

LAO PDR NATIONAL UXO/MINE ACTION  
STANDARDS (NS)



**Chapter Nine**  
**Explosive Detection Dog (EDD) UXO**  
**Clearance Operations**

**National Regulatory Authority for  
the UXO/Mine Action Sector in Lao PDR**

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## Explosive Detection Dog (EDD) UXO Clearance Operations

### 1. Introduction

Explosive Detection Dogs (EDDs) have proven themselves to be a valuable asset in the UXO/mine clearance process throughout the world. They are particularly useful for areas without a high degree of UXO/mine contamination and for areas where the presence of metal fragmentation and mineralised soils limits the use of manual clearance assets. EDD may be used as either the primary method of clearance or for secondary clearance in support of other clearance assets.

EDD have not been extensively used in Lao PDR, however this does not preclude their use in the future. If and when EDD are used in Lao PDR the National Regulatory Authority (NRA), as the authority for the control and regulation of UXO/mine action in Lao PDR, must ensure that EDD are used safely, efficiently and effectively. The NRA has the responsibility to establish and implement procedures for the use of EDD in Lao PDR.

### 2. Scope

This chapter covers the minimum requirements for the conduct of EDD UXO clearance operations in Lao PDR.

The requirements included in this chapter apply to UXO clearance operations by EDD only; they do not apply to mine clearance operations.

### 3. General Requirements

The following general requirements are applicable to all EDD UXO clearance operations conducted in Lao PDR:

- a. Each EDD team (EDD handler and EDD) is to be tested and accredited in accordance with the requirements laid down in the NS Support Document '[NRA Accreditation Procedures for Lao PDR](#)'.
- b. Routine re-testing of EDD is to be carried out at least every 6 months in accordance with the requirements of the '[NRA Accreditation Procedures for Lao PDR](#)'.
- c. Records of the testing and accreditation of EDD are to be maintained in the EDD log book and are to be available for inspection by external QA inspection teams as required.
- d. Organisations employing EDD teams are to develop Standard Operating Procedures (SOPs) for the use of EDD. SOPs are to cover:
  - (1) The operations to be carried out by the EDD teams.
  - (2) Work routines for EDD UXO clearance operations.
  - (3) The training and retraining requirements for EDD UXO clearance operations.
  - (4) Data collection and recording requirements.
  - (5) The administrative and support requirements for EDD teams.
  - (6) Operational details for each activity carried out as part of EDD UXO clearance operations. This is to include:
    - (a) Team composition.

- (b) Marking the area to be searched before clearance commences.
  - (c) Tools and equipment required.
  - (d) Safety distances.
  - (e) Specific clearance drills.
  - (f) Command and control of the clearance operation.
  - (g) Marking of the site as clearance progresses.
  - (h) Marking indications.
  - (i) Investigating indications.
  - (j) Actions on locating a UXO.
  - (k) Marking of UXO.
  - (l) Disposal of UXO.
  - (m) Manual UXO clearance of areas unable to be cleared by EDD due to obstacles or dense vegetation.
  - (n) Marking completed cleared areas.
- e. EDD teams are not to be employed on tasks or in conditions for which they have not been tested and accredited.

No EDD teams are to be employed on EDD UXO clearance operations in Lao PDR unless the requirements of this section have been complied with. When appropriate, the NRA may require restrictions or limitations to be placed on the use of EDD teams.

#### **4. Clearance Requirements**

The clearance requirements referred to in this chapter of NS only concern UXO **area** clearance operations. They do not concern EOD roving tasks.

Clearance requirements for UXO area clearance operations include specifications as to the depth of clearance, the area to be cleared and the quality of clearance.

Clearance requirements should be specified by the tasking authority based on the intended land use, however when the tasking authority does not specify clearance requirements, the default depth of clearance and quality of clearance included in this chapter of NS are to apply.

