DDAS Accident Report

Accident details

Report date:	01/08/2006	**Accident number:**	423
Accident time:	09:35	**Accident Date:**	19/04/2006
Where it occurred:	TMAC Task TSIS529, Nr Halkayor Village, Panj district, Khatlon Region	**Country:**	Tajikistan
Primary cause:	Management/control inadequacy (?)	**Secondary cause:**	Inadequate training (?)
Class:	Other	**Date of main report:**	26/04/2006
ID original source:	[Name removed]	**Name of source:**	[Name removed]
Organisation:	[Name removed]		
Mine/device:	PMN AP blast & booby trap	**Ground condition:**	grass/grazing area metal fragments rocks/stones
Date record created:	24/07/2006	**Date last modified:**	01/08/2006
No of victims:	2	**No of documents:**	3

Map details

Longitude:		**Latitude:**	
Alt. coord. system:		**Coordinates fixed by:**	
Map east:		**Map north:**	
Map scale:		**Map series:**	
Map edition:		**Map sheet:**	
Map name:			

Accident Notes

inadequate communications (?)

inadequate medical provision (?)

inadequate training (?)

protective equipment not worn (?)

visor not worn or worn raised (?)

safety distances ignored (?)

victim squatting and stepped on mine (?)

Accident report

A Board of Inquiry report was made available by the TMAC shortly after the accident. That report is reproduced below, edited for anonymity.

25 April 2006

Tajikistan Mine Action Centre, REPORT OF BOARD OF INQUIRY INTO DEMINING ACCIDENT ON 19 APRIL 2006

References:

Map, General Staff Series, Sheet no J-42-103-Г (10-42-103-4), WGS 84 Edition – Dashti Kala.

TMAC National Mine Action Standards Dated 29 October 2005.

(Demining group) SOP Part Four – Minefield Clearance.

INTRODUCTION

1. As a result of a mine accident on 19 April 2006, in which [Expatriate supervisor, Victim No.1] was killed and [Victim No.2] was injured, a Board of Inquiry was convened by the Tajikistan Mine Action Centre to conduct an investigation on behalf of the government, in accordance with National Mine Action Standards. The initial report of this accident is shown at Annex A.
2. The accident involved a Mine Clearance Team (MCT) from [Demining Group] Dushanbe which was clearing an area of ground which was known to be mined. The task was part of a high priority deployment requested through the Prime Ministerial office.
3. The Board comprised:

Chair (TMAC)	-	[Name excised]
Member (TMAC)	-	[Name excised]
Member (MOD)	-	[Name excised]
Assistant to Board of Inquiry:	-	[Name excised] (UNDP)

4. [Demining Group] appointed one observer to the Board of Inquiry – [Name excised].
5. A copy of the Board's Terms of Reference are attached at Annex B.

SEQUENCE, DOCUMENTATION AND PROCEDURES OF TASKING

6. TMAC designates this task as TSIS529 and a Red Task Folder has been issued for the task, in accordance with normal procedures. The Red Task Folder was issued, complete with the following contents, to [Demining Group] Deputy Project Manager, [Name excised] on 11 April.2006 by TMAC IMSMA Officer, [Name excised].

Description of Document	Source
IMSMA Impact Survey Report TAJ (original)	[Demining Group]
IMSMA Impact Survey Report Eng (hard copy)	TMAC
Topo Map 1: 50 000 or 1: 100 000	TMAC
Community Sketch Map	[Demining Group]
SHAs Sketch Map	[Demining Group]

Initial Request for Clearance	Local Govt
Task for Technical Survey	TMAC
Technical Survey Report	[Demining Group]
Task for Clearance	TMAC
Monthly Clearance Progress Report	[Demining Group]
QA Report During Clearance	TMAC
Completion Survey Report	[Demining Group]
Visitors Log During Clearance	[Demining Group]
Task for Quality Control	TMAC
QC Report	TMAC
Copy of Mine Incident Report	[Demining Group]

7. This mine clearance task is associated with an irrigation canal, which irrigates 11,000 hectares of ground for agriculture, based on the nearby village of Halkayor. The formal procedure for tasking was through the TMAC; it was first identified by the national Ministry of Water and the sequence of tasking originated with a letter of request from the Prime Minister's office to the TMAC.
8. Two personnel were directly involved in the accident; one was an expatriate supervisor who was deployed from the French Army on expert on mission status with UNDP and the other person was a local national civilian deminer employed by [Demining Group]. Both were deployed to the site as part of their routine duties, managed by [Demining Group] Dushanbe.
9. The team arrived on site on 10 April and set up camp on that day. Clearance activities began on the next day, 11 April. Teams normally work from 08:00hrs to 17:00hrs, with a one-hour break for lunch. [Demining Group] working practices require that each deminer normally works for fifty minutes before being relieved by his partner, who works fifty minutes in his turn, before changing places again.
10. TMAC and [Demining Group] are fully aware that this minefield is a high risk area, due to the presence of booby traps which had been placed beneath landmines laid on the area. A site-specific SOP for dealing with such devices is under development by [Demining Group].
11. Activities on each [Demining Group] task site are recorded within the pages of an [Demining Group] Team Leader's Logbook. Example pages from the logbook are shown at Annex C [held on record].
12. National Mine Action Standards require that a copy of Standing Operational Procedures is held on each task site. No copy was at this task site.

