

DDAS Accident Report

Accident details

Report date: 14/04/2008	Accident number: 567
Accident time: 11:40	Accident Date: 21/05/2007
Where it occurred: Bazuriyah Village, Area 7-001	Country: Lebanon
Primary cause: Field control inadequacy (?)	Secondary cause: Management/control inadequacy (?)
Class: Missed-mine accident	Date of main report: 04/06/2007
ID original source: 004/2007	Name of source: UNMAS
Organisation: [Name removed]	
Mine/device: DPICM M77 submunition	Ground condition: building rubble hard metal scrap residential/urban
Date record created:	Date last modified: 14/04/2008
No of victims: 1	No of documents: 2

Map details

Longitude:	Latitude:
Alt. coord. system: UTM 712082/3681844	Coordinates fixed by:
Map east:	Map north:
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate area marking (?)
metal-detector not used (?)
mine/device found in "cleared" area (?)
protective equipment not worn (?)

Accident report

The reports for this accident were made available in February 2008 as a collection of files and pictures. Their conversion to a DDAS file means that some of the original formatting has been lost. The substance of the reportd is reproduced below, edited for anonymity. The original files

are held on record. Text in [] is editorial. The Board of Inquiry carried out by the MAC is followed by the demining group's internal inquiry report.

REPORT FOR ACCIDENT INVESTIGATION BOARD OF INQUIRY – No 004/2007

BAC Accident that occurred in Area 7-001 (CBU 40), UTM 712082/36844 on the 21st May 2007 in which a civilian was injured (now died as of 7th Jun 07).

References:

- Lebanon National Technical Standards and Guidelines (TSGs)
- International Mine Action Standards (IMAS)
- [Demining group] Standard Operating Procedures (SOPs)
- Map: UNIFIL JENIMAP
- MACC SL Mine / UXO information

Introduction

1. In accordance with the National Technical Standards and Guidelines (TSGs), the MACC SL Programme Manager, [Name removed] and Lt. Col [Name removed], NDO Representative, issued a Verbal Convening Order on Monday 21st May, for an accident investigation Board of Inquiry (BOI). The MACC SL board members are Capt. [Name removed], LAF QA Officer MACC SL, Lt [Name removed], LAF OPS Officer MACC SL and [Name removed], Chief of QA MACC SL.

2. This is a comprehensive report by the Board of Inquiry into the Accident that occurred on 21st May 2007 which is based on the MACC SL investigation, the [Demining group] internal investigation report, statements from [Demining group] personnel involved in the accident (Annex A), visits to and photographs from the accident site, the accident is considered preventable.

3. The [Demining group] investigation report was forwarded to the BOI on 23rd May 2007 and is attached at Annex B. The accident occurred at approx. 1140hrs on the 21st May 2007 in Area 7-001 CBU 40 situated near the village of Bazuriyah, UTM 712082/3681844, additional information is:

Date: 21st May 2007

Time of Incident: 1200hrs approx [sic].

Location: Bazuriyah, Area 7-001, Lebanon

Task: CBU-40, Task Dossier 7-001

UTM of location of the munition: 712082/2681844

Task Start / Finish Date: 28th February 07 to task not yet completed

Reported by: Mr. [Name removed], Site Supervisor

Reported to: Operations Department, MACC SL

Time of Incident report to MACC QA: 1200hrs approx.

MA Organisation POC: Mr. [Name removed], PM [Demining group]

Investigation Date/Time: 21st May 07, 1300hrs

Investigation Location: Task CBU - 40

Investigation Team: Capt [Name removed], LAF QA Officer, Lt [Name removed], LAF Operations Officer and [Name removed], MACC SL C of QA.

Explosive Ordnance Type: US M-77 Sub-munition

Background

4. CBU 40 is part of Task Dossier 7-001 which is a cluster strike area from the recent conflict. The area is a mixture of buildings, house from the town of Bazuriyah and adjacent land used for growing orange and other citrus fruits. The area is contaminated with Israeli fired M77 sub-munitions.