Clearance organisations carrying out EDD UXO area clearance operations, by themselves or in conjunction with other UXO clearance assets are to develop clearance drills and procedures to ensure that the specified area to be cleared is cleared to the specified depth and to the required quality. In situations where clearance organisations are unable to achieve the clearance requirements, they should cease operations and immediately report the matter to the tasking authority.

Note: EDD may not be able to achieve the 0.25 m default depth of clearance for Lao PDR, but this should not preclude them from working. EDD clearance could still support clearance for some land uses.

#### **4.1. Depth of Clearance**

Depth of clearance is to be determined based on the intended land use and the types of UXO likely to be encountered. In some situations surface clearance may only be required. Different depths of clearance may be specified for different areas on a clearance site.

For subsurface clearance, where depth of clearance is not specified, the default depth of clearance is to be applied. **In Lao PDR the default depth of clearance is 25 cm.**

Note: The default depth is based on the most common use of cleared land, rice farming. The depth is based on an estimated maximum penetration depth of digging or ploughing implements into the ground.

#### **4.2. Area to be Cleared**

UXO area clearance operations in Lao PDR should only be considered when land is to be used within 6 months of clearance being completed. If the land use is known then the area to be cleared should be able to be specified. Specification of the area to be cleared should occur during the task allocation process.

#### **4.3. Quality of Clearance**

The minimum quality requirements for EDD UXO area clearance operations are:

- a. All UXOs equal to or greater in size than a half BLU 26 are removed from the ground to the required depth of clearance within the area to be cleared.
- b. All other UXOs smaller than a half BLU 26, including hazardous components of UXOs, located during the EDD UXO area clearance operations are to be removed from the ground.

Tasking authorities may specify clearance quality requirements that are more stringent than those stated above.

Note: For the purposes of these NS the half BLU 26 is deemed to be the minimum target UXO that poses an intolerable risk to personnel in Lao PDR.

### **5. Safety Distances**

The requirements for safety distances for EDD UXO area clearance operations are the same as for manual UXO clearance operations. See [Chapter 7 of NS 'UXO Clearance Operations'](#). When EDD teams are carrying out searching only, no safety distances apply.

### **6. Medical**

Accident response plans for EDD UXO clearance operations are to include procedures for dealing with EDD casualties and the provision of veterinary support.

### **7. General Safety Precautions**

The general safety precautions for EDD UXO clearance operations are:

- a. All EDD UXO clearance operations are to be carried out under the control of a qualified supervisor who is responsible for all aspects of the work of the EDD team.
- b. EDD teams are not to be employed on areas known or suspected to be heavily contaminated by UXO.

- c. Testing of EDD for obedience, motivation, concentration and detection capability must be carried out on site each day before work commences.
- d. If at any time during the conduct of EDD UXO clearance operations, the EDD handler is not satisfied with the performance of the EDD, work with that EDD is to cease immediately.
- e. EDD clearance is to always commence at least one metre outside any target clearance area to allow the EDD to adjust to the environmental conditions on the clearance site.

## **8. Training**

Clearance organisations employing EDD are to establish detailed procedures for the training and retraining of EDD teams and staff. These training procedures are to ensure that:

- a. All EDD are capable of working in the local environment and in detecting the range of UXO found in Lao PDR.
- b. EDD handlers are capable of effectively, efficiently and safely handling and supporting EDD in the range of operating environments within Lao PDR.
- c. All personnel employed as EDD clearance technicians in support of EDD UXO clearance operations are qualified and experienced for the task.
- d. EDD supervisors are qualified and experienced EDD handlers and clearance supervisors.

Training of EDD teams must be carried out in conditions as close as possible to the actual environments in which the EDD teams will work. Training areas prepared for training of EDD teams must have UXO:

- a. Common to Lao PDR.
- b. Containing different types and quantities of explosives.
- c. Buried at different depths.
- d. Buried and undisturbed for a period of at least three weeks.

When EDD are employed in the field, routine internal refresher training of EDD is to be conducted by their handlers. The routine internal refresher training is to conform to the requirements of the organisation's SOPs.

