

DDAS Accident Report

Accident details

Report date: 19/05/2006	Accident number: 343
Accident time: 14:45	Accident Date: 17/08/2000
Where it occurred: Sudici region, Rogatica Municipality	Country: Bosnia Herzegovina
Primary cause: Management/control inadequacy (?)	Secondary cause: Inadequate training (?)
Class: Other	Date of main report: 30/08/2000
ID original source: AS/JO/NH/BK	Name of source: BiH MAC
Organisation: Name removed	
Mine/device: PROM-1 AP Bfrag	Ground condition: metal fragments route/path
Date record created: 21/02/2004	Date last modified: 21/02/2004
No of victims: 4	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: CP 33526 49528	Coordinates fixed by:
Map east:	Map north:
Map scale: Map UTM	Map series:
Map edition:	Map sheet:
Map name: 1: 25 000	

Accident Notes

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

Accident report

The following is the MAC's Accident report, edited for anonymity. The report gets confused – with the difference between the Local NGO and the Demining group hard to determine. This is acknowledged in the conclusion as part of the possible cause of so many safety SOPs being ignored during the run-up to the accident – with lines of command confused.

INTRODUCTION

The demining accident occurred August 17th 2000 at 14.45 hrs, location Sudici, Rogatica municipality. Accident occurred at [a local NGO's] demining site (hereinafter [local NGO]). The [Local NGO] was required by local Rogatica police to involve themselves into the operation of taking out two fishermen killed in one of the mined tunnels in Sudici region.

The [Local NGO] has been involved in demining operations funded by the European Union, implemented through the demining organisation [Demining group].

The [local NGO] had reported the demining accident by phone at 17.30 hrs August 17th 2000. BH MAC Director convened board of Inquiry at 08.00 hrs August 18th 2000. Initial report was provided additionally upon Bol request. (Annex A). In accordance with BH Standard, Board of Inquiry gathered at 10.00 hrs August 18th 2000 and set off from Sarajevo towards the location of the accident. They arrived at the region of Mesici, which is about 7 km away from the accident site. Board of Inquiry members were previously informed by the [local NGO] radio operator that the entire management staff along with new teams (Doboj and Banja Luka teams) set off to the site in order to conduct the operation of taking out the victims from the tunnel. Upon arrival at Mesici, at the location where the tarmac road and the former railroad track are separating, the representative of [the Demining group] formed operational team for the [Local NGO] and on behalf of EU, met Board of Inquiry. He notified the Bol that the clearance operations for taking out killed deminers have commenced so there were no possibilities to come any closer. The reason for this was that the former railroad track was cleared of its sleepers and rails and made a one-way evacuation track. According to information received, operational officers from the [local NGO] and Federal CP and on behalf of the [Demining group] immediately supervised the operational team. [Local NGO] team "B" from Doboj was immediately involved in the operations of clearance and taking out while the Banja Luka "B" team was acting as a support. The Board of Inquiry was informed as well that entire Pale "B" team in which the accident happened were sent home so none of them was available to the Board of Inquiry. At about 13.30 hrs the same day the Director [Local NGO] and the programme manager [Demining group] arrived at Mesici. Agreement was made that Pale "B" team would be gathered at 09.00 hrs August 21st 2000 at Lukavica for the inquiry, in order not to disturb the operations of taking out the victims of demining accident.

Immediately after arrangement was made, Bol paid a visit to Gorazde hospital where the severely injured driver/interpreter of Pale "B" team was evacuated right after the accident, in order to state his health conditions. As informed, at 15.30 hrs August 19th, the operation of taking out victims from the tunnel was successfully completed.

Monday August 21st 2000 at previously agreed time, the Bol have asked the director of the [Local NGO] to provide them with a contact person to assist the work of the board. At about 11.00 hrs, after [Demining group] programme manager arrived at Lukavica, it has been arranged that the contact person on behalf of the [Demining group] would be the [Local NGO] operations officer. At the same day written statements were taken from the personnel on the site and interviews were made about the sequence of happenings on the day of the accident. The visit to the accident site along with the team that had the accident but now supervised by Doboj "B" team leader was conducted August 23rd 2000. Postponing the visit was due to [Victim No.1]'s corpse escort to the airport in order to take him to Sweden. During the investigation, Board of Inquiry discussed the ambiguous facts and faults in procedures with the team members. August 25th 2000 members of the Board visited and talked to the severely injured [Victim No.2] in Kasindol hospital.

Demining accident occurred while taking out corpses of killed fishermen from the mined tunnel and includes: joint operations manager for both [Local NGO] of Republic of Srpska and the Federation, [Victim No.1] (killed), [Local NGO] team "B" Pale team-leader [Victim No. 3] (killed), Srpsko Sarajevo police crime inspector [Victim No.4] (killed) and Pale "B" team driver and interpreter [Victim No.2] (severely injured). [Victim No.2] was immediately evacuated to Gorazde hospital where he was operated on and stabilised, except for the wounds to the right part of his lungs, which was not functioning properly. Gorazde hospital specialist recommended that the injured man should be transported to a higher capacity medical facility for another operation unless the lungs were functioning within 2-3 days. For this reason [Victim No.2] was transferred to Kasindol hospital on August 20th 2000, where he was once again operated on and his lungs finally started to function. The duration of his medical treatment cannot be predicted due to multiple severe injuries he sustained (stomach, right side of lungs, muscles of both lower limbs, fractures of left upper arm, both thigh bones, right shinbone). The members of Rogatica police investigation team along with the investigating judge did not enter the accident site due to the great danger of mine presence. They made their report when the victims were taken out and brought into the Rogatica morgue. (Record, Annex I).

