

AMAS 07.05

Third Edition
April 2011

Demining Accident Investigation

Mine Action Coordination Centre of Afghanistan (MACCA)
Post Box : 520 Kabul – Afghanistan
Website: www.macca.org.af

CONTENTS

1. INTRODUCTION.....	3
2. SCOPE.....	3
3. INCIDENTS AND ACCIDENTS REQUIRED TO BE INVESTIGATED AND REPORTED	3
4. INCIDENT REPORTING PROCEDURES	3
4.1 IMMEDIATE NOTIFICATION	4
4.2 INITIAL DEMINING INCIDENT REPORT	4
4.3 DETAILED DEMINING INCIDENT REPORT.....	4
5. FORMAL INVESTIGATIONS	4
6. LEVELS OF FORMAL INVESTIGATION.....	4
7. ACCIDENTS REQUIRING BOI INVESTIGATION.....	4
8. CONVENING BOI INVESTIGATION	5
9. DEMINING ORGANISATION RESPONSIBILITIES TOWARDS EXTERNAL INVESTIGATIONS	5
10. ACTIONS FOLLOWING EXTERNAL INVESTIGATIONS.....	5
11. DISTRIBUTION OF THE REPORT	5
12. SUSPENSION OR TERMINATION OF OPERATIONAL ACCREDITATION POST INCIDENT	6
ANNEX A - INITIAL DEMINING INCIDENT REPORT	7
ANNEX B - EXAMPLE OF A DETAILED DEMINING INCIDENT REPORT	9
ANNEX C - EXAMPLE OF A CONVENING ORDER FOR A FORMAL INVESTIGATION.....	14

Demining Accident Investigation

1. Introduction

Demining has inherent dangers and there is the potential for accidents to occur. It is the responsibility of mine action managers at all levels to ensure that this potential risk is reduced to the lowest realistic level. This is done by the good management and supervision of demining operations.

Despite this, demining accidents may still occur. Should this happen, the speedy evacuation and treatment of the casualties is the first priority. The second is to determine why and how the accident occurred in order to minimise the chance of a similar accident occurring in future. It is a management responsibility to ensure a thorough investigation into the accident is conducted as soon as practical.

The thorough investigation of accidents and incidents, and the promulgation of the findings of these investigations, provide information that contributes to improvement of the quality of demining and reduces the likelihood of future demining accidents.

2. Scope

This chapter covers the procedures to be used in Afghanistan for the reporting and investigation of demining accidents. Demining accidents are those directly related to the survey, clearance and disposal of mines, ERW and stockpile destruction.

3. Incidents and Accidents Required to be Investigated and Reported

The following incidents and accidents shall be investigated and reported to the Mine Action Coordination Centre of Afghanistan (MACCA)/DMC:

- a) An accident in which a mine, ERW or explosives harms a demining employee, visitor or member of the local population at a demining worksite.
- b) An incident in which a mine, ERW or explosives damages equipment or property at a demining worksite.
- c) The discovery of a mine or ERW located in an area previously cleared, regardless of whether harm has resulted from the hazard item or not.
- d) Where demining workers, visitors or the local population are exposed to intolerable risk that resulted from the application of documented standards or SOP, including the failure of equipment issued to employees.
- e) Any unplanned detonation of a mine, ERW or explosives in an explosive store, in a vehicle or on a demining worksite irrespective of the cause or outcome.
- f) A non-mine, ERW or explosive-related accident on a demining worksite that requires the urgent evacuation of a casualty to an advanced medical facility for treatment. These accidents may indicate a deficiency in procedures or equipment.

4. Incident Reporting Procedures

After the incident occurred the organization shall submit the following reports to MACCA/DMC:

4.1 Immediate Notification

All organisations shall immediately notify the MACCA/DMC by radio or telephone of any incident or accident at the worksite. This should be reported immediately after the incident occurrence or in the case of an accident as soon as practically possible after the casualties have been evacuated off the site.

4.2 Initial Demining Incident Report

Following the immediate notification of an incident, organisations shall submit the initial demining incident report. This shall be a written report, providing all further details that may not have been available at the time of the immediate notification. The report shall be submitted to the MACCA/DMC on the same day of the incident occurring and by the fastest possible means, such as email.

