DDAS Accident Report

Accident details

Report date:	27/03/2004	**Accident number:**	405
Accident time:	08:20	**Accident Date:**	19/08/2001
Where it occurred:	Bregana Dubrovnik Highway, Near Urije. Licko-Senjska, Licki Osic	**Country:**	Croatia
Primary cause:	Field control inadequacy (?)	**Secondary cause:**	Management/control inadequacy (?)
Class:	Missed-mine accident	**Date of main report:**	17/09/2001
ID original source:	NO/ML	**Name of source:**	CROMAC
Organisation:	Name removed		
Mine/device:	PMA-2 AP blast	**Ground condition:**	leaf litter metal scrap route (verge) woodland (bush)
Date record created:	24/03/2004	**Date last modified:**	27/03/2004
No of victims:	1	**No of documents:**	1

Map details

Longitude:		**Latitude:**	
Alt. coord. system:	LSLO-SB-ICH-198-07-00	**Coordinates fixed by:**	
Map east:		**Map north:**	
Map scale:	not recorded	**Map series:**	
Map edition:		**Map sheet:**	
Map name:			

Accident Notes

inadequate area marking (?)

inadequate investigation (?)

safety distances ignored (?)

inadequate metal-detector (?)

Accident report

An accident report was written by the Victim, who was the Site the Supervisor for the commercial Demining company involved in the accident. It and several other documents were made available, including one from the National MAC. Their content has been translated and is summarised below, edited for anonymity.

Conditions at the site

The area where the accident occurred was “enclosed” with hard, dry soil. There were trees around a stream and there was consequent leaf-litter on the ground. Undergrowth was fairly dense, typical of European woodland. An overgrown route ran through the area and there was a high level of metal contamination from scrap-metal refuse. The purpose of the clearance appears to have been to allow the safe opening of the route.

[The picture shows the lane approaching the accident site with the position of the PMR-2A mines indicated.]

The weather at the time of the accident was cloudy and hot.

The accident happened in the area of Urije, South from Licki Osik, by the entrance to Licki Osik from the Gospic direction. After the level crossing, take a right turn next to the railroad.

Ground preparation machines had been used over some of the area being cleared, but not at the accident site. The Demining group had completed “Phase 1” at the site and were just starting on “Phase 2”. Whether they had been away from the site between phases is not clear.

CROMAC, Department for Supervision of Demining report

Dated: 17 September 2001 and addressed to the Assistant for Project Implementation, Demining and Supervision.

Accident Report on a Project demining a “Section of the Highway Bregana Dubrovnik (Section III B2, Licki Osik – Sv. Rok) – area of Urije – phase 2” involving the company [Demining group]. The clearance projectect identification code was: LSLO-SB-ICH-198-07-00

The accident happened on 19 August 2001. Based on the list of documents collected during the inquiry (20 August 2001), it is obvious that:

On 19 August 2001 employees of [Demining group] were working on demining on the above named project. Their work was in accordance with the approved and certified Implementation Plan of Demining, which meant that the planned method – using a metal-detector – was used. The so-called “walking the wire” method was applied in search for PMR-2A mines.

[Deminer 1] detected 3 PMR-2A mines before 08:30 AM. The work-site leader, [the Victim], was informed about that. (The working time was 6:00-11:00 AM, with a break between 8:30-09:00 AM)

The work-site leader, [the Victim], came to deminer [Deminer 1] at 9:20 to measure and record the positions of the mines he had found. During that process he noticed a PMA-2 in the waste [on the ground?] next to his left foot. During the exit of deminers from the lane and due to his own movements he activated [another] PMA-2, from which explosion he suffered heavy injuries (with the consequent amputation of his left foot).

Conclusion

From above mentioned, a heavy oversight of deminer [Deminer 1] in performing manual clearance is obvious. The use of a metal-detector in a rubbish heap with a lot of metal was irregular and there was questionable usage of prodders.

To prevent oversights in demining work similar to this one - strict adherence to the Book of Rules About the Demining Work NN 79/00 [is required, also] reinforced internal supervision/inspection with more active monitoring and control of the work quality of every deminer and member of support stuff working on clearance operations, performed by the group leader and the work-site leader. [Narodne Novine, probably issue 79, year 2000: this is the publication that includes all Croatia laws and national regulations.]

Signed: Head of the Department for Supervision of Demining

Report of the victim

According to plan, we deployed the following at the site:

- 2 machines MV-3 (Doking, Mechem)
- 4 pairs of mine detecting dogs ([two named groups] each ran two pairs)
- 4 deminers
- Site supervisor [work-site leader]
- medical team

Continuing from Phase 1 of the clearance, two deminers ([Deminer 1] and [Deminer 2]) were to follow the familiar line of PMR-2A mines, which was continued from Phase 1. [Deminer 1] was to start from the last PMR-2A of Phase 1 through the grove, and [Deminer 2] made the passes in preparation for the use of MDDs [by the stream etc.].

According to the records that we had, the oaks and the higher trees were used for orientation, no azimuth and no distances. I had warned all deminers and machine drivers on the possibility of surprises at the exit from the forest and roads and paths next to the oaks. The area was planned to be examined manually through the forest and manually behind the machine through the Grebenar stream, following the series of PMR-2A. According to the records that we had, there were no indications of any pressure-activated mines.

Before the break, [Deminer 2] had reported 2 PMR-2A, and [Deminer 1] 3 PMR-2A mines. Because of the large area of the work-site and because of the amount of used equipment, which cannot be covered by a single group leader (and he is needed to coordinate the operating of the machine of Doking and to measure the efficiency of MDDs), we agreed that I would record the positions of the mines. I would also check the condition of the roads/paths and the exit from the forest to the stream. I was also planning the areas for the work of MDDs, possible work with demining machines by the edge of the forest, as well as judging the conditions around the oak at the end of the forest.

