6-21-2007

DDASaccident568

Humanitarian Demining Accident and Incident Database
AID

DDAS Accident Report

Accident details

Report date:	14/04/2008	**Accident number:**	568
Accident time:	11:04	**Accident Date:**	21/06/2007
Where it occurred:	Al Maalieh, Area 7-008	**Country:**	Lebanon
Primary cause:	Unavoidable (?)	**Secondary cause:**	Field control inadequacy (?)
Class:	Excavation accident	**Date of main report:**	08/07/2007
ID original source:	005/2007	**Name of source:**	UNMAS
Organisation:	[Name removed]		
Mine/device:	DPICM M77 submunition	**Ground condition:**	agricultural (recent) hard rocks/stones
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 728309/3676516	**Coordinates fixed by:**	
Map east:		**Map north:**	
Map scale:		**Map series:**	
Map edition:		**Map sheet:**	
Map name:			

Accident Notes

visor not worn or worn raised (?)

Accident report

The report of this accident was made available in February 2008 as a collection of files and pictures. Its conversion to a DDAS file means that some of the original formatting has been lost. The substance of the report is reproduced below, edited for anonymity. The original files are held on record. Text in [ ] is editorial.

REPORT FOR ACCIDENT INVESTIGATION BOARD OF INQUIRY – No 005/2007

BAC Accident that occurred in Area 7- 008 (CBU 071), UTM 728309/3676516 on the 21st June 2007 in which a searcher was injured.

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, Mr. [Name removed] and Lt. Col [Name removed], LMAC Representative, issued a Verbal Convening Order on Thursday 21st June 07, for an accident investigation Board of Inquiry (BOI). The MACC SL board members are Capt. [Name removed], LMAC Operations Officer 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 June 07 which is based on the MACC SL investigation, the [Demining group] internal investigation report, statements from [Demining group] personnel involved in the accident, visit to and photographs from the accident site, the accident is considered not preventable.

3. The [Demining group] investigation report was forwarded to the BOI on 27th June 07 and is attached at Annex A. The accident occurred at approx.1102hrs on the 21st June 2007 in Area 7-008 CBU 071 situated near the village of Al Maalieh, UTM 728309/3676516, additional information is:

Date: 21st June 2007

Time of Incident: 1104hrs approx.

Location: Al Maalieh, Area 7-008, Lebanon

Task: CBU- 071, Task Dossier 7-008

UTM of location of the munition: UTM: 728309/3676516

Task Start / Finish Date: 20 February 2007, to task not yet completed

Reported by: Mr. [Name removed], A/Programme Manager

Reported to: Operations Department, MACC SL

Time of Incident report to MACC QA: 1110hrs approx.

MA Organisation POC: Mr. [Name removed], A/Programme Manager

Investigation Date/Time: 21st June 07, 1200hrs

Investigation Location: Task CBU - 070

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

Explosive Ordnance Type: M 42/77 sub-munition (most likely)

Background

4. CBU 071 is part of Task Dossier 7-008 which is a cluster strike area from the recent conflict. The area is a mixture of citrus plantations. The area is contaminated with Israeli fired M42/77 sub-munitions.

5. [Demining group] commenced clearance at this site, CBU 071, on 4th May 2007. Up to the time of the accident [Demining group] BAC Team had been operational in CBU 070 and located 31 x M42/77's, with a total of 48,876m2, a combination surface and sub-surface searched.

6. The area where the accident occurred was in an orange plantation, portions of the area had been sub-surface cleared this and previous operations days. Prior to clearance the owner had visited the plantation to prune the citrus trees (this was evident on all trees in the area of the accident) and to mound earth around the base of the trees to retain water during irrigation.

Events leading up to the Accident

7. On the morning of 21st June 07 at approximately 0616hrs [Demining group] BAC Teams commenced operations at CBU 071. At approximately 1104hrs, an uncontrolled explosion occurred in the plantation at UTM 728309/3676516. An [Demining group] searcher, Mr. [the Victim] who was conducting search operations in the area of the detonation was not directly involved in causing the detonation but he was in the immediate area of the detonation where he was conducting sub surface clearance operations.