4.3 Detailed Demining Incident Report

The detailed demining incident report shall be submitted to MACCA/DMC covering the results of an internal investigation carried out by the demining organisations involved. The investigation should be carried out by appropriately qualified and experienced members of the demining organisation and should be submitted within **10** days after the incident or accident occurred. This report shall be covering all corrective and preventive actions taken and planned by the mine action organization.

5. Formal Investigations

If the MACCA/DMC determines that an independent formal investigation is warranted then a formal investigation will be conducted and the demining organisation's detailed report will become part of this investigation report. The sole aim of a formal demining incident investigation is to identify problems or opportunities to improve the safety and quality of the demining process. It is neither a criminal investigation nor an investigation to assist in the assessment of a current or possible future insurance claim. As such, all employees of demining organisations to be encouraged to provide complete and accurate information about the circumstances surrounding the incident and opinions on ways to improve procedures that may assist in preventing a similar incident occurring.

6. Levels of Formal Investigation

There are two levels of formal investigations of incidents and accidents within Mine Action Programme of Afghanistan:

- a) External investigation: An appropriately qualified and experienced independent investigation officer appointed by the MACCA/DMC to conduct formal investigation of demining incident/accident.
- b) Board of Inquiry (BOI): The composition of BOI shall not be less than three people; representative from the MACCA, a representative from DMC and a representative, other than a member of the demining team directly involved, from the organisation involved in the incident or accident to conduct formal investigation.

7. Accidents Requiring BOI Investigation

The MACCA/DMC shall convene a BOI to investigate the accident or incident in the following cases:

- 1) All demining accidents that involve the death of a deminer or member of an organizations operational staff.

- 2) All demining accidents with severe preventable injuries of a deminer or member of an organisations operational staff.
- 3) When a mine/ERW discovered in already cleared area.
- 4) Where demining workers, visitors or the local population are exposed to intolerable risk that resulted from the application of documented standards or SOP, including the failure of equipment issued to employees.
- 5) Any unplanned detonation of a mine, ERW or explosives in an explosive store, in a vehicle or on a demining worksite irrespective of the outcomes.
- 6) If the detailed demining incident report submitted by the organization is rejected by MACCA/DMC.

8. Convening BOI Investigation

On those occasions in which BOI investigations are warranted, the MACCA/DMC shall formally convene the investigation in writing. Copies of the written convening order shall be provided to the investigation board/officer and the demining organisation involved in the incident. Convening orders provide Terms of Reference for the investigation board/officer. The convening order shall also provide deadlines on the conduct of an investigation and any requirements for interim reports.

Refer to Annex C of this AMAS.

9. Demining Organisation Responsibilities towards External Investigations

In addition to its initial responsibilities in the event of a demining incident and accident demining organisations shall:

- a) Provide access and, if necessary, administrative support to incident investigation boards/officers.
- b) Make all relevant records available to the investigation board/officer.
- c) If requested, provide qualified staff to assist with investigations.
- d) Complying with the directions of the MACCA in implementing the recommendations of the investigation.

10. Actions Following External Investigations

Once an investigation has been completed and the report accepted by the MACCA/DMC, the demining organisation involved in the incident shall be given a copy of the report to view and comment upon within two days after receiving investigation report. This shall be done before the report, or any part of it, is released. If acceptable to the MACCA/DMC, the demining organisation's comments may be included in the final report. The organization shall provide their corrective and preventive action plan within 7 days after the release of final report or lessons learnt summary.

11. Distribution of The Report

The confidentiality of an investigation report will be decided by the MACCA/DMC; however some parts of it may be distributed to other demining organisations at the discretion of the MACCA/DMC. If any report identifies new hazards, then the dissemination of this information shall be immediate.

12. Suspension or Termination of Operational Accreditation Post Incident

Depending on the findings of the incident/accident investigation and subsequent recommendations, it is possible that the MACCA/DMC suspends or terminates the clearance organizations operational accreditation for the clearance asset directly involved in the incident or accident.

