

DDAS Accident Report

Accident details

Report date: 29/04/2008	Accident number: 481
Accident time: 09:35	Accident Date: 19/04/2006
Where it occurred: 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: None	Name of source: TMAC
Organisation: [Name removed]	
Mine/device: PMN AP blast with ML-7	Ground condition: grass/grazing area hard rocks/stones
Date record created: 17/01/2008	Date last modified: 29/04/2008
No of victims: 2	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system:	Coordinates fixed by: GPS
Map east: 69° 15' 00" E	Map north: 37° 10' 00" N
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate communications (?)
inadequate medical provision (?)
inadequate training (?)
protective equipment not worn (?)
safety distances ignored (?)
squatting/kneeling to excavate (?)
victim squatting and stepped on mine (?)
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 its formatting being lost. The text in the report is reproduced below, edited for anonymity. The original file and all annexes are held on record.

BOARD OF INQUIRY INTO DEMINING ACCIDENT ON 19 APRIL 2006

Dushanbe 26 April 2006

25 April 2006

See Distribution

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.

[International demining group] SOP Part Four – Minefield Clearance.

INTRODUCTION

1. As a result of a mine accident on 19 April 2006, in which French Warrant Officer [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 [International 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:
 - a) Chair (TMAC) [Name removed]
 - b) Member (TMAC) [Name removed]
 - c) Member (MOD) [Name removed]
 - d) Assistant to Board of Inquiry: [Name removed] (UNDP)
4. [International demining group] appointed one observer to the Board of Inquiry – [Name removed].
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 [International demining group] Deputy Project Manager, [Name removed] on 11 April.2006 by TMAC IMSMA Officer, [Name removed].

- IMSMA Impact Survey Report TAJ (original)
 - IMSMA Impact Survey Report Eng (hard copy)
 - Topo Map 1: 50 000 or 1: 100 000
 - Community Sketch Map
 - SHAs Sketch Map
 - Initial Request for Clearance
 - Task for Technical Survey
 - Task for Clearance
 - Monthly Clearance Progress report [Demining group]
 - QA Report During Clearance
 - Completion Survey Report [Demining group]
 - Visitors Log During Clearance [Demining group]
 - Task for Quality Control
 - QC Report
 - 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 0800hrs to 1700hrs, 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 [International 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 [International demining group].
 11. Activities on each [International demining group] task site are recorded within the pages of an [International demining group] Team Leader's Logbook. Example pages from the logbook are shown at Annex C.
 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 [International demining group] for use during this clearance project. Minefield record is at Annex E.

The pictures below show 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. [International 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. [International 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 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.

- e) 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. 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 [International 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.
- f) On Friday 14 April 2006 deminer [Name removed] 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,[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 [International demining group] SOP by removing this mine in such a manner.
- g) 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. 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. [International 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.
- h) 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 [International 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. [International 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 [International 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, 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 [International demining group] normal working practices. The picket was still in place during the Board of Inquiry inspection of the site after the accident.

COMMUNICATIONS

33. [International 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.
34. Routine daily reports are made to [International demining group]'s Dushanbe office from the task site, normally either by HF radio, or satellite telephone, depending on communications conditions.
35. On the day of the accident, three satellite telephones were on site, but team leader [Name removed] sent his vehicle to inform the hospital at Panj that casualties would soon be on the way to them. [He] 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

36. As a result of this mine accident, one person was killed and another person was injured.
37. Despite receiving professional medical attention within one hour of being injured, the report from Panj hospital records that [Victim No.1] died at 1530hrs 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.
38. 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.
39. 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 removed] and the team's translator, [Name removed]. The team medic, [Name removed] 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.
40. 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 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.
41. 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.
42. Both casualties were removed from the area in the team's ambulance vehicle, driven by [Name removed].
43. Further evacuation from Panj hospital was available by helicopter if required.
44. It is noted that doctors and staff at Panj hospital remarked that [International demining group]'s medic, [Name removed] carried out his duties with skill and performed first aid and medical procedures with proficiency and ability.

PERSONALITIES INVOLVED

45. Personnel directly involved in the accident were members of a Mine Clearance Team from [International demining group] Dushanbe, and an expatriate supervisor from the army of France. [List of named individuals at the site removed.]
46. All team members are trained and qualified deminers. All personnel have completed and passed at least one [International demining group] basic deminer course and one [International 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.