Members of the Board of Inquiry were as follows:
Chairman – BH MAC Coordination Dpt
Member - FedMAC (Dutch Army, Eng. Corps)
Member - F MAC RO Sarajevo
Member - RS MAC RO Pale

Board of Inquiry gathered for the investigation at location Mesici as previously agreed. They arrived and met the contact person at 10.15 hrs August 23rd 2000. Contact person to assist the Bol was [name excised], who gathered CP "A" and "B" Pale teams. There was also a supervisor and the Doboj "B" team-leader. Also present in this group were an observer from Germany who works at Kosovo and [a representative] on behalf of the Federal CP. The entire group set off using the former railroad track towards the location of Sudici. They stopped and parked their vehicles at the widening of the railroad, at a location of a previous Sudici railroad station, which is approximately 6.3 km away from the accident site. "A" team Pale was left by the vehicles as a support as it was on the day of the accident (August 17th) for medical support and HF and VHF communication. Communication was established with the operational centre of the [Local NGO] in Lukavica. Led by Doboj "B" team-leader and the supervisor, Pale team and followed by the Bol and the observers. Preparations were made for their movement along the riverbank of Praca river towards the Control Point of the task site. Approaching the first marked part in front of the first tunnel, the group went down to the river. At about 700th metre of walking the shallow parts of the river, the group approached the cleared and wider part where the Control Point was. The access lane rises gradually for the length of approximately 18 metres, coming onto the railroad track and the access lane that leads into the tunnel. Group reached the Control Point at about 12.00 hrs, while the investigation on the very site was completed at 14.30 hrs.

SEQUENCE, DOCUMENTATION AND TASKING PROCEDURES

August 16th 2000 Police station Rogatica received information that two fishermen were found dead in the minefield laid in "Orljik" tunnel in the region of Sudici. Those were [name excised] from Pale and [name excised] from Belgrade.

18.30 hrs the same day consultations were made in the police station with [Local NGO] "B" team Pale, in order to involve a demining team into the procedure of taking out the killed fishermen to the safe place in order for police to conduct their investigation without disturbance.

Having in mind that such a task was a priority one for [the Local NGO], the supervisor tried to contact the [Local NGO] operational officer. Since it was impossible to establish a telephone connection, he called Pale team "B" team-leader. He informed him to gather and bring Pale "A" and "B" teams on August 17th 2000 at 08.00 hrs into the Police station building in

Rogatica and to proceed the information further up to operational officer of [the Local NGO] and [Demining group].

Along with the members of Police station Rogatica, supervisor set off towards the region where the fishermen got killed in order to get familiar with the terrain and the task expected. On return to Rogatica, he establishes connection with operational officer and receives confirmation that equipped teams are about to arrive to Rogatica the next day, August 17th.

August 17th 2000 at 08.00 hrs Pale "A" and "B" teams arrived to the Police station building in Rogatica. Members of the police and the supervisor made them familiar with the task that was expected of them. Before the teams arrived, [the Supervisor] was collecting information about minefields and types of mines from the persons who were engaged on the ground during war activities. Upon arrival to Sudici at 09.30 hrs (widened area of former railroad station), supervisor warned the teams about further approach to the task site and possible approach to the killed fishermen using the river Praca to the second tunnel leading to the location of Renovica. He pointed out that apart from the location where fishermen were killed there are more mined areas: tunnels, riverbanks and the river canyon, as well as the spring on the left riverbank.

After this briefing, the team leader issued the tasks and started the realisation of the operation for taking out the killed fishermen from the mined tunnel.

The very same day (August 17th 2000) Police station in Rogatica issued the written request asking for the engagement of a [Local NGO] demining team (Annex C).



[The picture above shows the tunnel where the accident occurred.]

GEOGRAPHY

The region of Sudici is where the fishermen got killed in the tunnel through which a railroad used to run. The river Praca canyon is in the same region. Region itself is not inhabited much except for the villages located above the canyon. River Praca itself is about 15-20 metres wide, riverbanks climbing up sharply making a canyon within Sudic Mountain to about 400 metres from the water level. River has very clear water and is very suitable for breeding the high quality fish. At this time of the year, river has less water than usual. Small islands are made due to this fact which makes it easier for the fishermen to move around the river. The ground around the river is densely vegetated including woods, while the slopes around the riverbanks are not so much covered with woods and it is easier to see the rocky type of ground around the river. From the right riverbank of Praca river (to the direction W/E) there is a former railroad track, which due to the steepness of the canyon goes through many tunnels and supporting walls. There are mountain tracks leading from one riverbank to the other that can be used by people, livestock and wild animals, but they were also mined during the war due to the fact that it was the exact confrontation line between the RS Army and BiH Army. The tracks are not used i.e. their use by men cannot be seen. According to information gathered from the fishermen, it is only the river going through that area that is used.

All the metal and wooden parts have been taken from the former railroad that used to connect Sarajevo and Visegrad. The railroad track is covered with railroad gravel usually used for covering railroad tracks. The exact gravelled area is contaminated with lots of metal debris

like nails that were used when the railroad was built at the first place, as well as with metal bands used for connecting the tracks. While demining the areas for making access lanes towards the tunnel and into the tunnel to access the fishermen, it was not possible to use the metal detector due to metal contamination. The gravel also disabled deminers to properly prod to the depth of 10 cm. It was possible to use the detector and the prodder if the vegetation was moved while clearing the access lane from the very river towards the top of the railroad track (steep area about 18 metres from the river to the railroad track). Access lane on the railroad track requires removal of vegetation while demining the area, as well as the area within the tunnel, requires digging with hands and prodding in order to reach 10 cm depth. At the very railroad track tiny trees grew that had to be cut in order to clear the area for the access lane towards the tunnel. The ground, soil and the vegetation are shown at photographs attached in Annex G. [Not made available although some of the photographs were.]