5. [Demining group] commenced clearance at this site, 7-001, on 28th February 2007, but the task was [Demining group] internal suspended for two weeks while the Site Supervisor, Mr [Name removed] was on a programmed leave period. Up to the time of the accident [Demining group] BAC team 2 had been operational in CBU 40 for a total ofx [Missing in original] operational days. 21 x M77s and 1 x 122mm fuse were located during operations, with a total of 20,850m² visually searched and 59,377m² sub-surface searched.

6. The area where the accident occurred was adjacent to a new building construction site, portions of this area were used by the local population as a rubbish dump. In addition the area was within the residential housing area and was used as an access for the delivery of building materials to the adjacent construction site. It was reported at the time of the accident that a sub-munition had detonated due to rubble being disposed from the building site, on the 4th May 2007. There is no record of the MACC SL being informed of this incident, with no Ops or QA follow up investigation occurring. Up to the day of the accident, the area where the accident occurred had been visual searched only and limited marking had occurred at this portion of the site, but was removed by the local population. CLOs had visited the local authorities, local population (around the site area) and the workers on the building site.

Events leading up to the Accident

7. On the morning of 21st May 2007 at approximately 0630hrs [Demining group] BAC Team 2 re-deployed back to CBU 040 to start operations. At approximately 1140hrs, an uncontrolled explosion occurred at the building site adjacent to the rear of the BAC Team 2 CP, UTM 712082/3681844, involving a civilian worker, Mr. [the Victim], who was delivering building material to the construction site. Mr. [the Victim] had reversed his truck on the area adjacent the construction site and had commenced to unload the vehicle. During this process Mr. [the Victim] kicked, stepped or dropped some building materials on a M77 sub-munition that was most likely sub-surface causing it to detonate.

Events following the Accident

8. The [Demining group] Site Supervisor, Mr. [Name removed] immediately stopped search operations and deployed the team medic to provide emergency medical treatment and then transport [the Victim] by ambulance to the nearest hospital, at Jabal Amel, arriving at 1210hrs approx.

BOI Post Accident Activities and General Observations

9. On arrival at the accident scene and after an initial reconnaissance by the Investigation Officers, it was ascertained that the BOI could gain safe access up to the accident scene without additional clearance being conducted.

10. On inspection of the accident scene on the 21st May 2007 the following general observations were established:

- There had been an uncontrolled detonation of an M77 Sub-munition,
- The M77 was either partially or completely buried,
- The area of the detonation was surface cleared and suspended pending sub-surface clearance,
- The area was being used to store building materials for the adjacent building site,
- New area marking materials, posts and tape, had been erected at the site,
- Evidence of previous marking items were around the general vicinity of the area, and
- The vehicle had been removed from the site.

Sequence, Documentation and Procedure of Tasking

11. Task Dossier Area 7-001 was issued to [Demining group] in April 2007. The TD contains details of ... x [Missing in original] CBU strikes. Up to the time of the accident a total area of 80,215 m² (surface and sub-surface) of the area had been cleared, resulting in the disposal of a total number of 21 x Sub-Munitions.

Geography and Weather

12. CBU 040 is located in a mixed urban, agriculture and citrus area. The ground where the accident occurred was hard and covered with rubbish and building materials.

Site Layout and Marking

13. The site layout and minefield marking prior to the accident was in accordance with National TSGs and [Demining group] SOPs, however the marking around the area of the accident had been removed by the general public and replaced several times.

Management, Supervision and Discipline

14. There are no reports of disciplinary action being taken against any [Demining group] personnel on CBU 40 to date.

Quality Assurance

15. External QA was carried out by the MACC SL QA Section; the last External QA Evaluation on [Demining group] BAC Team 2 was conducted on 3rd May 2007, Battle Area Clearance, (Form E), carried out by QA Officer [Name removed]; all evaluation results were acceptable.

Communications and Reporting

16. Communications between CBU 40 and [Demining group] base location are maintained via the use of cell phone. On site communications between teams are also maintained via VHF handheld radios.

17. On the day of the accident, the site had proper and appropriate communications and managed to pass all relevant accident information back to [Demining group] base location, which in turn passed the information to the MACC SL in a timely manner.