Events following the Accident

8. On hearing the detonation, [Demining group] searcher Mr. [Name removed] moved to the site, as he was the closest to the accident area, he was quickly followed by [Demining group] team leader Mr. [Name removed] and a number of other searchers. They assessed the situation confirming that Mr. [Name removed] was lying in a previously sub-surface cleared area and therefore moved forward to provide medical support prior to the [Demining group] medical team arriving at the site. The [Demining group] medical team Mr. [Name removed] and Mr. [Name removed] arrived at the site at approx. 1104hrs and carried out emergency medical treatment to Mr. [the Victim]. Treatment occurred at the site over the period of 1104-1119hrs and then he was transported to Jabal Amel hospital in Tyre, arriving at approx.1131hrs.

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 site without additional clearance being conducted.

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

- There had been an uncontrolled detonation of an M42 Sub-munitions,
- The M42 was either partially or completely buried,
- The area of the detonation was at least 1m forward of the base stick, in an uncleared area.

[The crater is top right, the red cone is the marking system in use.]

- Marking was in accordance with [Demining group] SoPs.
- Items of equipment, PPE, Visor and detector were located in various locations from 12m away from the working site.
- No damage had occurred to the PPE, visor, detector, and hand tools.

[The undamaged visor approximately 9 metres away.]

- Some fragmentation damage was observed to the marking equipment in the immediate area, used for marking cleared/uncleared area and the citrus trees in the immediate area.
- First aid treatment had occurred approx, 12m from the location of the uncontrolled detonation. The searchers trousers and footwear were at the area of the emergency treatment
- No drag ribbon related to the M77/42 deployment was located during the investigation site visits.
- The orange trees and the trees in the immediate area had been pruned extensively. During this process any items, sub-munitions, located in the branches would likely be dislodged and fall to the ground.

Sequence, Documentation and Procedure of Tasking

11. Task Dossier Area 7-008 was issued to [Demining group] in May 2007. The TD contains details of 4 x CBU strikes, CBU 071 is one of these. Up to the time of the accident a total area of 48,876 m² (surface and sub-surface) of the area had been cleared, resulting in the disposal of a total number of 31 x Sub-Munitions.

Geography and Weather

12. CBU 071 is located in an agriculture and citrus area. The ground where the detonation occurred was soft due to the land owner bunding or mounding the earth around the base of the trees to retain water. All other area was firm.

Site **Layout and Marking**

13. The site layout, minefield marking was in accordance with National TSGs and [Demining group] SOPs.

Management, Supervision and Discipline

14. There are no reports of disciplinary action being taken against any [Demining group] personnel on CBU 070 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 21ST June 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 071 and [Demining group] base location are maintained VHF and 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 no injuries, with the exception that he was knocked unconscious but recovered once medical treatment was commenced at the accident site. After the [Demining group] medics administered medical treatment and [The Victim] was stabilised on-site he was evacuated by road to Jabal Amel Hospital in Tyre.

Details of Sub-Munitions Involved

19. The M42/77 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 M42/77 HE grenades are dispensed from various sizes of projectiles, which are initiated my mechanical times fuses above the target areas to allow dispersion of the grenade. The M42/77 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 M42/77 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.

Conclusions

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

a) An M42 or M77 detonated in an un-cleared area approx. 1m in front of where detector assisted surface clearance was being conducted.

b) An uncontrolled detonation occurred in an area where the earth had been gathered to provide a bund around citrus trees to retain water for irrigation.

[There was no earth in photographs, but stones – and no obvious "bund". This picture shows a pen at the seat of detonation.]

c) The searcher had not searched or cleared forward of the base stick.

d) When the detonation occurred the searcher was approx. 10m away from the area.

e) It is likely that the searcher had removed his visor on the way to the bathroom, but was still was wearing his PPE.

f) Medical treatment was conducted on site in accordance with [Demining group] SOPs.

g) The team leader had not visited the searcher for at least one hour during operations.

h) The area where the accident occurred had been marked with pickets and was in accordance with [Demining group] SOPs.

Recommendations

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

- Revise supervisors/team leaders on the requirements in regards to searcher supervision and the time/period required.
- Revise all [Demining group] personnel with regards to the requirement to wear PPE and visors.
- During clearance special attention is required in areas that have been disturbed prior to clearance i.e. earth bunds to the base of trees.
- Establish known ground level to allow 20cm clearance to occur in area where earth bunding has occurred.