The weather within the canyon was suitable for conducting demining operations, regardless of outside temperature since the river, vegetation and shades were bringing the temperature down, as well as the tunnel itself. The work of deminers within the tunnel was difficult due to the condition of the corpses that were there for a few days already, so that demining shifts were shorter (deminers changed after 10 – 15 minutes of work).

Visibility in the tunnel decreased deeper into the tunnel. Even during daylight, one needs torchlight from about the fifteenth metre from the entrance into the tunnel.

PRIORITY OF THE TASK

Priority of the task was taking out the killed fishermen from the mined tunnel through which a former railroad was passing. It is the area of Sudici, Rogatica municipality. It took a few days to trace the fishermen. As soon as the information was received on their whereabouts, Police station in Rogatica sent a request to the RS [Local NGO] in order to take out the killed fishermen from the mined area.

The very mandate of the [Local NGO] is to be involved in taking out persons who were injured or killed in mined area, on the request of the authorities, whether those are SFOR, IPTF, police, CP of the municipalities, Entity MACs or others). This priority is stated in [Local NGO] SOP (part II, points 10.2 and 15.6.3).

As informed by the [Local NGO] director, this was the fifth case of engaging [Local NGO] teams on similar tasks and all were successfully conducted so far.

TASK SITE LAYOUT AND MARKING

The particularities of the task and terrain themselves set the possible task site layout. Teams "A" and "B" were involved in the task. Team "A" members were qualified for conducting UXO removal operations independently, while team "B" was a demining team. That means that team leader of "B" team had as his support entire "A" team who involve themselves into "B" team's operations unless they are tasked with something else. Vehicles of both teams were left at the widened part of the former Sudici railroad station, since the first tunnel, which is about 70 metres from the parked vehicle, was mined. The place where the vehicles were parked was also used for the "A" team control point. "A" team was tasked with support, establishing and maintaining communication, medical support and supplying necessary equipment to the site where "B" team worked. Such as it was, demining task of taking out fishermen from the entrance to the second tunnel up the Praca river required for the "B" team task site layout to be approximately 750 metres away. At about 50 metres from team "A" control point; an access lane was cleared from the railroad track to the very river Praca. After this was completed, team "B" continued further with all the necessary demining and medical equipment, approaching by river (about 700 metres) to the point, which was about 40 metres from the tunnel. The tunnel, as well as the railroad track, is located about 15 metres about the river level. Control point was set at the nearby river island in order to clear the area at the riverbank for another control point as well as the access lane climbing up to the railroad track and further towards the tunnel where the dead fishermen were. Medic, equipment and the resting area were set close to this control point on the riverbank, which provided natural

shelter under the railroad track and the tunnel for about 15 metres, 50m away from the tunnel and 70 metres away from the location of the accident in the tunnel.

Sketch of the task site and the location of the accident are attached in Annex F, while the photographs attached in Annex G show the parts of the task site.

Instead of 1.2-1.5 high red tipped pickets, the marking of the access lanes into the river and up the river towards the tunnel used trees and poles as the border for clearance. Further in the tunnel, tapes that were marking the working / access lanes were fastened to the ground by stones that were used instead of 0.5 m red tipped pickets above the ground level. Safe lane and datum line were not set, since the first lane cleared that led to the fisherman who was taken out first was then used as the safe lane and datum line. The lane was further cleared towards the second fisherman and one metre was cleared around the body.

This particular site layout and marking comply with the requirements of a very specific task, only that the access lane to the killed fishermen should have been at least two metres wide since it was not a case of emergency saving lives.

SUPERVISION AND DISCIPLINE ON SITE

The team leader of Pale "B" team was the immediate supervisor at the site, having under his command supporting "A" team.

The regular "B" team had Pale supervisor, the next level of supervision while the supervision on behalf of [Demining group] was provided by [Victim No.1] acting as a joint operational manager for [Local NGO] operations both in Federation and in Republic of Srpska.

QUALITY ASSURANCE

Within this particular task, quality control of the task was conducted by "B" team Pale supervisor on behalf of the [Local NGO] which was his regular function, while [Victim No.1] supervised the task functioning as a joint operational manager on behalf of [the Demining group].

No one from RS MAC structure visited this site since RO MAC Pale was not contacted about the conduct of this task, which was in their jurisdiction.

COMMUNICATION

While conducting this task, mobile VHF radios Motorola GP-300 were used between "A" and "B" teams. Communication with the operational centre of the [Local NGO] in Lukavica was established and maintained through HF CODAN radio devices in the vehicle. This type of communication is satisfactory regarding the particularity of the task, since even the "B" team vehicle with its HF devices had to be left on "A" team's control point.

The maintenance of communication towards the Operational Centre of [Local NGO] as well as towards the team leader is the responsibility of the driver/interpreter who is also tasked with radio communications.

The radio operator of "A" team reported the accident to the Operational Centre of the [Local NGO]. He used HF Codan communication device from his vehicle. Further on, Operational centre of [Local NGO] notified the Gorazde hospital in order for them to receive the injured.

MEDICAL COVERAGE (CASUALTIES INCLUDED)

There were medics from "A" and "B" teams included in this task. "A" team medic was at the control point of its team, right by the ambulance and equipment of her team, where the vehicle of "B" team was parked as well. "B" team medic was at "B" team's control point, carrying her first aid bag and having stretchers with her, within the natural shelter about 65 m away from where deminers worked in the tunnel.