GEOGRAPHY

13. The accident occurred near the village of Halkayor, in Panj district, Khatlon Region. Lat/Lon 37° 10′ 00″ N, 69° 15′ 00″ E. Elevation is 370 metres. Map sheet J-42-103-Г (10-42-103-4). See map at Annex D.
14. The general area where the accident occurred is rough country, in a region adjacent to agricultural fields, meadow and pastureland. The area is covered with grass, small trees and bushes.
15. The minefield is situated at the base of a line of steep-sided hills and the clearance lane where the accident occurred is on stony ground, at the base of an earth cliff, on the northern bank of the Panj River.

16. The total mined area is 2000 square metres and is recorded on a Russian minefield record, now held by the national Border Guards Commission and copied to TMAC and [Demining Group] for use during this clearance project. Minefield record is at Annex E.

[The picture below shows the accident site.]

17. An unsurfaced track and an irrigation channel run parallel and next to each other, through the area. The track terminates next to a sluice gate in a dam, which may be used as a footbridge to access the minefield, situated next to the irrigation channel. The nearest tarmac road is approximately 21 Kilometres away, at the town of Panj. The point where the mine detonated was approximately 50 metres from the unsurfaced track, to the north, or left-hand side of the track.
18. Though not shown on local maps, the nearest substantial inhabited buildings are border-guards barracks and associated structures, approximately two kilometres away from the accident site.
19. Weather conditions prevailing at the site on the day of the accident and during the inquiry were dry, warm and sunny and there had been no rain or cold weather during the preceding week. The ground was dry at the time of the accident.
20. The team were living in a tented camp approximately one kilometre from the minefield and were supported by [Demining Group] with sufficient primary health care, shelter, food and water.
21. Further images of the site and the general area are shown at Annex F.

PRIORITY OF TASK

22. This task was designated as high priority because the original request was from the Prime Minister's office and the Ministry of Water were waiting to carry out works in the area to reinforce a dam on the irrigation channel, which was next to the mined area. A copy of the letter is shown at Annex G.

SITE LAYOUT AND MARKING

23. Marking on and around the area consisted of two separate marking arrangements. When the mines were laid in 1995, the troops that laid the mines cordoned the minefield perimeter with barbed wire, suspended on metal pickets and marked with rectangular minefield warning signs.
24. [Demining Group]'s mine clearance team marked their clearance operation with wooden pickets, plastic marking tape and mine warning triangles, in accordance with their own Standing Operational Procedures and UN International Mine Action Standards.
25. Sketch maps to show plans of the site are attached at Annex H.

SUPERVISION AND DISCIPLINE ON SITE

26. The team live in a tented encampment on the task site area, approximately one kilometre to the west from the mined area. [Demining Group] have a total of thirteen personnel working on this project task site and these were supervised and monitored by [Victim No.1]. The team are not permitted to carry out any search or clearance tasks unless their expatriate supervisor is on site at the time.

27. As well as an international supervisor, the team consisted of one Team Leader and six deminers, as well as support personnel, as shown in the diagram below. [Diagram contains names, so removed.]

28. Management and supervision and Quality Assurance (QA) of works at the task site are the responsibility of the expatriate supervisor. During interviews with the demining team deployed to this task, the following incidents were reported to the Board of Inquiry.

    a) On Thursday 13 April 2006, [Victim No.1] deliberately and consciously crossed the marked line which separated the cleared area from the uncleared area. Having crossed the line from the safe area, he worked within the unsafe area for several minutes to lay out pickets and tape to mark a rectangle of ground *inside* the hazardous, uncleared area. [This rectangle marked an area of dense metal-fragmentation considered unsuitable for metal-detector based clearance.] Two deminers reported that they both saw this and each stated independently that they asked [Victim No.1] to discontinue his activities, which they both considered to be extremely dangerous and threatening to the safety of themselves as well as to [Victim No.1]. Paragraph 4.5 from [Demining Group] SOP Part 4 states the following: *Under no circumstances are personnel to step over a mine tape. Supervisors are to ensure that marking is checked before the start of each day to ensure that all areas are clearly identified*.

    b) On Friday 14 April 2006 deminer [Name excised] located a PMN anti-personnel mine which had been laid in conjunction with a ML-7 booby-trap switch. Having located the mine/switch combination, a shallow trench was dug to expose the side of this pair of explosive devices for confirmation of identification, photographs were taken and the area was then closed. It is normal practice to destroy such devices by placing an explosive charge next to them and detonating it from a safe distance. At about 11:00hrs on Tuesday 18 April, [Expatriate supervisor, Victim No.1] took a length of rope and a grapnel hook and went, unaccompanied to recover the PMN mine by remotely disturbing it through the use of the rope and grapnel hook. He recovered the mine, but the ML-7 switch did not detonate, as it was designed to do. [Victim No.1] did not request permission to deviate from [Demining Group] SOP by removing this mine in such a manner.