Medical Details

18. [The Victim] suffered blast injuries to both feet and received head injuries. After the [Demining group] medic administered medical treatment and he was stabilised on-site he was evacuated by road to Jabal Amel Hospital in Tyre.

Details of Sub-Munitions Involved

19. The M77 HE cluster bomb is commonly referred to among the Lebanese and Palestinian population as the “battery bomb” or “lighter” bomb because of its shape. There M77 HE grenades are dispensed from various sizes of projectiles, which are initiated by mechanical time fuses above the target areas to allow dispersion of the grenade. The M77 has a white nylon ribbon which when pulled or touched can detonate. Shortly after ejection from the projectile, artillery shell or various size of container or dispenser, the M77 HE grenade arms due to the rotation of the white nylon ribbon. This ribbon also acts as stabilizing tail to orient the cone of the grenade towards the target. Upon impact a charge in the grenade launched downward to penetrate armour while the metal grenade body bursts into shrapnel-like fragments to wound and kill personnel. The M77 has a white [grey] band around its body.

US M-77



Conclusions

20. Based on the investigation, the statements and visits to the site, the BOI concludes the following:

A M77 detonated after [the Victim] either stood, kicked or dropped building materials on the sub-munition.

The accident occurred in a surface cleared area,

1. The CASEVAC was conducted in accordance with [Demining group] SOPs, with the casualty given appropriate first aid and transported by ambulance to the nearest hospital in good time.
2. There was an uncontrolled detonation most likely of a M77 that occurred on the 4th May 2007 that was not reported to the MACC.
3. The area where the accident occurred had been marked with pickets and tape but this was removed or damaged and not been replaced or maintained either during the internal suspension and the clearance of the CBU task.
4. The local population had not adhered to warnings of the danger of this area, by CLOs [Community Liaison Officers].

Recommendations

21. The following are recommendations based on the BOI conclusions:

- The area of the accident is to sub-surface cleared, immediately.

- [Demining group] is to report all uncontrolled detonations, at all CBU tasks and any related detonations, to the MACC SL to allow correct follow up investigations and operational clearance plan adjustments to be made. Revise all [Demining group] operational staff and office personnel in this requirement.
- [Demining group] is to maintain making/warning materials during the clearance process and during periods of internal suspensions or when period of leave or stand-down by the supervisor.
- Contact the relevant NDO/MACC SL Operations Officer to address the movement of public in urban areas to adjust clearance plans if required.

Signed: C/QA Officer , MACC SL ; LAF QA Officer , NDO/MACC SL

4th June May 07

Site Photographs



[Point of detonation was beneath the pile of reinforcing bar.]



[The reinforcing bar is in the centre of this picture near to the building.]

Internal [Demining group] accident report

INVESTIGATION REPORT ON A M77 SUB-MUNITION ACCIDENT AT CBU 040, AREA 7-001. Al Bazuriyah

The incident occurred in Area 7001 (CBU 040), UTM 0712082 3681844 on the 21st May 2007, on an active BAC site. One M77 Sub-Munition was detonated by a construction worker whilst unloading a truck containing building materials.

References:

Lebanon National Technical Standards and Guidelines (TSGs)

International Mine Action Standards (IMAS)

[Demining group] Standing Operating Procedures (SOPs)

Introduction

In accordance with the National Technical Standards and Guidelines (TSGs), and [Demining group] Standing Operating Procedures SOPs the Programme Manager of [Demining group], Mr. [Name removed] instructed that an internal investigation into the above incident be carried out.

This Report will form part of the NDO / MACC SL report into the incident which occurred on the 21st May 2007. The initial investigation by [Demining group] investigation team established that: **The incident is considered not preventable.**

Relevant facts

Date: 21st May 2007

Time of Incident: 11:40h approximately.

Location: Al Bazuriyah, Lebanon

Task: CBU-040, Task Dossier 7-001

UTM of location of the munition: 0712082 3681844

Task Start / Finish Date: 28th February 2007 Task ongoing.