Such medical coverage was sufficient regardless of the fact that both ambulance vehicles were parked about 750 metres away due to the impossibility of driving closer to the "B" team medic.

Sustainable medical equipment enabled the "B" team medic to provide emergency first aid to severely injured "B" team driver/interpreter [Victim No.2]. A deminer and the supervisor assisted medic. [Victim No.2] had sustained injuries to his sternum / lungs, stomach, muscles of his right lower limb, right upper arm, both thighbones and right leg shinbone. After the accident (15.45 hrs) and after being provided with emergency first aid the injured was put on the stretcher and taken to the ambulance vehicle at "A" team control point from where he was transported to Gorazde hospital for further treatment, where he was received at 16.50 hrs. The hospital personnel had conducted further steps in order to revive and stabilise the injured and his injuries. The operations undertaken by Gorazde hospital specialists lasted until 22.00 hrs. That is when the injured was finally stabilised and out of danger for his life functions.

Personnel showing no signs of life after the explosion were: team leader [Victim No.3], joint operational manager from [Demining group], [Victim No.1] and crime inspector [Victim No.4] from Srpsko Sarajevo police. A deminer was tasked to state their conditions by the supervisor, while the rest of them were providing help to the injured [Victim No.2], he checked their immediate death.

Regarding the insurance, deminers were covered for the period of November 15th 1999 until November 15th 2000, to the amount of money greater than minimum set in the BH Standard. Copies of insurances are attached as Annex J.



[The picture shows the Victims photographed the next day.]

PERSONNEL INVOLVED AND TEAMS IDs

Immediately involved personnel in clearing the access and taking out fishermen were members of Pale "B" team as follows:

- team supervisor
 - team leader (killed)
 - 6 x deminer
 - medic
 - driver/interpreter (Injured)
- Supporting Pale "A" team was as follows:
- team leader
 - UXO operator
 - medic
 - driver/interpreter

Written statements taken from the personnel who were on the site are attached as Annex D. [Not made available.]

EQUIPMENT AND TOOLS

According to the statements and interviews with deminers, team "B" used the following: GUARTEL MD-8 metal detector, prodders, spades, shears, hand saw, helmets with visors, and protective jackets, hook and line set for remote pulling.

DETAILS ON EXPLOSIVE DEVICE INVOLVED

Explosive device that caused the accident was a PROM-1 mine whose plate was found in the crater made where it detonated, at 25 cm depth from the ground level and 50 cm from the right wall of the tunnel. While investigating the crater on August 23rd 2000 (victims were already taken out), Board of Inquiry requested that Dobož "B" team, who cleared and marked the spot, should clear another working lane by the right side of the tunnel wall in the direction of the crater, which was to be 1.5 metres long towards the crater and another metre further, towards the crater of the mine that killed the fishermen. At about 30 cm from the crater Board of Inquiry found a PMA-2 that was absolutely covered by gravel. The distance of the crater made where the mine detonated is approximately 2.5 metres from the right side, in the direction of tunnel's length. According to Board of Inquiry opinion, the crater of the mine that caused demining accident was right underneath the back of the late fisherman Radomir Lucić, as well as the PMA-2 mine which was found during the investigation.

On August 17th 2000, while clearing the access lane for taking out the fisherman, two PMA-2 mines were found in the lane while the prong of a PROM-1 mine was noticed to the left side of the working lane.

After the accident that happened in Pale "B" team on August 17th 2000 at the task of taking out killed fishermen, Dobož "B" team was tasked for taking out the other fisherman and the rest of the victims. While clearing the access towards them, they found 12 more PMA-2 mines and the PROM-1 that was already noticed.

Entire cleared area in the task of taking out the victims from these two accidents is about 65m² of the tunnel area, while 15 PMA-2 mines were found, one PROM-1 was found while two were activated.

Sketches of the accident site along with the photographs are attached as Annex F and G. [The annexes were not made available, although some pictures were.]

EVIDENCE ON REMINING

After the explosion which had killed the fishermen, there was no evidence of remaining.

CLOTHES AND PERSONAL PROTECTIVE EQUIPMENT

During the entrance to the cleared part of the mined area and in order to take photographs of the second fisherman and to take further actions on his taking out that actually led to the accident, the killed and the injured wore no personal protective equipment.

Photographs of the accident's victims that prove what is stated above are attached as Annex G. [Not made available, but some photographs were. Other photographs reveal that the PPE being worn while the group recovering bodies approached the accident site was a long visor and a frontal apron.]

DETAILED ACCOUNT OF ACTIVITIES ON THE DAY OF THE ACCIDENT

Team leader did not fulfil the daily report with the evidence of activities and the start time. According to written statements and interviews, activities were as follows:

At 08.00 hrs August 17th Pale teams "A" and "B" met in front of the police station building in Rogatica. The representative of the police and supervisor briefed them about the task. They set off towards Sudici.

They approached Sudici (widening of the former railroad station) at about 09.30 hrs and supervisor briefed them about the mine situation on the ground again. Teams were warned that this place used to be the confrontation line during the war. They have been warned about the fact that the riverbanks are mined as well as tunnels and springs on the left riverbank. The only possible way to move, which is said to be used safely by fishermen is down the river. The main control point for "A" team during this task was thus set at the spot with a parking area for the vehicles of both teams, medical support of "A" team, HF communication equipment for communicating with the Operational Centre [Local NGO] Lukavica, team equipment and the rest of the equipment team "B" did not need at the moment.