Signed: C/QA Officer , MACC SL; LAF Operations Officer , LMAC/MACC SL

8th July 2007

Internal Demining Group report

Subject: Incident on CBU-71, IMSMA-ID: 2265

Our Date: Thursday, June 21, 2007 (Compiled: 2007-06-26)

Introduction:

On 21 of June 2007 at approx 11:02 hours an explosion incident occurred at a [Demining group] clearance site, recognized as CBU-71 with IMSMA-ID: 2265.

Search methodology:

At CBU-71 site, [Demining group] conducting surface search with instrument assistance.

The area is searched with one lane/searcher using Ceia or Schonstedt metal detector and red cones/sticks as markings, detailed in [Demining group] SOP.

The area:

The search area is in a maintained orange orchard with small stony ground and more or less no under vegetation. The surrounding trees are without any fruits, indicating that harvest has been carried out. The density of branches on the trees is low to medium with relativity good view for visual search of eventual hanging clusters.

Events leading up to the incident:

The searcher was working in the lane when he had a need for toilet. The searcher closed his lane using a base stick. The searcher put down his detector on the ground. When the searcher was approximate 10 meters away the detonation occurred. The searcher fell down, turned on the side and become unconscious.

According to what the searcher said 2007-06-22:

- The searcher did not see any cluster in the tree or on the ground.
- The searcher did not see any signs of clusters.
- The searcher used his detector but had no signal/reading before closing the lane.
- The searcher did not hear or see any other person in the vicinity.
- The distance to closest colleague was approximate 40 meter.
- The first person he remembered/ recognized after the unconscious stage was the medic.

Immediate action taken following the incident:

The Team Leader was checking other searchers when the detonation occurred. After the detonation the team leader checked his searchers and tried to find out where the detonation was taken place. After approx 1 ½ minute the Team leader identified the lane and found almost simultaneously with two other nearby working searchers the searcher unconscious. The unconscious searcher was found in searched terrain, on same location as the vest. The Team leader together with assisting searchers recognized the unconscious stage but breathing of fallen searcher, and they called for medic assistance. When medic arrived, the Team leader with assisting searchers arranged guidance for medic to site of incident and medical treatment was initiated.

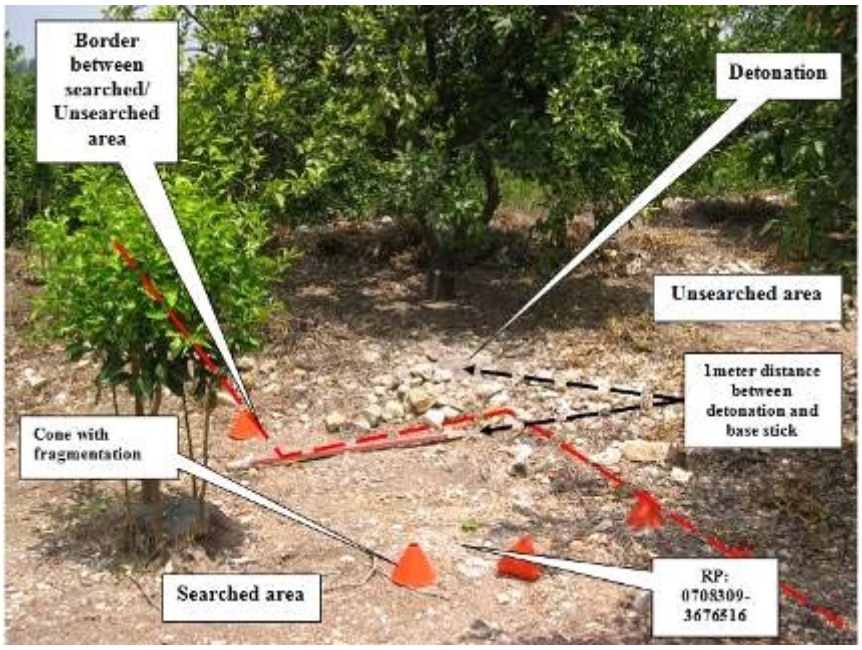
Medical treatment and Medevac procedure:

DESCRIPTION OF THE INCIDENT [reproduced under Medical report]

Post incident scene investigation:

Initial scene investigation was conducted 2007-06-21. Done by Act. Operation Manager and a national EOD 2 member of [Demining group], together with MACC SL and NDO representatives.

Additional investigation of detonation pit was conducted 2007-06-22, done by a [Demining group] SV together with Chief of MACC SL QA Department.