    c) Later on in the day on Tuesday 18 April, (probably around midday) [Victim No.1] returned to the same place, carrying a length of wood approximately 3-metres long, which he had manufactured by joining together two 1.5 metre wooden pickets. His colleagues at the site report that they saw him go alone, from the administration area, to the place where the ML-7 still lay in its original position. [An ML-7 is reported to contain 45g TNT and be metal cased, but with no added fragmentation.] He was not seen to be carrying a pulling rope or grapnel hook or any other tools or equipment other than the 3-metre long piece of wood. A few minutes later they heard a detonation and shortly after that, [Victim No.1] came back to join them; he was laughing and in good humour. [Victim No.1] was aware that a plan was already in place to destroy this mine in situ, and explosives arrived from Dushanbe on the afternoon of 18 April to implement this. [Demining Group] SOP 5.6 states "*In all cases the first option for any mine / UXO found is to destroy in-situ. If, however for some exceptional circumstances an item needs to be moved, it must first be pulled. This is to lessen the risks caused by booby traps*". There were no exceptional circumstances to require that the ML-7 booby trap should have been moved on that day.

    d) On Wednesday 19 April 2006, [Victim No.1] entered the hazardous area for routine works without first donning his Personal Protective Equipment (PPE). Such

behaviour was a regular occurrence; the Team Leader and members of the team had requested [Victim No.1] to desist from such conduct every day since starting works at this project site. [Victim No.1]'s response to such requests was to inform his questioner that he was a trained EOD Officer and that he had many years experience and that his stomach for such work was his best protection. He also made other humorous and derisive remarks about not wearing PPE when working inside hazardous areas. It was further reported by five deminers that [Victim No.1] did not normally wear PPE when carrying out his daily duties within the hazardous area. He wore his PPE when visitors were expected at the work site and on other occasions, such as when he went to recover the ML-7 booby trap switch described in paragraph c, above.

QUALITY ASSURANCE

29. There is a formal regime of internal supervision and inspection for the work of all of [Demining Group]'s Mine Action Teams and their work is regulated by UN International Mine Action Standards (IMAS), Tajikistan National Mine Action Standards (NMAS) and the organisation's own Standing Operational Procedures (SOP).

30. [Demining Group] managers visit their teams and work sites on an occasional basis, approximately once each week. This includes visits by the expatriate Project Manager, the expatriate Operations Officer and their local national counterparts. The last [Demining Group] management visit was on Thursday 18 April and this is recorded in the site log book.

31. As well as internal Quality Assurance, TMAC normally inspects all task sites through the national Quality Assurance Officer. The most recent inspection by the TMAC QA Officer was on the day the task started, 10 April 2006.

32. As part of internal Quality Control (QC) procedures, the supervisor at each task site is required to check each area cleared at the end of each working day, to ensure that no signals are received from a metal detector when it is passed over areas which have been cleared on that day. In this instance, [Victim No.1] checked the cleared lane adjacent to where the mine was laid before he left the site to travel to Dushanbe on the morning of Friday 14 April. To mark the limit of his QC inspection, he marked the end of the checked lane with a blue marker picket, as required by [Demining Group] normal working practices. The picket was still in place during the Board of Inquiry inspection of the site after the accident.

33. As part of internal Quality Control (QC) procedures, at irregular intervals throughout the working day, the supervisor at each task site is required to check areas cleared. This procedure is carried out whenever a deminer completes clearance to the end of a five metre length of ground and also at the end of each working day. The supervisor is to ensure that no signals are received from a metal detector when it is passed over areas which have been cleared on that day. In this instance, [Victim No.1] checked the cleared lane, adjacent to where the PMN mine was laid, before he left the site to travel to Dushanbe on the morning of Friday 14 April. To mark the limit of his QC inspection, he marked the end of the checked lane with a blue marker picket, as required by [Demining Group] normal working practices. The picket was still in place during the Board of Inquiry inspection of the site after the accident.

COMMUNICATIONS

34. [Demining Group]'s communications network is based on satellite telephones, vehicle mounted HF radios, and handheld VHF radios. There is no mobile telephone coverage in this area.

35. Routine daily reports are made to [Demining Group]'s Dushanbe office from the task site, normally either by HF radio, or satellite telephone, depending on communications conditions.

36. On the day of the accident, three satellite telephones were on site, but team leader [Name excised] sent his vehicle to inform the hospital at Panj that casualties would soon be on the way to them. [Name excised] did not know the telephone number for the hospital at Panj, nor was this number stored in his satellite telephone. He informed the Board of Inquiry that this information was held by the medic.