The MACCA/DMC following the incident/accident can apply suspension of operational accreditation immediately if gross negligence is evident prior to the completion of the BOI Final Incident/Accident Report.

Suspension or termination can involve the followings:

- a) Individual: If individual person is found to be negligent then he/she shall be suspended. Suspension should be for a specified timeframe to be set by the MACCA/DMC. If the individual fails to rectify the problems leading to his/her suspension in the required time frame then shall be terminated.
- b) Clearance asset/team: Individual clearance assets/teams shall be suspended or have their operational accreditation terminated by the MACCA/DMC depending on the findings of the BOI. Suspension will be for a specified timeframe to be set by the MACCA/DMC. If the clearance asset fails to rectify the problems leading to its suspension in the required time frame then their operational accreditation shall be terminated.
- c) Organization: The Clearance Organization may be suspended or has their operational accreditation terminated by the MACCA/DMC if gross negligence is ascertained as a result of the BOI investigation. If the organization fails to rectify the problems leading to its suspension in the required time frame then the operational accreditation shall be terminated.

Annex A - Initial Demining Incident Report

From: Demining organisation name. **Date & time report submitted:** DD/MM/YYYY

To: AMAC, location.

Initial Demining Incident Report

- 1) Organisation, sub unit, team name/number. ^{See note 1}.
- 2) Location (province, district, village, minefield number).
- 3) Time of incident.
- 4) Type of incident.
- 5) Details of casualties to include:
- 6) Names. ^{See note 2}.
- 7) Description of injuries. ^{See note 3}.
- 8) Treatment given.
- 9) Current condition of casualty (s).
- 10) Evacuation methods, routes, destinations, departure time and estimated arrival times.
- 11) Equipment or property damaged.
- 12) Describe how the incident occurred.
- 13) Contact details of key personnel.
- 14) Any other information including.
- 15) Did the incident occur in a cleared or known hazardous area?
- 16) Device type (if known).
- 17) Any other relevant information.

Note 1: This information shall be sent in the immediate notification by radio or telephone within 30 minutes of the incident occurring, or in the case of an accident as soon as practically possible after the casualties have been evacuated off the site. The full demining incident initial report (including all information) shall then be sent by facsimile or email on the same day of the incident occurring.

Note 2: For non demining workers include the names of the casualties or the contact details of a person who can be the point of contact. Contact details for non demining workers do not need to be sent with the immediate notification of the incident but the fact that non demining workers were injured should be included.

Note 3: List injuries for each casualty separately and referenced to the name.

Note 4: List the equipment or property damaged. Include a short description of the extent of the damage and where appropriate include the name and contact details of equipment or property owners.

Note 5: Include a short description of how the incident occurred. In the case of a mine/ERW located in a cleared area, a failure in standards or SOPs or a failure with equipment then include details of how the mine/ERW was discovered or the failure occurred.

Note 6: Provide contact details of the person(s) responsible for the coordination of the immediate response to the demining incident and investigation activities, for example the Worksite Supervisor and/or the Operations Manager. Provide radio call signs or telephone numbers as appropriate.

Note 7: Provide as much information as possible about the circumstances surrounding the incident, specifically information which would assist in making decisions on the requirement to send out a general warning about a new device found or the inadequacies of equipment, a standard or SOP.

Note 8: Submission of the complete demining incident report shall not to be delayed in an effort to collect and analyse information regarding the incident.

Annex B - Example of a Detailed Demining Incident Report

Note: Not all of the parts in this example are applicable to all incidents required to be reported.

From: Demining organisation name. **Date report submitted:** DD/MM/YYYY

To: Mine Action Coordination Centre of Afghanistan

Demining Incident Detailed Report (Incident Description)

References:

- a) Initial demining incident report (copy attached).
- b) Afghanistan Mine Action Standards (AMAS).
- c) Demining organisation SOPs.

Part one – background (This is a summary of some of the information from the initial demining incident report)

- a) Demining organisation name.
- b) Organisation sub unit, team name/number.
- c) Name of worksite supervisor.
- d) Location of incident (province, district, village, minefield number).
- e) Date and time of incident.
- f) Type of incident.