After preparations were made at about 10.00 hrs, "B" team checked the travelable railroad track for the length of 50 metres towards the first mined tunnel, in the direction of the accident. Team started to clear and mark the access lane 2 metres wide and 15 metres long into the river Praca, starting from the right side of the railroad track towards the direction of the mine accidents that killed the fishermen. After that was done, "B" team along with their supervisor continued their movement through the shallow parts of the river for about 700 metres, towards the river island where temporary control point was formed and where the medic was located with the equipment.

About 11.30 hrs the team started to clear the area on the right side of the river in order to form a real control point for "B" team, with the area for the medic, equipment, and deminers' rest. They also cleared the 2 metres wide access lane climbing up for about 18 metres onto the railroad track. Deminers were engaged in shifts of 10-15 minutes after approaching and clearing the left side of the railroad track towards the tunnel, 38 metres long and 1 metre wide. On approaching the tunnel, the lane was cleared right through the middle of the tunnel towards the corpse of the killed fisherman that lay about 13 metres away from the entrance. Two PMA-2 mines were found and disarmed at that part of the working lane by the team leader.

About 13.45 hrs, fisherman [No.1] was pulled into the cleared part of the access lane, his body placed into the bag. It was delivered to his family at "B" team control point. Using the torchlight, deminers continued to clear the access lane towards the second fisherman [No.2], that lay about 7 metres away, slightly to the right side of the tunnel, looking from the direction of the entrance into the tunnel.

At 14.15 hrs the operational officer of [Local NGO] arrived at "A" team control point together with the [Demining group] operational manager for [Local NGO] Federation and RS.

After being briefed at the "A" team control point, stated that he wanted to go to the "B" team control point in order to check the conduct of the task and to take some photographs. He was approached and followed to the control point by the driver/interpreter. While moving, the Operational Manager was taking photos (Annex G, 1 – carrying body of the fisherman along the river, while his last photograph shows the position of the found body of another fisherman. This photo was supposedly taken immediately before the explosion).

At about 14.30 hrs [the Operational Manager] along with [Victim no.2] and crime inspectors from Srpsko Sarajevo police who joined them (Victim No.4 and [name excised], taken on photo No 2. on the very beginning of the access lane to the tunnel, which was approximately 40 metres from the entrance into the tunnel) arrived at "B" team control point. Team leader and supervisor briefed [the Operational Manager] about the task. The last one to work in the tunnel was a deminer. He reported to the team leader that he had finished the clearance towards the body of the second fisherman and around him towards the wall.* He marked the cleared area with the tape. After that, the Operational Manager, team leader, supervisor, both crime inspectors and driver interpreter entered the tunnel. According to what Victim No.2 can remember, someone carried a bag for the body and said to the Operational Manager that the body should be remotely pulled for security reasons. The Operational Manager supposedly answered that it would not be humanitarian in this moment. Body was photographed both by the Operational Manager and the crime inspector. In the meantime, the supervisor left the tunnel; one crime inspector took the torch light and the fishing pole from the late fisherman and followed the supervisor out of the tunnel. Victim No.2 remembers that he himself turned to leave the tunnel because of the corpse's smell. He was about 7 metres away from the group that stayed in the tunnel. When he turned towards them, all he could see was the glow of the explosion that took him down. He tried to stand up but he had no strength in his legs.

Explosion occurred at 14.45 hrs. The supervisor took over the management of further operations and providing help to the severely injured [Victim No.2] with the help from a deminer. [Name excised] was sent to state the conditions of the rest of the group that stayed in the tunnel. He checked the place of explosion and found out that none of the people around survived. He stated visible injuries to the vital parts and reported on the same to his supervisor. Medic provided emergency first aid to the injured [Victim No.2] (bandaging the wounds, stopping the bleeding, infusion etc.). This was conducted on the safe area within the access lane, i.e. the part in front of the tunnel. Then he was taken to "A" team control point, put into the vehicle and transported to Gorazde hospital by the driver. They arrived at the hospital at 15.50 hrs.

In the meantime, the driver/interpreter/radio operator of "A" team, Predgrad Ristovic notified the [Local NGO] about the accident and was in continuous communication with Ops Centre during the transport of the injured to the hospital.

At the moment of the explosion, "A" team medic set off towards the place of the accident along with three policemen in order to provide help to the injured. On her way to the location she met deminers and another medic carrying injured Victim No,2. She approached the tunnel where she was told that no one else survived.

After this, supervisor along with the others used tapes to close the tunnel; he took the equipment and withdrew people to "A" team control point. According to information provided by Operational Centre, they were withdrawn from the task.

The [Demining group] and [Local NGO] Management immediately planned and conducted activities on taking out corpses of the fisherman and the rest who got killed in the demining accident for the next day. Doboј and Banja Luka "B" teams were chosen to conduct the task.

Next day the operation [Demining group] formed team appeared consisting of operational officer [Local NGO] Federation and Operational officer [Local NGO] Republic of Srpska, both on behalf of the [Demining group]. Operational [Demining group] team engaged Doboј "B" team for this task with the supervision of the supervisor to the team that had the accident while Banja Luka "B" team was providing support. The task of taking out the victims started August 18th 2000 and finished August 19th 2000 about 15.30 hrs, as stated in the introduction of this report.

Photographs taken by team leader of Doboј "B" team on starting clearance towards the victims show the positions of corpses after the explosion (Annex G) and led to theories of possible mistakes that may have led to the activation of another mine and more victims.