MEDICAL

37. As a result of this mine accident, one person was killed and another person was injured.

38. Despite receiving professional medical attention within one hour of being injured, the report from Panj hospital records that [Expatriate supervisor, Victim No.1] died at 15:30hrs in the hospital at Panj, as a result of his injuries. He suffered a traumatic amputation of his left foot and serious injuries to his right leg. His right arm was also injured and he received serious injuries to his head and the right side of his face.

39. The injured person, [Victim No.2], received injuries to his arms and hands. He was treated at Panj hospital within approximately one hour after the accident occurred and was evacuated by helicopter to Medgaradoc hospital in Dushanbe the same day.

40. After the mine detonated, both casualties were assisted to the nearest clear area, on a track approximately twenty-five metres from the point of detonation, by deminer [Name excised] and the team's translator, [Name excised]. The team medic, [Name excised] was stationed at the task site administration area, approximately 200 metres away and arrived at the scene of the accident after approximately two or three minutes. [The medic] treated [Victim No.2]'s injuries and gave immediate attention to [Victim No.1] as soon as he was carried, on a stretcher, away from the minefield, approximately twenty-five metres away.

41. All [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 demining personnel 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.

42. No casualty evacuation exercise had been completed from this task site location to the nearest hospital or medical facility. National standards require that this should have been carried out immediately on first arrival at the site and routinely at least once each month.

43. Both casualties were removed from the area in the team's ambulance vehicle, driven by [Name excised].

44. Further evacuation from Panj hospital was available by helicopter if required.

45. It is noted that doctors and staff at Panj hospital remarked that [Demining Group]'s medic, [Name excised] carried out his duties with skill and performed first aid and medical procedures with proficiency and ability.

PERSONALITIES INVOLVED

46. Personnel directly involved in the accident were members of a Mine Clearance Team from [Demining Group] Dushanbe, and an expatriate supervisor from the army of France.

[List of personnel excised.]

47. All team members are trained and qualified deminers. All personnel have completed and passed at least one [Demining Group] basic deminer course and one [Demining Group] deminer refresher course. All members of the team are experienced in mine action activities and have received instruction in first aid as part of their basic training. Deminers' job descriptions state that part of their duties is to assist with the treatment and evacuation of casualties in the event of a mine accident. Deminers' Job Description is shown at Annex I.

48. The team had been working at the area since 12 April and their last days of rest were on Saturday, Sunday and Monday 15, 16 and 17 April, during the time when [Victim No.1] departed the worksite and they were not permitted to work without international supervision. Their last leave and holiday period was during the closure of the demining season, when they were all stood down from November 2005 to 03 March 2006, when they started their most recent refresher training with [Demining Group].

EQUIPMENT AND TOOLS

49. The deminer involved in this accident was deployed with a standard-issue [Demining Group] deminer's toolkit, consisting of the items mentioned below. Evidence at the site and interviews with team members indicate that equipment was being used correctly.

    - Metal detector – Ebinger model 421GC. Although the batteries were flat, the detector was still switched on when the board of inquiry team inspected the site of the accident on 21 April. On-site testing showed that the Ebinger detector is capable of locating PMN anti-personnel mines in the type of soil encountered at this task site. When the detector was recovered from the scene of the accident, a new battery was installed and, when tested, the detector appeared to be 100% effective. Deminers report that the detector was still signalling when the lane was closed immediately after the accident and it was continuing to emit signals when an [Demining Group] expatriate supervisor checked the closure of the lane at 1515hrs on 19 April.
    - Prodder.
    - Trowel.
    - Hand-held magnet.
    - Base-stick and marking tape.
    - 15cm ruler.
    - Plastic bucket for collection of metal pieces.

50. 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:

    a) 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.

    b) 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.

51. All PPE equipment used by [Demining Group] in Tajikistan is manufactured by ROFI, of Norway. See images at Annex J.

52. [Victim No.2] was wearing leather working gloves whilst working in the clearance lane. He was also wearing an [Demining Group] shirt, with his sleeves rolled down.

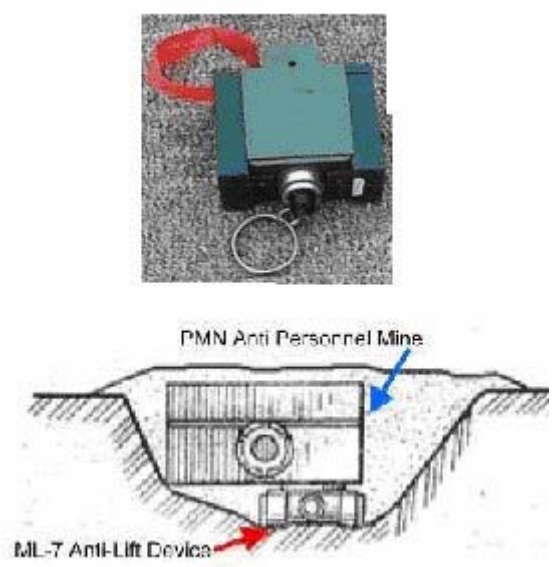
53. The site was marked in accordance with [Demining Group] SOP, with colour-coded wooden pickets and plastic warning tape.