Reported by: Mr. [Name removed]

Reported to: QA Department, MACC SL

Time of Incident report to MACC QA: 12:00hrs approx.

MA Organisation POC: Mr. [Name removed]

Investigation Date/Time: 21st May 2007, 12:30hrs

Investigation Location: Task CBU -040

Investigation Team: Mr [Name removed], [Name removed], Programme manager/Head of Mission (HoM)

Explosive Ordnance Type: US M -77 Sub-munition

Background

CBU 040 forms part of task Dossier 7-001 issued to [Demining group] for BAC clearance as part of the sub-munitions clearance programme in South Lebanon. CBU 040 is an active clearance site. According to [Demining group] site files for the task, the area where the incident occurred, has been surface cleared only in accordance the TSGs and [Demining group] SOP, to reduce the immediate risk posed by cluster munitions. The intention for CBU 040, as per the clearance plan, is to return to this area once higher priority areas have been cleared sub-surface. The Clearance mythology for CBU 040 is to clear all, none hard standing contaminated areas, sub-surface.

Events leading up to the Incident

According to witness reports, See Annex D, on the morning of the 21st May 2007 at approximately 11:30, an explosion occurred behind the CP of CBU 040. Evidence at the site of the incident and from eye witnesses indicated that the construction worker either stepped

or dropped a length of reinforcing bar on an obscured cluster bomb causing it to high order detonate.

Events following the Incident

The first [Demining group] staff member to arrive at the scene of the incident reported that a group of people was surrounding one casualty laying on the ground. Shortly after the site medic arrived at the scene and, assisted by one BAC operator, approached the casualty to administer first aid. During the period the casualty was receiving first aid, and up to the point when the casualty was removed to hospital, the team leader of bravo team was coordinating at the incident site and the supervisor, [Name removed], was at the CP from where he was in overall command and control of the incident.

The site supervisor immediately contacted [Demining group] Ops room by cell phone to inform the Programme Manager Mr [Name removed]. In addition [Name removed] also contacted [Name removed] at MACC OPS to report the location and circumstances relating to the incident. Immediately the programme manager went to the incident location to assist in the initial investigation.

Post Incident Activities and General Observations

On arrival at the incident site, the programme manager accompanied the site supervisor attended the site. The site was accessed along a section of hard standing. From the evidence on the ground and from information contained within the site file it seems likely that the injuries sustained by the casualty were from an M77 Sub-munition.

Observations at the site also revealed the following:

- The area in which the suspected sub-munition had detonated would seem to indicate that the munition was sub-surface
- A quantity of concrete reinforcing bar was directly adjacent to the site of the explosion.
- The site of the explosion was also contaminated by other construction and general debris.

Geography and Weather

CBU 040 is located the village of Al Bazuriyah. The land is primarily a waste/dumping area adjacent to an ongoing construction site and residential dwellings.

Conclusions

Based on the investigation, site documentation and site visit by the PM and the Site Supervisor the following conclusion can be drawn:

- The incident was probably the result of the victim either stepping on the sub-munition or dropping a length of reinforcing bar on to it.
- The location of the sub-munitions was identified as in an area that surface clearance had taken place
- The sub-munitions was in a designated danger area
- The sub-munition was probably sub-surface or obscured by building debris.
- Dangerous area making pickets and mine tape have been removed on numerous occasions, despite repeated warning to the local population by [Demining group] CLO.

Recommendations

The following recommendations are based on the [Demining group] internal investigation:

- [Demining group] CLO, supported by MACC Ops CLO should continue to warn local residents that the areas has been surface cleared only, and still poses a dangerous to local residents.
- Sub-surface clearance of the area is carried out as a priority.
- Appropriate warning signs and mine furniture is erected and checked daily by clearance teams.

Signed: Programme Manager/Head of Mission; Site Supervisor, [Demining group] I
BAC team

21st May 2007

Victim Report

Victim number: 741	Name: [Name removed]
Age: 40	Gender: Male
Status: civilian	Fit for work: DECEASED
Compensation: Not made available	Time to hospital: None
Protection issued: None	Protection used: None

Summary of injuries:

severe Abdomen

severe Arms

severe Chest

severe Head

AMPUTATION/LOSS

Eye

Toes

FATAL

COMMENT: See Medical report

Medical report

An IMSMA report confirmed that the victim was male and born in 1967. The time of the accident was recorded as 11:38.