After the break (8:30-9:00) the deminers took more mines-found signs and went to their lane. I recorded the data about the distance and the azimuth of the landmark and (9 pieces of PMA [illegible] for check, because the terrain between the oaks was not cleared earlier in Phase 1.

Then I went to measure azimuths of the mines found by [Deminer 1]. He was standing in the passage behind the third PMR-2A, cleaning the rest of the vegetation and preparing for extending the lanes. I told him to stop working while I take the azimuths of mines found. I

went by him to the end of the passage about 5 steps, and he stayed by the third PMR-2A preparing the tapes. After coming to the end of the passage and based on the azimuths, I had established that the line of PMR-2As would continue towards the oak, so I told [Deminer 1] to be careful in the area around the oaks and while entering the stream. I was turning around slowly, following the junction of the forest with the stream, and thinking about including the machine in the next days, since the woods are sparse. Having experience from Phase 1 with PMA-2s next to oaks, I assumed that the area from the oak to the well at the other edge of the forest towards Urije [village] would be secured with pressure-activated mines, especially since there is a road through the forest to the well. That road is a bit overgrown at the moment.

I had already decided to go back when I spotted – left from the passage, on some litter or larger pile of leaves – a bottom part of PMA-2. I immediately told [Deminer 1] to stop all his activities and to withdraw while checking, and that I would clear again next to him.

I was standing within the examined area closer to the left end and observing the area around my feet, when [Deminer 1] told me he saw a "paste" [colloquially: PMA-2]. I remember that the terrain below me was inclined and below my left foot there was a small hollow covered with leaves. I could not see "pastes", so I intended to squat down and start cleaning. I was probably already above the mine, but I could not feel it because of the incline and the hollow and I could not see it. Shifting the weight from one to the other foot and with a small torsion I probably activated it.

The explosion threw me about 2 m towards the stream and the area treated with machines. I recovered quickly and saw that I lost my right foot and that I am almost on the area previously treated with machines. I told [Deminer 1] not to go after me and use the Motorola to say that I had been injured [...] and to stop working.

I dragged myself 3-4 metres deeper in the machine treated area. [Deminer 2] and [Deminer 1] came [...] making passes with their metal-detectors. I kept my foot in the air holding the artery. I prepared the first bandage and [Deminer 1] tied off my leg with his and my bandages. Then the medical team arrived.

I was carried to the ambulance, where I received medical help. Since I was fully conscious and with no other injuries, they took off my bullet-proof vest and my helmet in the medical headquarters, and then I was transported to Gospic hospital.

All the time I was conscious, so that I know details. The whole team acted without panic and according to planned activities of evacuation. I plan work-sites in a way that dangerous points are isolated and that they have a good and fast approach for the purposes of evacuation. I measured the distances in steps, because I needed to come again after I examined the area of [Deminer 2] and the area examined by MDDs.

I have to remark that the lines of PMR-2A that we found in the Phase 1 were not secured with pressure-activated mines and that the uneven surface of the forest ground, slopes and large amounts of litter can make detection of pressure-activated mines impossible. In the passage made by [Deminer 1] places of detection were clearly uncovered, so that there was no doubt that the area was examined.

All employees used their protective equipment.

I considered that part of the work-site (the whole grove) as potentially dangerous, therefore I appointed more experienced deminers to work there. But obviously PMA-2s were put independently from PMR-2A, since they do not cover only the area around PMR-2A (which would be usual), but probably the whole slope from the oak. I cannot blame the deminers, nor myself, since we worked rather carefully, which is obvious from our previous work.

When I gave a statement to the police, I have learned that another 3 PMA-2 mines were found close to the place of the accident and another one near the third PMR-2A ([Deminer 1] threw this mine to the PMR-2A mines when the explosion happened. This means that, together with the exploded mine, there were 5 PMA-2 mines found. Once more I remark that no PMA-2s were detected in the passage, otherwise work would be stopped immediately and the search for PMA-2s would continue even more slowly, more carefully and more thoroughly.

Signed: 24 August 2001

Victim Report

Victim number:	524	**Name:**	**Name removed**
Age:	34	**Gender:**	Male
Status:	supervisory	**Fit for work:**	not known
Compensation:	not made available (insured Lloyds)	**Time to hospital:**	19 minutes
Protection issued:	Frag jacket Helmet Short visor	**Protection used:**	frag-jacket, helmet, short visor

Summary of injuries:

AMPUTATION/LOSS

Leg Below knee

COMMENT

No medical report was made available.

Analysis

The accident information is “sketchy” but it seems that the wrong methods were used in an area with a lot of metal-scrap. It appears that the selection of appropriate clearance methods was being made at field level, and so the Victim himself selected the method. However, walking the wire (or “mine-hunting”) must have been approved by more senior management and so they may have sanctioned “corner-cutting” methods of clearance. The primary cause of this accident is listed as a *“Field-control inadequacy”* because the MAC determined that the methods in use were inappropriate. The secondary cause is listed as a *“Management control inadequacy”* because it seems likely that the demining group’s managers approved the methods in use by their field supervisors.

The Country MAC have a unique accident reporting process that involves a police investigation. It is likely that they gather far more detail than has been made available for this database. This accident is listed as having had an “inadequate investigation under “Notes” because the documents made available do not provide the information required in the International Mine Action Standards. This record may be revised as more information is sourced.