Picture 1.

The border of searched/not searched areas was well marked. The location of detonation was 1 meter in front of ongoing search, in not searched area. One cone was lying flipped over and was most likely moved by air pressure. One cone is penetrated of several fragmentations.

[Other pictures removed]

The detector was laying in good order on 7 meters distance from RP, indicating that the searcher has intentionally put the detector down on the ground.

The visor was laying in good order on 9 meters distance from RP, indicating that the searcher or other person has intentionally put the visor down on the ground without to prevent getting scratch marks.

The protective vest, shoes and trousers was taken off the searcher by medics due to medical body check.

Probable cause of the incident:

There could be several reasons of why the cluster went to detonation, together or independently; strong sun, animal, falling down from the tree. A specific reason can not be identified at this stage.

Conclusion:

If the searcher was searching during detonation, he should have wounds of fragmentation in his legs, since his position should normally be between the cone with fragmentation marks and actual location of detonation.

The searcher confirmed that he was not conducting clearance in his search lane; he was taking a short break to go for toilet when the detonation occurred.

The cluster was most likely not hanging in the tree; therefore the initiation of CB was not caused by falling down into detonation. The cluster went off into detonation by unknown cause and was most likely not affected by searcher in any means.

The markings was in good order and search procedures by the searcher was most likely following the [Demining group] SOP and was not the reason causing the uncontrolled detonation.

There is a contradiction concerning Visor on or off on the searcher during the incident.

According to what the assisting staff was saying, they did not take the visor off, but the searcher himself says that he was wearing full PPE. The involved assisting staff did not recognize during the verbal hearing the same day that they had touched or moved the visor on the scene.

The Visor position could indicate that the searcher has taken the visor off inside the hazard area during work time. If so, this is a major safety violation and not follows the [Demining group] SOP.

Intended follow-up actions and recommendations:

Follow up actions:

- [Demining group] had initial briefing with the teams the same day, informing them about medical status then next morning an additional brief/update was given. Some individuals on BAC teams needed extra time to talk through the incident and an organized debrief was carried out by Supervisor.
- An After-Action review will be carried out, with the intentions of finding out individuals action towards SOP and organization set up in general.
- A Dictaphone is implemented at [Demining group] OPS/Radio room, helping to memorize communications in future
- Casevac drills.

Recommendations:

- The Team leader has to visit the searchers more frequently due to different needs, improve markings etc. of working searcher.
- The SVs and Team leaders has to maintain the focus of searching staff on potential clusters still hanging in trees, even if this incident most likely was not a case as such.
- The SVs and Team leaders has to make sure that searchers follows and understand given instructions concerning [Demining group] SOP.

Victim Report

Victim number: 742
Name: [Name removed]
Age: 20
Gender: Male
Status: deminer
Fit for work: presumed
Compensation: Not made available
Time to hospital: 27 minutes
Protection issued: Frontal apron
Long visor
Protection used: Frontal apron

Summary of injuries:

minor Arm

minor Back

minor Leg

COMMENT

Victim was initially unconscious and reported a back injury. See Medical report.

Medical report

An IMSMA report confirmed that the victim was male, and born in 1987.The form had been overwritten with “contusion”. A back injury was reported along with pain in the arm, back and thigh. The time taken for the victim to reach hospital was recorded as 10 minutes.

CASUALTY REPORT BY (MEDIC)

DESCRIPTION OF THE INCIDENT

Incident date: 21/6/2007

Location: Al Maalieh

Type of Incident: Casualty and Shock due to cluster explosion

Time of Incident: 11:02

Patient’s condition: Unconscious

Support medic: [Names removed]

Patient’s history

Allergy to drugs: No

Diabetic: No

Cardiac: No

Hypertensive: No

Others: No

Communication procedures:

Radio report:

Internal team radio communication: Adequate

External communication with [Demining group] base and the [Demining group] operations officer: Adequate

The person who contact the hospital: medical coordinator ([Name removed])

Time of [Demining group] operations officer arrival the scene: 12:00

Time of ambulance arrival the scene: 11:04 am

Medical treatment on the site:

Type of treatment: oral airway, Oxygen administration 15 l/min, Intra venous infusion Lactated Ringer 1 liter.