DETAILS OF MINE INVOLVED

54. Fragments recovered from the crater created by the blast of the explosion show that the mine involved was a Russian PMN anti-personnel blast mine, coupled together with a ML-7 booby-trap switch. Crater left by the detonation is as would be expected from expected from such a device.

55. A PMN anti-personnel mine is loaded with 249 grams of high explosive. It is designed to be operated by 8 to 25Kg of pressure from above.

56. An ML-7 booby-trap switch is loaded with 40 grams of high explosive. It is designed to be operated by the removal of 4Kg pressure.



57. The minefield record handed over by the Russian army to the government of Tajikistan shows that PMN anti-personnel landmines had been laid by Russian armed forces within this area during November 1995. The area where the mine which detonated on 19 April is clearly illustrated on the minefield record as being within a minefield. See Annex E.

58. Analysis of the crater caused by the detonation shows that the mine involved in this accident was buried at a depth of approximately twenty-one centimetres in the ground. The mine was situated twenty-three centimetres inside the uncleared area, close to the marked clearance lane where a deminer was working at the time of the accident. See Annex K.

OTHER MINES INVOLVED

59. On 14 April 2006, one PMN anti-personnel mine, which was laid on top of an ML-7 booby trap switch, had already been found on the site. This was five days prior to the accident. As recorded earlier in this report, the mine was disarmed and recovered by [Expatriate supervisor, Victim No.1] on 18 April 2006. The ML-7 booby-trap switch was detonated on the same day.

DRESS & PERSONAL PROTECTIVE EQUIPMENT

60. All members of the team involved were issued with their own set of personal protective equipment, consisting of a blast resistant apron/jacket and a blast-resistant visor. When [Victim No.2] was evacuated from the clearance lane, he was still wearing his blast-resistant jacket. His visor sustained some slight damage as it was blown from his face; it was recovered from a point approximately three metres outside the cleared lane during the Board of Inquiry inspection of the accident site.

61. [Victim No.1] was not wearing PPE when he was evacuated from the clearance lane. The Board of Inquiry noted that a full set of PPE was located, with the jacket folded neatly and the visor placed on top of it, on the bridge approximately ten metres from the point of detonation of the mine involved in this accident [as shown below].

62. Each member of the team was also wearing a pair of 100% cotton trousers and a 100% cotton jacket, issued by [Demining Group]. Leather working gloves are also issued and [Victim No.2] was wearing these at the time of the accident.

63. At the time of the explosion, [Victim No.1] was wearing lightweight hiking boots, as shown in the image at Annex M. The right boot was severely and extensively damaged; the sole was cut and a large part of the boot's upper was ripped and frayed from the effects of the explosion as it was blasted away from his foot. The other boot has not so far been found and it is most likely that this was completely annihilated during the detonation which destroyed the lower part of [Victim No.1]'s left leg.

64. No other protective equipment was worn or issued to the personnel involved.

DETAILED ACCOUNT OF ACTIVITIES ON DAY OF ACCIDENT

65. The following account summarises the responses to questions from members of the Board of Inquiry, directed to personnel directly and indirectly involved in the accident.

66. The team's work at this task site started on 12 April, after a tasking from TMAC to [Demining Group] and a subsequent deployment from Dushanbe. The team arrived in the area during the afternoon of that day and set up their camp with tents and a kitchen.

67. Activities on the night before the accident followed a normal pattern and after eating dinner at about seven o'clock, team members sat around talking and went to their beds between nine o'clock and ten-thirty, the same time as usual.

68. No evidence was found that any person at this task site was suffering from illness or sickness or had any reason to behave in any way that would be considered as out of the ordinary. 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.

69. On the day of the accident, team members awoke and arose, as usual, before seven o'clock in the morning. Breakfast of bread, tea with sugar and milk was eaten by all team members at seven o'clock.

70. The team set off for the work site at about seven-thirty, thirty minutes earlier than usual, because it had been the team leaders' intention to adjust working hours so that the team could finish work half-an-hour early on that day.

71. The minefield clearance of the task site is in two separate areas. [Victim No.2] and his partner for that day, [Name excised] went to the eastern end of the minefield, and the remainder of the team went to work at the western end. [Expatriate supervisor, Victim No.1] and his translator, [Name excised], went to supervise operations at the eastern end of the minefield.

72. At about 0900 hours, [Victim No.2] took over the duties as lead deminer in the clearance from his partner for that day, [Name excised], using correct procedures for the handover and he received a briefing from [Name excised] before taking over. [Name excised] walked back for his allotted period of rest, to a point next to a small building adjacent to

the Panj River, about twenty-five metres from the clearance lane, where he sat together with the translator, [Name excised] facing south, away from the clearance area.

73. [Victim No.2] started work and continued his duties of searching for landmines, working along the clearance lane towards a westerly direction and using approved procedures, in accordance with normal working practices and [Demining Group]'s published Standing Operational Procedures.