SUMMARY

The area of the railroad track from which the rails and sleepers were removed is extremely hard for demining due to high metal contamination and gravel usually used for railroads. Quartel MD-8 detector was checked and it is impossible to use it if its sensitivity is set to II. If set to position I, it could be used for locating larger pieces of metal but then it would not find mines with small amount of metal, such as PMA-2, which were also found in the mined area of the tunnel's entrance towards the victims inside. Work with the prodder is limited to the very small depth, down to the first layer of gravel. It has been proven that the most reliable way to clear is to use hands in gravel and help oneself with the prodder to reach 10 cm depth, especially if the prong is set for pressure and is covered with gravel. There is no minefield record about the mined part of the tunnel where accidents occurred. Visibility is lower from the 15 metres from the entrance and the torchlight is needed for work. The corpses of fishermen who got killed a few days ago were already in the process of decay, which also hardened the deminers' work. That is why they worked in short shifts of 10-15 minutes. The Board did not consider that these conditions had any influence on the accident.

The fishermen who got killed were probably going through the tunnel from the direction of Renovica, trying to reach their car that was parked some 5 kilometres away in the direction of Mesici. When moving through the tunnel they used the torch light that was left hanging from the hand of late [Fisherman]. Their movements were such that one walked the middle of the tunnel in front of the other who lightened the way, while one was moving closer to the left side wall into the direction of movement – leaving out. At about 22.5 metre from the entrance [a

fisherman] activated a mine (most probably a PROM-1) whose explosive blast threw him badly so that his head was found 2 metres from the crater from where the mine detonated (photo No. 7 made by Victim No.1 – Annex G), with his legs in the direction of the exit. The body was close to the wall of the tunnel (left side regarding the direction they went). Injuries resulting in immediate death were all over the body, especially lower limbs and head, which can easily be seen on the photo. The second fisherman also suffered similar injuries but his body was at the middle of the tunnel, about 5 metres closer to the exit.

According to the investigated crater from where the PROM mine detonated (demining accident August 17th 2000) the body of late fisherman No.1 was laying on or close to a PROM-1 and PMA-2 mine, as a PMA-2 mine was found at 30 cm distance from the crater towards the exit. If analysing the crater (position of the body close to the wall, clearance to the point of the head and marked above it, the crater of the mine that killed the fishermen), the key PROM-1 mine was under the corpse (more towards upper part of the body) of the late fisherman No.1, while PMA-2 was found during investigation at the place where his back was when his body was laying down.

According to what the Board of Inquiry thinks, the activation of the key mine that caused the demining accident could happen either by moving the body or lifting it by the rest of the personnel in the tunnel in order to put it into the bag, or that one of them stepped on the mine and activated it. According to the statements, especially the one given by the injured [Victim No.2] who was leaving towards the exit, the following men stayed with the body: team leader, operational manager and crime inspector. As seen on the photographs taken by Dobož "B" team leader when their clearance started in order to take out the other fishermen and victims of the second accident, (August 18th –August 19th 2000), it is possible that they have tried to move the body towards the bag. When lifting and moving the fishermen towards the bag, team leader had probably activated the mine by stepping on it, since the position of his body is the closest to the crater and thrown a bit towards the exit. Lower limbs injuries as well as fatal injuries to his head show that the deceased must have been in crouching position. According to what is stated above, the Operational Manager lifted the body by the legs, the crime inspector took the body's right arm while the team leader took his left arm. The fact that bodies were not thrown away further from the place of explosion proves that they had the fisherman's body in their hands. Fisherman's body was blown apart by the explosion and thrown into the bag to which he was being lifted in the first place.

CONCLUSIONS

Demining accident that happened August 17th 2000 at [Local NGO] "B" team Pale was caused because standing operational procedures were not complied with to the full extent, since the [Local NGO] Republic of Srpska is an accredited organization with their own SOP which they breached. According to the facts on the ground, written statements, interviews and documented photographs, the Board of Inquiry has made the following conclusions:

Procedure for remote pulling from the safe distance was not complied with when the second fisherman was being taken out from the mined area to the safe area in order to be placed in the bag. This is the basic cause that led to the accident.

The obligatory personal protective equipment was not worn within the mined area neither by the team leader as the lowest level of supervision, nor by the regular supervisor and the manager on behalf of the [Demining group]. This represents all but discipline on site, which can have a very negative impact on demining personnel who in such case were not able to provide any help to the killed and a severely injured person.

Procedure of entering visitors into the mined area was not complied with (team leader and maximum 4 authorised visitors). This could have resulted in even more victims since the lane cleared was only 1 metre wide and also 1 metre around the body; the fact remains that to the left and right of one metre wide lane 12 PMA-2 mines and one PROM-1 mine were found by "B" Dobož team. Approaching the body of second fisherman, there were six people at the same time in the part of the tunnel with poor visibility.

Access lane on the railroad track that led to the killed fishermen should have been of a minimum width of 2 metres for safety reasons (reference [Local NGO] SOP). In this case

there are no excuses since it was not an emergency situation of saving lives but merely taking out corpses of fishermen who were killed in the mined area a few days ago.

The closest regional RS MAC office was not even notified about the conduct of this task, which means there was no quality control of work and no possibility of noticing faults and correcting them.

Team leader made no diary of evidence for the daily activities on the task and all other data requested both by their SOP and BH Standard.

Statements were not taken from the members of the team who had the accident when they were supposed to be taken (right after the accident) and the team was not available to the Bol the next day after the accident, which is requested both in their SOP and the BH Standard.

Initial report, which is stated to be sent both in their SOP and in BH Standard was not provided until August 25th 2000.

