:</b> Frontal apron Long visor	<b>Protection used:</b> None

### Summary of injuries:

minor Eye

minor Face

severe Hand

COMMENT: Half of the thumb and index finger of left hand were cut and the lip and right eye were injured. No formal Medical report was made available.

### Analysis

The primary cause of this accident is listed as a "Field control inadequacy" because the investigators determined that the field controls in place were inadequate, despite having a very high supervision ratio. The secondary cause is listed as a "Management control inadequacy" because it seems that the Victim did not understand the risk posed by the detonator and so was inadequately trained for the task he was doing. Management must take responsibility for ensuring that training is both appropriate and effective. It is a further failing of senior management that the demining group had still not implemented the recommendations of previous accidents, including the basic need for relevant SOPs.

This international demining group flout the requirements of the National MAC (TMAC) and do not reach the standards required in the IMAS. They seem to believe that, being the only demining group operating in Tajikistan, they can ignore the humanitarian requirements and norms that apply elsewhere. See all other recorded accidents in Tajikistan.