74. At about 09:30hrs, [Victim No.2] observed the shadow of [Victim No.1] walking behind him. He saw [Victim No.1] walk along the cleared lane, to a point in front and slightly left of where [Victim No.2] was working. At this time, [Victim No.1] was inside the cleared area, about one-and-a-half metres from where [Victim No.2] was working.

75. One or two seconds after this, an explosion occurred when the PMN/ML-7 combination which killed [Expatriate supervisor, Victim No.1] detonated.

07:30 Team starts work Panj minefield

08:00-08:15 [Victim No.1] and his interpreter move to South end of minefield and talk with Demining Team Leader. [Victim No.1] is not wearing his PPE.

08:30 [Victim No.1] enters minefield and sits in the clearance lane, 1.5 metres away from [Victim No.2], who was conducting full excavation drills in the clearance lane.

09:00 [Victim No.1] returns to the resting point for a drink of water and orders a routine changeover of deminers in the clearance lane. [Victim No.2] in, [Name excised] out.

09:35 Detonation

09:35 Demining Team Leader + 2 Deminers move by foot around to eastern end of the minefield, where the explosion occurred. Ambulance and medic also move to the eastern end of the minefield.

09:37 [Victim No.2] walks out of minefield and receives treatment from the team medic. Demining Team Leader + 3 deminers extract [Victim No.1] from the minefield and carry him to the medic, 25 metres away.

09:37-09:45 Demining Team Leader informs [Demining Group] Dushanbe about the accident and requests helicopter for evacuation of casualties to Dushanbe.

09:50 [Demining Group] Dushanbe requests support from TMAC.

09:45 Demining Team Leader + Medic + 3 deminers + casualties depart the worksite for Panj hospital.

10:05 or 10:15? Arrive Panj hospital and handover the casualties to local hospital staff.

11:28 Tajikistan Airlines helicopter, arranged by TMAC takes off from Dushanbe Airport.

12:30 [Demining Group] HQ staff + French staff arrive at Panj hospital via helicopter.

15:30 [Victim No.1] dies at Panj Hospital.

15:55-17:50 Documentation completed allowing release of body.

17:50 Helicopter departs for Dushanbe with [Victim No.2] and body of [Victim No.1].

ORGANISATION OF IMMEDIATE REACTION

76. When [Demining Group] telephoned the initial emergency report to TMAC, a request was made for a helicopter to be made available immediately. Under normal circumstances this should have been sourced from the Ministry of Defence Helicopter Detachment stationed at Aini airbase, approximately ten kilometres west of Dushanbe. Although there is no formalised contract, a verbal agreement exists between TMAC and the national MoD, for an army helicopter to be on standby for [Demining Group] demining operations, but on this occasion, no military helicopters were available, because all Ministry of Defence helicopters are in St Petersburg, Russia, undergoing annual repairs and maintenance.

This was known some weeks prior to the accident and requests had been made to MOD for assistance in addressing the issue.

77. Because no military helicopter support was available, requests for help were made from TMAC to Tajikistan Airlines and from the Embassy of France to the Aga Khan Foundation for use of their helicopters. UNDP Country Office also initiated procedures to obtain help from the national government. In the event, a Tajikistan Airlines helicopter, arranged by TMAC was used. The helicopter flight was paid for by [Demining Group], from demining funds.

78. Initial request for support from TMAC was made by [Demining Group] Dushanbe at 09:50hrs. Tajikistan Airlines helicopter took off from Dushanbe airport one hour and thirty-eight minutes later, at 11:28hrs and landed at Panj after a one hour flight of 230 kilometres, at 12:30hrs, as recorded in the Team Leader's logbook.

SUMMARY

79. This [Demining Group] Mine Clearance Team was clearing an area of ground that they knew was definitely mined with PMN anti-personnel mines, which had been laid together with ML-7 anti-lift devices. Procedures and tools that were used at the task site conformed to national and international standards for mine clearance. The day was a normal working day and nothing untoward had happened during the previous twenty-four hours that might affect operations at the site. WO [Expatriate supervisor, Victim No.1]n was supervising operations at the eastern end of the site; he was not wearing the personal protective equipment he had been issued for his own use. [Victim No.1] had a history of unsafe behaviour and had recently contravened [Demining Group]'s Standing Operational Procedures on four occasions. Injuries caused by the unplanned detonation of a PMN anti-personnel mine, which had been laid together with a ML-7 anti-lift booby trap switch, caused the death of [Victim No.1]. [Victim No.2] was working approximately one metre from [Victim No.1] and suffered injuries to his hands and arms from the explosion.

CONCLUSIONS

80. This Mine Clearance Team was employed as part of [Demining Group]'s ongoing mine clearance project in Panj District, Khatlon Region in south-western Tajikistan. On the day of the accident they were carrying out duties that constituted a routine minefield clearance task, in accordance with the Terms of Reference for their jobs, they used their equipment correctly and complied with normal procedures.