47. 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 [International demining group].

EQUIPMENT AND TOOLS

48. The deminer involved in this accident [Victim No.2] was deployed with a standard-issue [International 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.
- i) 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 [International demining group] expatriate supervisor checked the closure of the lane at 1515hrs on 19 April.
 - j) Prodder.
 - k) Trowel.
 - l) Hand-held magnet.
 - m) Base-stick and marking tape.
 - n) 15cm ruler.
 - o) Plastic bucket for collection of metal pieces.
49. 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:
- p) 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.
 - q) 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.
50. All PPE equipment used by [International demining group] in Tajikistan is supplied by ROFI, of Norway. See images at Annex J.
51. [Victim No.2] was wearing leather working gloves whilst working in the clearance lane. He was also wearing an [International demining group] shirt, with his sleeves rolled down.

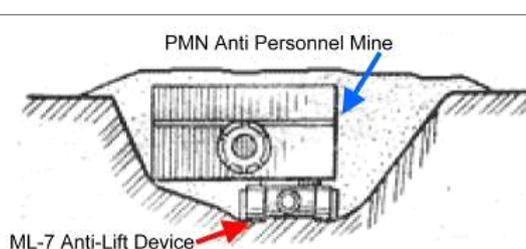
52. The site was marked in accordance with [International demining group] SOP, with colour-coded wooden pickets and plastic warning tape.

DETAILS OF MINE INVOLVED

53. 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.

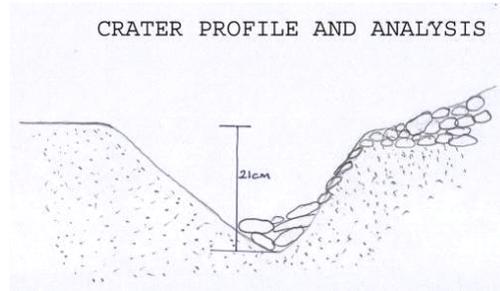
54. A PMN anti-personnel mine is loaded with 249 grams of high explosive. It is designed to be operated by 8 to 25Kg of pressure from above.

55. 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.



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.

56. 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

57. 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 [Victim No.1] on 18 April 2006. The ML-7 booby-trap switch was detonated on the same day.

DRESS & PERSONAL PROTECTIVE EQUIPMENT

58. 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.
59. [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. See Images at Annex L.
60. Each member of the team was also wearing a pair of 100% cotton trousers and a 100% cotton jacket, issued by [International demining group]. Leather working gloves are also issued and [Victim No.2] was wearing these at the time of the accident.
61. 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. [The second boot was later recovered entirely intact.]
62. No other protective equipment was worn or issued to the personnel involved.

DETAILED ACCOUNT OF ACTIVITIES ON DAY OF ACCIDENT

63. 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.
64. The team's work at this task site started on 12 April, after a tasking from TMAC to [International 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.

65. 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.
66. 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.
67. 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.
68. 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.
69. The minefield clearance of the task site is in two separate areas.[Victim No.2] and his partner for that day, [Name removed] went to the eastern end of the minefield, and the remainder of the team went to work at the western end. [Victim No.1] and his translator, [Name removed], went to supervise operations at the eastern end of the minefield.
70. At about 0900 hours, [Victim No.2] took over the duties as lead deminer in the clearance from his partner for that day, [Name removed], using correct procedures for the handover and he received a briefing from [his partner] before taking over. [His partner] 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 removed], facing south, away from the clearance area.
71. [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 [International demining group]'s published Standing Operational Procedures.
72. At about 0930hrs, [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.
73. One or two seconds after this, an explosion occurred when the PMN/ML-7 combination which killed [Victim No.1] detonated [inside the uncleared area in front of the deminer: it appears that Victim No.1 stepped into the uncleared area for some reason and his injuries imply that he was crouching/squatting when the accident occurred].

TIMELINE

0730: Team starts work Panj minefield

0800-0815: [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.

0830: [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.

0900: [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, [His partner] out.

0935: 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.

0937: [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.

0937-0945: Demining Team Leader informs [International demining group] Dushanbe about the accident and requests helicopter for evacuation of casualties to Dushanbe.

0945: Demining Team Leader + Medic + 3 deminers + casualties depart the worksite for Panj hospital.