Part two – details of incident

Provide a general description of how the incident occurred including locations; timings; demining personnel (manual clearance teams, MDD teams and mechanical teams) and any non demining personnel involved; mines, ERW or explosives involved; and vehicles/equipment involved. Attach photographs, diagrams and incident plans (location plan and detailed site plan) as Annexes to the report to assist in clarifying the circumstances surrounding the incident.

Note 1: For accidents, include details of the activities being carried out when the accident occurred.

Note 2: For mine(s)/ERW located in a cleared area include details of how the mine(s)/ERW was/were discovered, the type(s) of mine(s)/ERW involved, the exact location(s) (by GPS if it can be done safely), classification of the area where the mine(s)/UXO were located and any known details of previous demining (technical survey or clearance) in the area.

Note 3: For a failure in standards or SOPs or a failure with equipment provide details of the procedures or equipment involved, how the failure was discovered/occurred and potential consequences of the failure if not rectified.

Part three – incident site conditions

Describe the conditions on the incident site at the time of the incident in terms of worksite layout and marking, ground and terrain, vegetation and weather:

- a) Worksite layout and marking. Describe the layout of the worksite in relation to the location of the incident covering control areas, general worksite markings and specific worksite markings in the location of the incident. Include dimensions and cross reference to SOPs where appropriate. Include details of the worksite layout on incident location and site plans attached as an Annex to the report.
- b) Ground and terrain. Describe the ground in terms of type of soil, density or hardness and moisture content. Describe the terrain in terms of flat, undulating or hilly. If required use slope ratios (i.e. 1 in 25) to identify maximum/minimum slopes.
- c) Vegetation. Describe the vegetation in terms of type, density, size and root structure. Provide dimensions such as height of grass/crops/bush and maximum size of the vegetation stems. Indicate if the roots had an effect on the work or if the vegetation had been burned or cleared in any way.
- d) Weather. Describe the weather at the time of the incident.

Provide photographs of the site to highlight the incident site conditions.

Part four – team and task details

Team details: Provide details of the size and composition of the team (deminers, section leaders, team leaders, supervisors, medics etc), including MDD or mechanical teams; the qualifications (formal and refresher training) and experience (types of work carried out, locations, worksite conditions and mines, ERW or devices encountered); the most recent refresher training and subjects covered; the last period of leave/stand down; the results of recent monitoring (both internal and external) carried out on the team; and any known problems with the team. Provide a comparison between the team in general and any individuals involved in the incident.

Task details: Provide details of the task to include the survey work carried out (non technical and technical); clearance plan for the task, which should include area to be cleared and depth of clearance; types and number (if known or able to be estimated) of mines expected to be found; any known mine laying techniques or patterns; the planned use of the land after clearance; time worked on the task; progress in terms of area cleared as a percentage of the total area to be cleared; types and numbers of items found; and any problems encountered with the task.

Include copies of training records, monitoring reports, technical survey reports, task folders, task progress reports or any other demining organisation or demining worksite administration documentation required, as an Annex.

Part five – equipment and procedures used

Equipment used: Provide details of the equipment being used on the site relevant to the incident. This may cover detection equipment, Personal Protective Equipment (PPE), deminers' toolkits, demolition equipment, communication equipment, medical equipment, vehicles and mechanical equipment. For electronic detection equipment provide details of onsite testing requirements. This may be referenced to SOPs.

Procedures used: Provide an overview of any procedures used related to the incident. This may be referenced to SOPs.

Work routines: Provide details of the work routines being followed on the task at the time of the incident and the number of hours worked by personnel (including those involved in the incident) on the day prior to the incident occurring. If work routines involve handovers between personnel, provide details of when the last handover occurred prior to the incident and the details of what is covered during handovers for example, detection equipment checks, briefings etc. This may be referenced to SOPs.