Time from incident to initial first first aid: 11:02-11:04 am

Time spent at site administering treatment: 11:04-11:19 am

Time from Casevac at site to arrival at hospital (Jabal Amel): 11:19-11:31 am

Discussions:

The medic and his assistant informed by the team leader about the incident, the medic moved directly from the medical site to the casualty site after assuring about the safety and can enter the area.

First, the casualty was unconscious due to shock. He was wearing PPE, removed by the medic and initial and rapid assessment started:

Level of conscious: Unresponsive

Airway: clear and opened

Breathing: Normal

Circulation: Normal pulse with no external bleeding or any signs or symptoms of internal bleeding.

Collar neck placed for him.

Rapid assessment of head, neck, abdomen, chest, extremities showed normal and intact no external injuries.

Oral airway placed for him because of unconsciousness, then directly the gag reflex of the casualty returned back and started to be conscious with stress state and cramps with presence of shoulder, thigh and back pain. Oxygen by Ambu bag given for him and intra venous infusion administered, then transported to the ambulance by using spinal board to the nearest hospital (Jabal Amel) for examinations.

On route:

Reassessment showed that the casualty is in stable state with normal vital signs and oxygen given for him till arriving the hospital.

The casualty arrived the hospital to the emergency department after 10 min. of evacuation for examination and treatment.

Statements

REPORT BY (SEARCHER)

I was the nearest person to the casualty [Name removed], when I heard the bomb sound I went directly to the site to help him, there were many fragmentation around, I wait for a moment then I entered for helping, I was ambitious and ready for help him, so I did the first aid procedures. He was unconscious but he was breathing with presence of pulse, at this time the team leader arrived to the site for investigation and assisting me till the medic arrived.

This incident is a good experience for me, it helped me to be stronger of how to deal with these situations.

REPORT BY TEAM LEADER

While I was making QA on the girls I heard a sound of a cluster I run down where the other section were working they told me that we has a detonation where [the Victim] was working I enter the field I saw [he] was lying on the ground and I left all the equipment in its place and in

my opinion that [the Victim] was working and the cluster go and he have a shock and he runs he lied on the ground and the equipment fall from his hands.

REPORT BY SEARCHER 2

When the accident occurred I shouted in a loud voice but no body heard me so I ran toward the casualty and I saw him lying down on unconscious state.

REPORT BY SEARCHER 3

When I entered the incident site I noticed many things: first the casualty was lying down 12 m far away from the site of accident and the detector was far away from the accident site and the helmet was off because the casualty has eye injury as the medic said this means that the casualty was not wearing PPE and the detector was placed by hand not threw on the ground due to explosion and not destroyed, this lead to a conclusion that the casualty was in a resting period may for eat or drink and he was far away from the cluster for that reason he has no injury.

Finally, I think that the cluster did not fall down from the tree because there was no winds but may be one searcher who was working closer to him threw it (this is my opinion).

REPORT BY (the casualty)

While I was working in my lane, I stopped when I passed the half of it and closed my lane in a base stick because I want to go to bathroom, I placed may detonator in a safe place and I walked about 2 to 3 meters when the cluster exploded, it was in unsafe area. I fell down 9 to 10 meters far away from the cluster and I was in unconscious state.

Note: I was wearing PPE and Helmet during the accident.

REPORT BY SUPERVISOR

Date: 21/06/2007

Time: 11:02 am

Location: CBU 71 (Maalieh)

I was in Rest Area working as a SV when I heard DTL [Name removed] calling for medic and then I noticed that a cluster go off and one searcher [the Victim] is injured. Then the medic arrived to the scene and took [the Victim] to Jabal Amel hospital.

During the accident me and [Name removed] (TL) we noticed that [the Victim] was only unconscious and wasn't talking. In my opinion I think that the searcher was taking a break and he wasn't wearing the visor.

Analysis

The primary cause of this accident is listed as *"Unavoidable"* because it seems that the munition was initiated while no one was nearby. The cause was not determined but the statements of those involved mention possible causes that appear not to have been investigated, and include mention of an unreported eye injury.

The Victim was knocked unconscious so must have been struck by something, possibly a rock, in the back (his only obvious injury). He was too far away to have been affected by the small blast. The position of his equipment indicates that he was not wearing his visor at the time. He was on his way to “the bathroom” which was not a designated area, and he had not been visited by his supervisor for an hour. The absence of a designated latrine area and the absence of field supervision are both *“Field control inadequacies”*, and so this is recorded as the secondary cause.