0950: [International demining group] Dushanbe requests support from TMAC.

1005 or 1015?: Arrive Panj hospital and handover the casualties to local hospital staff.

1128: Tajikistan Airlines helicopter, arranged by TMAC takes off from Dushanbe Airport.

1230: [International demining group] HQ staff + French staff arrive at Panj hospital via helicopter.

1530: [Victim No.1] dies at Panj Hospital.

1555-1750: Documentation completed allowing release of body.

1750: Helicopter departs for Dushanbe with [Victim No.2] and body of [Victim No.1].

ORGANISATION OF IMMEDIATE REACTION

74. When [International 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 [International 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.
75. 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 [International demining group], from demining funds.
76. Initial request for support from TMAC was made by [International demining group] Dushanbe at 0950hrs. Tajikistan Airlines helicopter took off from Dushanbe airport one hour and thirty-eight minutes later, at 1128hrs and landed at Panj after a one hour flight of 230 kilometres, at 1230hrs, as recorded in the Team Leader's logbook.

SUMMARY

77. This [International 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. [Victim no.1] 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 [International 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

78. This Mine Clearance Team was employed as part of [International 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.
79. The area of ground that the Team was walking over at the time of the accident had been assessed by [International demining group] and the TMAC as being of very high risk.
80. 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.
81. [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.
82. It is possible that the use of correct protective clothing could have contributed to a reduction in the injuries to [Victim no.1].
83. 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

84. 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.
85. All personnel at all work sites should conform to all aspects of [International 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.

86. 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 [International demining group] SOPs and offered to all potential donors who may deploy expatriate experts on mission to Tajikistan's mine action programme.
87. 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.
88. [International 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:
 - r) All PMN/ML-7 devices are to be destroyed in situ.
 - s) No attempt is to be made to recover ML-7 booby trap switches for training, display or any other purpose.
 - t) PMN/ML-7 devices are not to be remotely disturbed or pulled; see paragraph a.
89. All satellite telephones on site should be loaded with emergency contact telephone numbers; this should include HQ [International demining group] Dushanbe, local hospital(s) and TMAC office in Dushanbe.
90. 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.
91. 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.
92. SOP should be on site, in local language and should be in the care and charge of the local national Team Leader.
93. 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.
94. 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, [International demining group] SOP should be reviewed and updated very soon.

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

ANNEXES [Held on file]

- 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; [International demining group] Dushanbe; Embassy of France in Dushanbe.

[The Demining group reported:]

“During the inspection of a deminers work lane and adjacent uncleared area, an uncontrolled detonation occurred. The detonation caused the traumatic amputation of the Supervisor’s (Patient 1) left leg below the knee, severe injuries to the right leg and severe injuries to the right arm. Patient given initial medical treatment on-site and transported 10 minutes later by vehicle to local hospital. (Approx 30 minutes away) Deminer (Patient 2) walked from blast area to treatment point with assistance. Transported along with Patient 1 to Panj hospital at approx 0945 hrs. Both patients treated at Panj Hospital. During treatment at local hospital Patient 1 died. (Approx 6 hours later, at 1555 hrs.)”

Victim Report

Victim number: 641	Name: [Name removed]
Age: 48	Gender: Male
Status: supervisory	Fit for work: DECEASED
Compensation: Not made available	Time to hospital: 40 minutes
Protection issued: Frontal apron	Protection used: None

Long visor

Summary of injuries:

severe Arm

severe Chest

severe Face

severe Head

severe Leg

severe Neck

AMPUTATION/LOSS: Leg Below knee

FATAL

COMMENT: See Medical report.

Medical report

From: Chief Doctor of Panj District Hospital, Date: 26 April, 2006

MEDICAL CONCLUSION ON DEATH OF [Victim No.1]

The administration of the Panj District Hospital informs you that on 19 April, 2006 at 10.50 a.m. the French military Warrant Officer [Name removed] (born in 1958), who was working for [Demining group] Tajikistan, has been brought to hospital in Panj with very severe injuries.

The surgeons and rehabilitation specialists of the hospital offered him the first medical aid at the surgery department of the hospital too. Due to the severe injuries, Trauma and Gemotransfuziolog specialists were invited and brought by medical air helicopter from the centre of region (Khatlon region) and together with hospital and [International demining group] doctors, they offered medical assistance to the victim.