RECOMMENDATIONS

According to all stated above, and in order to prevent such accidents from happening again, Board of Inquiry recommends the following:

As presented to the Bol, there is the duplication of managing function between RS [Local NGO] and implementer of the programme on behalf of EU [Demining group] and especially in structure of managing the demining teams (officer for operations on behalf of [Local NGO] and officer for operations of [Local NGO] on behalf of [Demining group]). It cannot be clearly said who has the final word in managing the demining teams. This was also obvious while the investigation was conducted so the Bol recommends that authorities of individuals within the [Local NGO] and [Demining group] should be reviewed and separated.

Not a single individual within demining community, regardless of his function and authority, is allowed to breach the prescribed procedures for humanitarian demining.

In part II (point 15.6.3) of the SOP, there is the explanation for the procedure "The action in case of (civilian) accident within the minefield", when it is the matter of saving victims for saving their lives, and it is referred to as "rapid response/reaction". That part was not provided to the Board of Inquiry so the Bol recommends that it be amended with the experience from this accident. Before any changes / amendments are made, it should be submitted to BH MAC Coordination Department for agreement.

A minimum of one days training is to be conducted regarding the breaching of procedures set in the SOP, especially those that led to the accident, as well as others notified. Training should be conducted with all [Local NGO] teams, especially with the supervision personnel. RS MAC is to be notified in time about the date when the training is to be conducted.

RS MAC and RO Pale should consider emergency marking of the suspicious area of the exits and entrances to and from the area, including Praca river towards the critical tunnels (three) where accidents happened. This should be marked from the former railroad station Sudici towards the confrontation line, i.e. in the direction of Renovica.

ADDITIONAL INFORMATION

At the wider Sudici area from the former railroad station to the direction of Renovica there was the confrontation line. Two accidents have been reported so far. One happened in the third tunnel during the war (1995), when refugees from Zepa got killed on their movement towards Gorazde. Second one happened in the second tunnel where an SFOR member got killed on the very entrance driving his motorcycle. This accident in the third tunnel shows that the first three tunnels are mined (those are entrances from the former railroad) but there is no information about minefield records in the database.

ANNEXES: [Not made available.]

A Initial report

- B Board of Inquiry members
- C Police request for engagement of a demining team
- D Written statement of the personnel present on site
- E Sudici area map 1: 25.000
- F Sketch of the task site and of the location of the demining accident
- G Photographs of the task site and of the site of the accident
- H Team "B" Dobo team leader's report
- I Police record made by investigating judge
- J Copies of deminers' insurance

Signed: all BOI members

Distribution: [Local NGO]. [Demining group], FED MAC, RS MAC

Victim Report

Victim number: 431	Name: Name removed
Age:	Gender: Male
Status: supervisory	Fit for work: DECEASED
Compensation: not made available (insured)	Time to hospital: not applicable
Protection issued: Frontal apron Long visor	Protection used: none

Summary of injuries:

FATAL

COMMENT

Multiple fragmentation injuries. Died immediately. No medical report was made available.

Victim Report

Victim number: 432	Name: Name removed
Age:	Gender: Male
Status: driver	Fit for work: DECEASED
Compensation: not made available (insured)	Time to hospital: 1 hour 5 minutes
Protection issued: Frontal apron Long visor	Protection used: none

Summary of injuries:

INJURIES

severe Abdomen

severe Arm
severe Chest
severe Legs

COMMENT

No medical report was made available.

Victim Report

Victim number: 433	Name: Name removed
Age:	Gender: Male
Status: supervisory	Fit for work: DECEASED
Compensation: not made available (insured)	Time to hospital: not applicable
Protection issued: Frontal apron Long visor	Protection used: none

Summary of injuries:

INJURIES

severe Head
severe Legs

FATAL

COMMENT

Multiple fragmentation injuries. Died immediately. No medical report was made available.

Victim Report

Victim number: 434	Name: Name removed (policeman)
Age:	Gender: Male
Status: other	Fit for work: DECEASED
Compensation: not made available	Time to hospital: not applicable
Protection issued: Not recorded	Protection used: none

Summary of injuries:

FATAL

COMMENT

Multiple fragmentation injuries. Died immediately. No medical report was made available.

Analysis

The primary cause of this accident is listed as a *“Management/control inadequacy”* because the Victim’s included the most senior group manager and he was in breach of many basic safety SOPs. It seems likely that he was inadequately experienced and/or trained, so the secondary cause is listed as *“Inadequate training”*.

The fact that the Victim’s corpses were only checked by a deminer for signs of life is the reason why *“inadequate medical provision”* is listed in the notes. The photographs of the dead (others are in the file) do not show obviously fatal injuries – although there also no indication that the victims had moved after the detonation. However, if it was safe for a deminer to check for signs of life, it should also have been safe for a medic to do so.

Related papers

A *“lesson learned”* document relating to this accident was made available in 2002 and is reproduced below.

BOSNIA AND HERZEGOVINA MINE ACTION CENTRE, September 1st 2000

LESSON LEARNED – DEMINING ACCIDENT AUGUST 17th 2000

INTRODUCTION

The Board of Inquiry was convened by the BH MAC Director and in compliance with the BH Standard in order to conduct the investigation of the accident that happened in Rogatica municipality, area of Sudici, August 17th 2000.

Accident involved following personnel who suffered mortal injuries: the team leader, operational manager for the implementation of the demining programme on behalf of the European Union and a police inspector from the Police station Srpsko Sarajevo, while the driver/interpreter of the demining team is severely injured.