Part six – explosive hazards involved

Provide details of any mines, ERW, explosive devices or explosives that were involved in the incident:

- a) For items that were located (mines, ERW), or explosives that were known to be used provide details such as; (1) mines/ERW - common names; (2) explosive devices - a detailed description of the components (name, type, size or weight) and construction details; (3) for known explosives - the names, type, size or weight of the items used. For items located also include the position in/on the ground (i.e. surface or buried and if buried, the depth and attitude in the ground) and whether item was trip wired, command detonated or booby trapped.
- b) For incidents involving a detonation provide details of blast holes (size and depth); mine/ERW or other debris located and any known or suspected items involved. Provide explanations as to why an item is either known or only suspected.

Provide photographs and technical details for any items located or photographs of blast holes and debris as an Annex to the report.

Part seven – details of injuries

Provide details of all personnel (including non demining workers) injured as a result of the incident. Include names, occupation, details of injuries and cross reference the names to the activities that the personnel were carrying out at the time of the incident. All injured personnel no matter how minor the injuries they received shall be included. Also include copies of medical records and injury data sheets as Annexes to the report. The location of the injured personnel, immediately after the incident occurred, should be shown on the incident detailed site plan.

Part eight – equipment/property/infrastructure damage

Provide details of all equipment, property or infrastructure damaged as a result of the incident:

- a) For equipment include detailed descriptions to include owner, make, model, age, serial numbers (where applicable), current value (if known), details of damage, insurance held by the owner/organisation and if possible an assessment of the cost of repair/replacement.
- b) For property and infrastructure provide details of the owner(s), damage incurred, insurance held by the owner(s) and if known, the cost of restitution or repair.

PPE: Provide details of any PPE involved in the incident by type/function, make, model or any other identifying details. Describe any damage to the PPE and provide comment as to the effectiveness or otherwise of the PPE in preventing injury (or more serious injury) to personnel involved in the incident.

Include photos of damaged equipment, property or infrastructure and copies of any other supporting evidence (ownership papers, property deeds, insurance details, repair quotes etc) as Annexes to the report.

Part nine – medical and emergency support

Provide details of the medical and emergency support (communications and evacuation transport) available at the incident site prior to the incident occurring. This may be cross referenced to SOPs. Also if applicable to the incident, include details of the frequency of demining accident response plan practices and the date the last practice was carried out.

Provide timings for key activities during the casualty evacuation for example the evacuation of the casualties of the incident site, the arrival at the initial medical facility, departure from the initial medical facility and arrival at the final medical facility.

Comment on the effectiveness or otherwise of the medical and emergency support in terms of planning and preparation, medical equipment and supplies, communications, evacuation transport, medical treatment facilities and external support (from other mine action organisations) to the casualty evacuation. Where deficiencies were identified provide details and recommendations for improvements.

Part ten – reporting procedures

Comment on the effectiveness or otherwise of the initial incident reporting procedures carried out.

Part eleven – any other matters of relevance.

Include any other matters relevant to the incident that have not already been covered in this example.

Part twelve – discussion, conclusions and recommendations

Provide any additional discussion, conclusions and recommendations.

Signature of Investigating Officer
Name of Investigating Officer

Annexes:

- a) Copy of the initial demining incident report.
- b) Witness statements.
- c) Incident location and detailed site plans.
- d) Site photographs.
- e) Training records, monitoring reports, technical survey reports, task folders, task progress reports or any other demining organisation or demining worksite administration documentation required.
- f) Photographs and technical details of items located, blast holes or mine/ERW debris.

- g) Medical records or injury data sheets. See Appendix 3 to Annex C of IMAS 10.60.
- h) Photographs of damaged equipment, property or infrastructure.
- i) Copies of equipment/property ownership documentation (ownership papers, property deeds, insurance details etc).
- J. Damage repair quotes/estimates.
- K. IMSMA Demining Accident Report and Casualty Report.

Annex C - Example of a Convening Order for a Formal Investigation

Mine Coordination Centre of Afghanistan Mine
Address
Location
File reference (incident serial number).