Unfortunately, despite the undertaken measures, [the victim] died at 15.30 p.m.

Diagnosis:

Mine explosion combined politrauma; Trauma amputation of the low 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.(not clear?). The brain got the severe injuries. Trauma shock type 4.

The following pictures were taken at the hospital.



Victim Report

Victim number: 642	Name: [Name removed]
Age:	Gender: Male
Status: deminer	Fit for work: not known
Compensation: Not made available	Time to hospital: 40 minutes
Protection issued: Frontal apron Long visor	Protection used: Frontal apron, Long visor

Summary of injuries:

severe Arm

severe Arm

severe Hands

COMMENT: See Medical report.

Medical report

No formal Medical report was made available.

The victim “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.”

The following picture was taken at the hospital.



Anecdotal reports a year later were that the Victim had lost the use of one finger and some movement in one hand.

Statements

Statement No.1: Victim's work partner: deminer

My name is [Name removed]. On 19 April, 2006 at 07.30 we our work. I and [Victim no.2] went to the mine field. I was clearing the northern site of the mine field and [Victim No.1] was observing me. I had been clearing the site till 09.00 o'clock and then [Victim No.2] replaced me. I left the mine field and was sitting with [Name removed] behind the bunker (a small house along the track). Both of us wore our PPEs. At 09.30 we heard an explosion and [Victim No.2] shouted. I stood up and put my mask and visor on and ran towards the mine field. At this time [Victim No.2] stood up. I saw that [Victim No.1]'s both legs were broken and his mouth was cut. I tried to pull [Victim No.1] from his shoulders to the cleared lane, but I could not alone. Then our deminers: [two Names removed], and team leader [Name removed] came and we together evacuated him to the safe area. Our doctor [Name removed] offered the first medical aid to both mine victims and at 09.45 the ambulance with the victims left the site and at 10.05 we reached the Panj central district hospital.

I confirm the above mentioned statement with my signature. 19 April, 2006

Statement No.2: Deminer

At 07.30 we left our camp and went to the mine field. First I began the mine clearance. My partner was [Name removed]. After one hour the team leader ordered me to finish work. My partner [Name removed] replaced me. I left the mine field and was relaxing. At 09.30 we heard an explosion and we ran to the mine field. [Victim No.2] left the mine field himself and we took a stretcher and evacuated [Victim No.1] to the safe area. After our medic provided the first medical aid to both mine victims, they were sent to the hospital.

I confirm the above mentioned statement with my signature. 19 April, 2006

Statement No.3: deminer

On 19 April, 2006 at 07.30 we started our work at the mine field. I worked with team leader that day. I was working at the mine field. Approximately at 09.40 we heard an explosion from the direction of dam and mine field. Then I, and team leader [Name removed] ran to the location of the mine accident. When we reached the spot we found out that the French supervisor [Victim No.1]'s left leg was lost and [Victim No.2] got some fragmentations. The four above mentioned deminers evacuated [Victim No.1] from the mine field and our doctor [Name removed] offered the first medical aid to both mine victims and at 09.45 we put the mine survivors in the ambulance and approx. at 10.05 we reached the Panj central district hospital..

I confirm the above mentioned statement with my signature. 20 April, 2006

Statement No.4: Victim No.1's translator

I am a staff (translator) of [International demining group]. On 19 April, 2006 I went to the mine field together with [Victim No.1] and deminers. At 09.35 the mine accident occurred. At this time I was sitting with deminer [Name removed] behind the small house along the road and we wore our PPEs. When the mine accident occurred, I informed the team's medic about the accident by radio and he came within two minutes. He immediately offered the first medical aid to both mine victims and after 10 minutes, i.e. at 09.45 our ambulance left the mine field and at 10.05 we reached the Panj central district hospital.