81. The area of ground that the Team was walking over at the time of the accident had been assessed by [Demining Group] and the TMAC as being of very high risk.

82. Both members of the demining team who were directly involved in the accident are fully trained deminers, each with three years experience of such operations, they were properly equipped and trained to carry out the task in hand. The accident was not caused by neglect, carelessness or misconduct by any member of the team involved in working at this site.

83. [Expatriate supervisor, Victim No.1] was an experienced EOD specialist who had a recent history of carelessness and non-compliance with normal procedures. His command and control of the task site area was adequate and he did not issue any inappropriate or dangerous orders to any member of the team at any time.

84. It is possible that the use of correct protective clothing could have contributed to a reduction in the injuries to [Victim No.1].

85. The mine involved in this accident was buried at a depth of approximately twenty-one centimetres in the ground. The mine was situated twenty-three centimetres inside the uncleared area, close to the marked clearance lane where a deminer was working at the time of the accident.

RECOMMENDATIONS

86. All members of the team involved in this accident should undergo at least three days of refresher training and counselling before being re-deployed to any demining task.

87. All personnel at all work sites should conform to all aspects of [Demining Group]'s Standing Operational Procedures. Specifically, this should mean that, when they are working within hazardous areas, personnel deployed on mine clearance operations should not walk outside known cleared areas.

88. TMAC should write a minimum Training and Qualification Standard for expatriate personnel involved in supervision of demining task sites. This standard should be incorporated into [Demining Group] SOPs and offered to all potential donors who may deploy expatriate experts on mission to Tajikistan's mine action programme.

89. The Terms of Reference at Annex A to the Memorandum of Understanding between UNDP and the Government of France should be further developed and the duties and responsibilities of all expatriate supervisors should be regulated by a formal job description or Terms of Reference document.

90. [Demining Group] should write a specific SOP for dealing with PMN mines which are laid in conjunction with ML-7 booby trap switches. The SOP should be promulgated to all personnel who work at task sites where such devices are suspected to be laid. It should address the following issues:

91. All PMN/ML-7 devices are to be destroyed in situ.

92. No attempt is to be made to recover ML-7 booby trap switches for training, display or any other purpose.

93. PMN/ML-7 devices are not to be remotely disturbed or pulled; see paragraph a.

94. All satellite telephones on site should be loaded with emergency contact telephone numbers; this should include HQ [Demining Group] Dushanbe, local hospital(s) and TMAC office in Dushanbe.

95. Casualty evacuation exercise should be carried out from every task site during the first twelve hours at any newly appointed task site. This should be followed by a casualty evacuation exercise at least once each month. Such exercises should be recorded in the site log book, together with the names of all personnel who carried out the exercise. In order to confirm communications, all casevac exercises should include a telephone call from the task site to the local hospital.

96. TMAC should ensure that at least one Quality Assurance inspection is carried out during the first seven days of any mine clearance task. This should be followed by regular, planned QA inspections at the discretion of TMAC.

97. SOP should be on site, in local language and should be in the care and charge of the local national Team Leader.

98. A formal agreement should be written and signed by both TMAC and the Minister of Defence, to ensure that a helicopter will be made available in case of any future demining accident. Provision should be made in the agreement for periods when MoD helicopters are not available and a plan should be made to contract Tajikistan Airlines or other helicopters during such periods.

99. Although not immediately related to this mine accident, the Board of Inquiry also recommends that in order to better reflect current practices and recent developments in mine action, [Demining Group] SOP should be reviewed and updated very soon.

Signed: UNDP Chief Technical Adviser, Chief of Engineering Ministry of Defence, Operations Officer TMAC

Annexes: [All held on record]

Initial report of mine accident
Terms of Reference
Example pages from the logbook
Map
Minefield record
Images of site and general area
Priority of task letter
Sketch maps of site
Job description
PPE images
Crater analysis
Folded PPE
Walking boots
Terms of Reference for French Supervisor

DISTRIBUTION

TMAC National Program Director

[Demining Group] Dushanbe

Embassy of France in Dushanbe

Victim Report

Victim number: 564

Name: [Name removed]

Age:

Gender: Male

Status: supervisory

Fit for work: DECEASED

Compensation: Not recorded

Time to hospital: 2 hours 55 minutes

Protection issued: Frontal apron
Long visor

Protection used: none

Summary of injuries:

INJURIES

severe Arms

severe Chest

severe Face

severe Hands

severe Head

severe Leg

severe Neck

AMPUTATION/LOSS

Leg Below knee

FATAL

COMMENT

See Medical Report. Victim died in hospital approximately six hours after the accident.

Medical Report

A medical report was received by the MAC after the Board of Inquiry Report was completed. Details were made available in July 2006. The following is a translated extract.

“Diagnosis:

Mine explosion created combined polytrauma, including: Traumatic amputation of the lower 1/3 left shin; Open multi-fragmentation fracture of bones of the right shin and foot; Multi – fragmentation injuries close to shoulders and hands; Injury of the upper lip and cheek plus fracture of the upper right jaw; Multi –fragmentation injuries around the face, neck and chest. ZCh.MT [? – illegible]. The brain received severe injuries. Trauma shock type 4.”