Date

Name of recipient(s)
Address
Location

Appointment of Personnel to Carry Out a Formal Investigation

Reference:

- a) Afghanistan Mine Action Standards.
 - b) Demining incident detailed report. (Copy attached)
- 1) You (name(s) of organisation(s)) are hereby appointed by (name and appointment) of the MACCA to investigate the circumstances surrounding the demining incident that occurred on (time and date) at (location) involving (personnel from, if applicable to the incident) (organisation name).
 - 2) This incident involved (a brief note as to what the incident was about for example 'a deminer detonating a mine whilst carrying out manual clearance'; or 'the discovery of a mine in an area previously cleared').
 - 3) Your formal investigation and report are specifically to cover the following:
 - a) Details of the task(s) being carried out at the time of the incident.
 - b) When and where the incident occurred.
 - c) How the incident occurred including a description of the events that led up to the incident, personnel, equipment and procedures involved.
 - d) The cause, nature and extent of injuries caused to personnel or damage to equipment, property or infrastructure as a result of the incident.
 - e) Why the incident occurred and whether the incident could have been avoided.
 - f) Any remedial action necessary to prevent future incidents of this nature occurring.
 - g) Any other matters that the BOI/IO considers relevant to the incident.
 - 4) In investigating the incident the following factors shall be considered:
 - a) The level of training and experience of the personnel involved in the incident, including where applicable, supervisory and managerial staff. This should also cover the dates and subjects covered for the most recent refresher training for the team, including if the members involved in the incident attended that refresher training.

- b) The work routines being followed prior to and at the time of the incident including work start and finish times and rest period routines. Investigate if any handovers were occurring between personnel working on the site and procedures followed for these handovers including any briefings involved.
- c) The dates of the last leave period or day off work for personnel involved in the incident.
- d) The dates and results of recent monitoring (internal and external) of the team involved in the incident.
- e) The procedures being followed by the personnel involved in the incident for the activities being carried out at the time of the incident.
- f) The safety equipment or protective clothing required to be used or worn by the personnel involved in the incident, and whether the equipment or clothing was worn or used and if so, whether it was done so correctly. Also consider whether the use of safety equipment or protective clothing contributed to, or could have contributed to, a reduction in any injuries to personnel.
- g) The medical and emergency support available to the team/personnel involved in the incident and whether this support was adequate or not in the circumstances of the incident. If the medical support was not adequate consider the possible affect this may have had on any casualties resulting from the incident.
- h) Whether the incident was contributed to or caused by any of the following:
 - 1) Any weakness in command and control.
 - 2) Neglect, carelessness or misconduct by any of the personnel involved.
 - 3) Personnel being given inappropriate or dangerous orders by supervisory or managerial staff.
 - 4) Non-compliance with orders, instructions or procedures.
 - 5) The use of alcohol, drugs or prescribed medication.
 - 6) Deficiencies in standards or SOPs.
 - 7) Incorrect use of equipment.
 - 8) Any shortfall in training of personnel involved.
 - 9) Injury or sickness to any personnel involved in the incident.
 - 10) Malfunctioning of equipment or materials, including explosives.
 - 11) The prevailing weather conditions.

Any deficiencies in basic support to personnel on the site for example provision of primary health care, shelter, food and water.

The report should summarise the results of the investigation, draw conclusions as to the factors that contributed to the incident and make whatever recommendations necessary to prevent a future incident of this nature occurring.

5) The following documents should be included with the report:

- a) A copy of the document appointing personnel to carry out a formal investigation (this document).
- b) A copy of the demining incident detailed report from the organisation involved in the incident.
- c) Witness statements.
- d) Sketches, diagrams, location and site plans as appropriate.
- e) Photographs highlighting important aspects of the incident for example site conditions; mines, ERW, explosive devices or explosives involved; blast holes and blast debris; injuries to personnel; and equipment, property or infrastructure damage.
- f) Task documentation, which may include survey reports, clearance plans, demining worksite plans or demining worksite documentation.
- g) Extracts from standards and SOPs as required.
- h) Medical records or coroner's reports.
- i) Any further documentary evidence gathered during the investigation.

The investigation report shall be submitted by (time and date). In the event that the completed report is not able to be submitted on the date indicated an interim report outlining progress with the investigation and the reason for the delay should be submitted on that date and further interim reports provided every (7) days until the completed investigation report is submitted.

Signature of appointing authority
Name of appointing authority