I confirm the above mentioned statement with my signature. 19 April, 2006

Statement No.5: Team Leader

I am a team leader. On 10 April, 2006 we left the office for the Shurasoi border post No. 11 in Panj district . On 19 April at 9.20, I made a telephone call to our [International demining group] HQ by our THURAYA sat phone. At approx. 9.35 the mine accident occurred. At this time I was working with two other deminers – [two Names removed] at the other side of the mine field. We saw that mine accident occurred at the mine field where [Victim No.2] was working. We ran to the location of the accident. We saw that the instructor [Victim No.1] was seriously injured and [Victim No.2] was injured as well. We – I, [three Names removed] evacuated the mine victims from the mine field. During the accident [Victim No.2] and [Name removed] were together with [Victim No.1]. [Victim No.2] was clearing mines and [Victim No.1] was observing his work. The team's doctor offered them the first medical aid and at 09.45 the ambulance left the mine field and at 10.05 we reached the Panj central district hospital. During the providing the first medical aid and on the way to the hospital I had a telephone call with HQ. We arrived at the Panj hospital at 10.45.

I confirm the above mentioned statement with my signature. 20 April, 2006

Statement NO.6: Medical doctor (Medic)

My name is [Name removed]. I'm the medic of the ERT. On 19 April, 2006 after breakfast I went to the mine field together with the team members. That day we started work approx. at 07.30 a.m. I stayed with the driver of ambulance – [Name removed] in the ambulance at the medical point. Approx. at 07.30 a.m. the team leader – [Name removed] called me by radio to provide urgent first medical aid. I went to the northern site of mined area by ambulance. When I reached the spot I got out of the ambulance and started to offer first medical aid to the mine

survivor – [Victim No.2], whose hands were injured and one could see blood. Translator [Name removed] was with him. I asked both of them who else was injured, they answered that their supervisor – [[Name removed]ictim No.1] was seriously injured and was at the minefield. I finished giving the first medical aid to [Victim No.2]. He could walk, but was seriously shocked by the mine accident. At that moment the following deminers: [three Names removed] and the team leader - [Name removed] evacuated the second mine victim – [Victim No.1] from the minefield on a stretcher. He was in a horrible condition: he was suffering from the sharp pain, his left foot was amputated, his right foot was broken in several places, both arms were broken and seriously injured till the elbows and his mouth from the right side was seriously wounded. I have offered the first medical aid to him as well. Approx. at 09.45 a.m. we put him inside the ambulance and the driver drove towards the Central District Hospital (CDH). [Three deminers] and the team leader - [Name removed] were with us in the ambulance. We reached the CDH in Panj town approx. at 10.05 a.m. together with the above mentioned deminers we carried the mine survivors to the surgery room on the third floor. The doctors received the victims and asked us to wait outside. After some time a doctor gave me a list of medicines and asked to buy and bring them. I brought the prescribed medicines. Later the doctor sent me with another list of medicine. I bought these medicines together with team leader. The doctors assessed the condition of [Victim No.1] very serious, but as for the condition of [Victim No.2] the doctors consider it as good.

Approximately at 12.30 a helicopter with several French representatives, [International demining group] National Manager - [Name removed] and doctor [Name removed] arrived and the doctor replaced me.

Analysis

The primary cause of this accident is listed as a “Management Control inadequacy” because the demining group’s management put a field supervisor in place who did not obey the basic safety rules of Humanitarian Demining. It seems that he breached many SOPs and may have deliberately stepped into the uncleared area and squatted down to observe the deminer believing that he was somehow immune to danger. The national staff knew that he was dangerous but had no authority to correct him. His actions also placed the deminer he was observing at risk, and caused him serious injuries.

The secondary cause is listed as “Inadequate training” because it seems that Victim No.1 was not appropriately trained and his managers did not correct this.

Although it seemed at first that Victim No.1 must have deliberately entered the minefield, a subsequent discovery throws doubt onto that explanation. Months later, Victim No.1’s second boot was found further into the minefield – with no sign of damage. The only explanation for this is that it was not being worn at the time. It may be that Victim No.1 took off his shoe, perhaps to remove a stone, and stumbled into the mined area. Certainly he was at least 30cm inside the mined area and in a squatting or crouching position when he initiated the PMN, (boosted with an ML-7). If the boot was in his hand it could have been thrown aside by the blast. Close examination shows no damage

The second boot is shown below.



The first boot is shown below.



Whatever his reason for being inside the minefield, his behaviour before the accident was so unacceptable that the group's senior management should have intervened to correct and train him.

This detailed accident report (a mere fraction is reproduced) is one of the most professional ever produced in Humanitarian Demining.

The "Inadequate communications" listed under "Notes" refers to the Supervisor's inability to telephone the hospital. The "Inadequate Medical provision" refers to their failure to have a practiced CASEVAC plan.