Photographs showed severe damage to hands and forearms (the left forearm is shown below). There was also severe damage to the right side of the face.

Victim Report

Victim number:	565	**Name:**	[Name removed]
Age:		**Gender:**	Male
Status:	deminer	**Fit for work:**	yes
Compensation:	Not made available	**Time to hospital:**	2 hours 55 minutes
Protection issued:	Long visor Frontal apron	**Protection used:**	Long visor, Frontal apron

Summary of injuries:

INJURIES

minor Arms

minor Hands

COMMENT

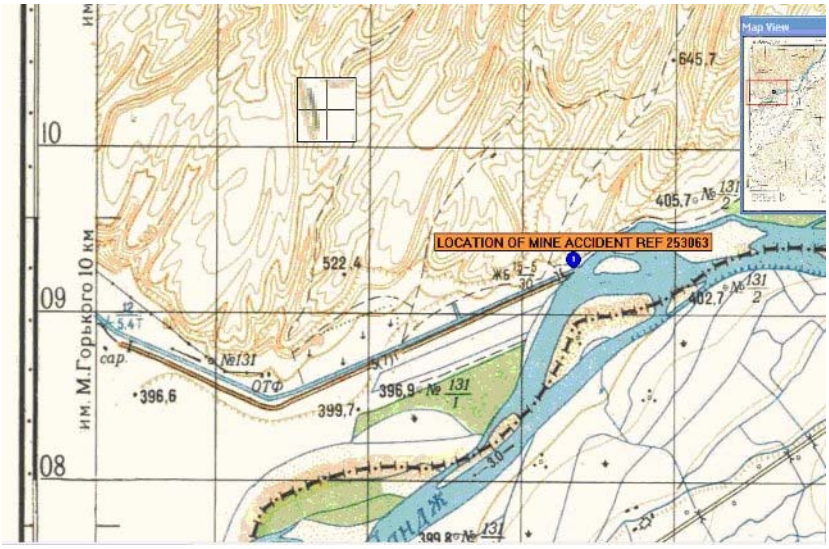
See Medical report

Medical report

No formal medical report was made available. The MAC reported that the victim was back at work (light duties) in late July 2006. He had “received injuries to both hands and arms because he was facing the blast, wearing his visor and PPE apron.”

Maps

A Map of the area was included in the file. Other sketch maps are held on record.



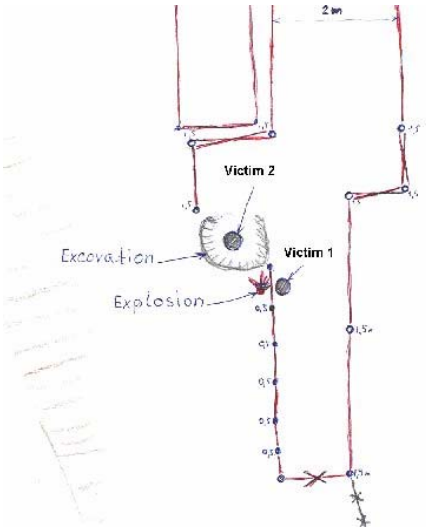
Related papers

The Victim's boot was later found (three months later) in perfect condition 18m metres from the seat of initiation (it may have been moved by animals). There was no sign of the missing foot, blast damage or blood.

The picture above shows the boot.

Analysis

The incident occurred 23cm outside the cleared area, but a sketch map in Annex H showed Victim No'1's position was just inside the cleared area.



If the drawing were to scale he would have been 40cm from the blast. Statements (held on file) report that he had shown scant regard for perimeter markings before, so it seems likely that he stepped over the tape in order to supervise Victim No.2 and initiated the device by stepping directly onto it. According to witnesses, the victim "regularly sat on the ground to watch deminers while they were working. He usually sat at a distance of 1 to 2 metres from the working deminer". From the injuries, it is likely that his first foot would have stepped alongside the device, and his second on top of it – so explaining how the initiation could cause severe injury to both legs, destroying one shoe and severely damaging the other. He may then have fallen backwards landing inside the cleared area as shown on the sketch.

The primary cause of the accident is listed as a *Management control inadequacy* because the senior expatriate on site was in regular breach of basic safety rules which finally led him to suffer a fatal injury. This man represented the "international management" and had to be present before any work could be conducted. Despite the responsibility vested in him, he regularly failed to obey the demining group's IMAS compatible SOPs. The secondary cause is listed as *Inadequate training* because Victim No.1's risk taking implies that either he had never been adequately trained so that good practice became habitual, or he was in need of refresher training. His risk taking was the direct cause of the injuries suffered by the second victim.

Of the Notes associated with this record, inadequate communications and unrehearsed MEDEVAC procedures are cited as failings in the Board of Inquiry report. Safety distances were clearly ignored, as was the requirement to wear PPE. No daily safety briefings were made.