- The IMSMA sketches record:
- Loss of eyesight right side
- Loss of foot/toes, left side.
- Other injuries to head, chest, abdomen and upper limbs.

The victim went to the accident place because “is easy for him to lift the construction materials.”

The area where the accident happened was not marked.

The victim died on 7th June 2007, 17 days after the accident.

Statements

Statement 1: TEAM 2, Team Leader

On 21-5-2007 around 11:30 while I was having my lunch in the control point which is located in a building close to the main road and next to the old municipality building I heard an explosion and directly people screaming and shouting saying that a civilian was injured. Immediately, I ran to the accident place and I saw from a distance lot people and one person laying on the ground and [Demining group]'s medic giving him the medical support and beside him one operator. Quickly, I started to ask the people to leave the accident area and give the medic a space to do his job but the people did not respond. Meanwhile, the ambulance was ready to transport the victim to the hospital. After the medic finished his job, he put the casualty on the spin board and then holds him to the vehicle with the assistant of the civil defence guys.

Regarding the accident place or land, it was cleared visually and the reason why it was not cleared instrumentally is because of the nature of the land and because it is close to a construction project and therefore it is full of metals note that it is a hard land to clear due to many slopes inside especially between the accident place and the building there.

We reported to the municipality that we still need to work in that area and put around that area pickets and tapes but people did not respond and the construction project continued.

Statement 2: Team 2 QC

AT 11:40, I was doing some work in the field when I heard an explosion. Directly I ran to the explosion place because I assumed that it took place in our operation area. When I got there I did what I should do. There were around 20 people around someone laying on the ground. I started asking the people to leave the place since it is a dangerous area. Meanwhile the medic was giving medical support to the casualty. Later and after few minutes an ambulance came and took the casualty to the hospital. I kept asking the people to stay away from the dangerous area.

Statement 3: Team 2, Operator

During lunch hour, I was having my meal close to the control point and after that I went to the neighbours to get some water and suddenly I heard an explosion and I look behind me and I saw a man laying on the ground. Quickly I went down to the control point looking for the team leader and the medic. They both came to the accident place and the medic started to give medical support for the casualty and later on an ambulance took the casualty to the hospital.

Statement 4: Team 3, Operator

On the 21- 5-2007 and at 11:35, I was working on putting out a fire across the control point, I heard an explosion and people screaming. I thought that some one from our team was injured. I ran to the accident place and I saw the casualty on the ground and lot of people around him. After giving him the medical support he was moved to the ambulance and then to the hospital.

Analysis

Marking had been placed in the area and removed by local people during a stand-down. When the deminers returned, it seems that the marking was not replaced. Statements raise doubts whether there was ever any intention to clear that area using sub-surface detectors. Whether or not this was the case, questions about the suitability of the procedures in place arise. The procedure of carrying out a surface check followed by a later sub-surface clearance puts deminers at risk from buried ordnance and may also give civilians a false confidence that the area has been cleared when it has not. The photograph of the accident site shows a shallow crater indicating that the device was not deeply buried and may have been close to (or on) the surface.

Lack of control after the accident meant that civilians crowded around on a known hazardous area.

The primary cause of this accident is listed as a "*Field control inadequacy*" because the demining group did not ensure that the hazardous area was clearly marked. The presence of buildings materials inside the area indicated that local people were using the area, but nothing was done to prevent this. The secondary cause is listed as a "*Management control inadequacy*" because the procedures to keep civilians out of working areas do not seem to have been in place, or were not enforced.

There had been a previous uncontrolled detonation (4th May) that had not been reported to the MAC, which implies that the Demining group did not take the MAC's requirement to report unintended detonations seriously. Had it been reported, it is possible that the Community Liaison Teams might have used that as evidence and prevented the Victim entering the work area while it was clearly still hazardous.