SUMMARY

The accident occurred in the third tunnel of the former railroad from the direction of Sudici towards Renovica. It happened at 14.45 hrs on August 17th 2000. The demining team was engaged in the activity of retrieval the bodies of the two killed fishermen from the mined tunnel, upon request of the local Rogatica police. While planning to go through the tunnel, the fishermen went into the mined part of the tunnel in which there were no sleepers and rails on the former railroad track. They activated a PROM-1 mine by stepping on it. The tunnel is mined at its very exit, from the direction of Renovica towards Sudici. The activation of the PROM-1 mine resulted in two killed deminers [fishermen] who were searched for [for] a few days. Upon the activation of the mine, one of the fishermen was thrown away by the blow and fell onto the ground covering with his back two mines (PROM –1 and PMA-2). His falling down did not cause the mines to be activated, since they have been very well hidden and masked in the gravel and all they needed was a direct pressure on the surface where the prong was. The only way to approach the tunnel for the mined canyon as well as the part of the tunnel within the River Praca canyon was through the Very river. Vehicles of the teams were parked at about 800 metres from the tunnel. First access downwards to the river was made at about 50 metres from the entrance to the first tunnel. The team then proceeded along the river for about 700 metres in order to clear the access lane onto the railroad and into the tunnel where the dead fishermen were. One metre wide access lane was cleared to the tunnel and onwards to the first fisherman, who was at about 13th metre from the entrance, at the middle of the tunnel. The fisherman’s body was pulled towards the cleared part of the lane, loaded onto the vehicle and delivered to his family on the control point. Deminers continued accessing the second fisherman who was near the right side of the tunnel’s wall. The access lane was cleared as well as one metre around his body. The senior operational

manager arrived at the site at about same time, wishing to photograph the body of the second fisherman. The team leader, team's regular supervisor, two crime inspectors from Police station Srpsko Sarajevo and their driver/interpreter followed him into the tunnel. After photographs were taken, the team supervisor and one of the crime inspectors left the tunnel. The driver/interpreter followed them. Due to humanitarian reason, as stated by the operational manager, the fisherman's body was not remotely pulled. When they lifted the fisherman's body in order to place him into the bag, PROM-1 mine was activated. Three of the persons within the tunnel suffered fatal injuries while the driver/interpreter who was 7 metres away was severely injured. However hard the conditions were, the evacuation of the injured person was successfully conducted so that he reached Gorazde hospital in about 65 minutes. He was operated on for six hours and stabilised. After the accident occurred, a new team was engaged to retrieve the bodies of the second fishermen and those who got fatal injuries in the demining accident.

CONCLUSIONS

The demining accident that occurred August 17th 2000 was a result of non-compliance with the procedures stated in the demining organisation's SOP. When all the conditions were taken into consideration, including written statements, interviews and photo documentation the Board of Inquiry had concluded the following:

1. Remote pulling procedures from the safe distance to the safe area were breached in the case of the second fisherman's body. It was supposed to be pulled out, placed into the bag and taken onto the safe area, which was the main reason that led to the accident.
2. The obligation of wearing PPE within the mined area was breached from the lowest level of supervision (the team-leader), then regular team's supervisor and the senior supervisor who visited the site, which is an obvious example of lacking discipline, which furtherly has a very bad impact on demining personnel. In this particular case, the fatalities and the injured person could not be protected in any way.
3. Procedure of taking the visitors into the mined area was also breached (the team-leader and maximum 4 authorised visitors), which could have caused even more victims due to the narrow clearance of the access lane (1 metre plus 1 metre around the body), since 12 PMA-2 mines and one PROM-1 mine were found to the left and the right side of the fisherman and by the second engaged team. Six persons at the same time had entered the partially invisible part of the tunnel towards the second fisherman.
4. According to the organisation's SOP and for safety reasons, the access lane on the railroad track approaching the killed fishermen should have been 2 metres wide as a minimum. For this no excuse can be found since it was not matter of saving lives but retrieval from the mined area of the corpses of the fishermen who got killed several days ago.
5. The closest Regional Office of RS MAC was not notified about this task, which resulted in no quality control procedures and possible noticing the breaching of the procedures.
6. The team leader did not write down his daily diary containing schedule for certain activities related to the task, as well as containing other relevant information as set both organisation's SOP and BH Standard.
7. Statements from the personnel in the team where the accident occurred were not taken immediately after the accident. The team was not available to the Board of Inquiry the day after the accident, though stated it would be so both in their SOP and in the BH Standard.
8. The Initial report, which is supposed to be sent in the deadline prescribed by both SOP and BH Standard, was not provided on time. The notification on the accident was received by phone, providing no information needed to start the accident investigation.

RECOMMENDATIONS

According to what is stated above and in order to prevent future accidents, the Board of Inquiry gave the following recommendations:

1. Not a single individual within demining community is to breach humanitarian demining procedures, regardless of his function or authorisation. The supervisors are those who are supposed to be familiar with both BH Standard and the SOP of their own organisation, concurrently preventing the breach of the procedures noticed during the visits to the sites. Every supervisor is to recommend and take discipline measures towards those who are breaching the procedures, even if it ends up in getting somebody fired.
2. Remote pulling onto the safe area is to be used as an obligation in cases of retrieving bodies from the mined areas. Emergency activities in order to save the lives of victims within the mined area are to be thought of and if necessary detailed according to this new experience, all in order to prevent one victim to become two during rescuing procedure.
3. Perform briefing and if necessary, re-train entire personnel (executive and supervising) on the procedures breached that led to this accident, as well on all the other noticed faults noticed and stated in the conclusions.
4. RS MAC RO Pale is to consider the possibility of emergency marking from the safe area of the river Praca towards all the critical tunnels where so far three accidents occurred. This should be done from the direction of the former railroad track Sudici towards the direction of Renovica, this area having been the former confrontation line.

Signed