Formal refresher training and retesting of EDD teams is to be carried out at least every 6 months (see section 3 above).

## **9. Environmental Factors in the Employment of EDD**

### **9.1. Wind Strength and Direction**

The following rules in relation to wind strength and direction apply:

- a. EDD should not be used if the wind speed (at ground level) is greater than 18 m/s.
- b. EDD should not be used if the wind speed is greater than 7 m/s if the soil surface is very dry and dust is being raised.
- c. EDD should not search with a tail wind greater than 2 m/s.

## **9.2. Rain**

After periods of heavy rain, clearance organisations are to test EDD on test sites that have also been subject to the same heavy rain to ensure that EDD can still satisfactorily detect target items. If EDD are unable to detect target items reliably then EDD UXO clearance operations shall not take place.

## **9.3. Vegetation**

If vegetation is such that it will prevent the EDD from searching the whole area, or the EDD handler has limited visibility of the search, EDD are not to be used until the vegetation is removed. Vegetation may be removed by cutting or burning.

Where mechanical vegetation cutting is carried out in support of EDD UXO clearance operations, vegetation must be cut as close as possible to the ground. Vegetation must be cut in a manner which does not leave sharp, ragged edges that may injure the EDD or affect their work.

When vegetation cutting is required, irrespective of how the cutting is to be carried out, training and testing shall be carried out prior to any EDD UXO clearance operations taking place to determine:

- a. The safe time delay between cutting and EDD search.
- b. The indication accuracy of the EDD after vegetation cutting.

EDD shall not be used to search in areas where the vegetation has been burned unless they have been proven capable of detecting target items in burned areas.

## **9.4. Humidity**

To ensure that EDD are capable of operating effectively in the prevailing humidity conditions, the EDD should be trained and tested under these conditions. If conditions change dramatically, additional training and testing should immediately be introduced to ensure that EDD are able to deal with the new conditions.

## **9.5. Atmospheric Pollution**

EDD are not to be used in areas where the atmosphere is obviously polluted by gases, smoke or odours from petroleum products, fertiliser, chemicals, garbage, domestic burning (including vegetation) and traffic or factory exhausts.

## **10. EDD Pre-Employment Requirements**

### **10.1. Medical Clearance for Work**

All EDD are to be examined by veterinarians and cleared as medically fit for work before they are permitted to carry out EDD UXO clearance operations. They are to be re-checked and cleared by a veterinarian on a 6 monthly basis.

### **10.2. Daily Health Check**

The health and well being of EDD are to be assessed by the EDD handler each day before the EDD is permitted to commence work.

If a EDD has a slight health problem or minor injury but is assessed by the EDD handler as able to work, the EDD supervisor is to confirm this assessment before the EDD is authorised to

commence work. In such cases, the EDDs performance is to be closely monitored throughout the entire day.

If the health check reveals that a EDD suffers from illness or incapacity which might affect its detection capability and reliability, the EDD is not to be used for clearance before it has fully recovered. EDD with even minor injuries to paws or noses should not be used.

### **10.3. Daily Test**

EDD testing areas should be established on all clearance worksites where EDD teams are employed.

All EDD are to be tested on a daily basis prior to commencing work to ensure that they are capable of detecting the target UXO to the required depth of clearance. EDD unable to detect the target UXO to the satisfaction of the EDD handler and EDD supervisor are not to commence work.

## **11. EDD Operational Procedures**

### **11.1. Establishing EDD Search Boxes**

Prior to commencing any EDD UXO clearance operations, it is necessary to establish the search boxes that the EDD teams will work in. These are to be established so that:

- a. There are sufficient search boxes for the number of EDD to be deployed on the task.
- b. A EDD handler working in a search box is able to see the whole area where the EDD will be working. If vegetation prevents this, the search box size is to be reduced as required.
- c. The requirements for the management and supervision of the task are complied with.

In establishing search boxes consideration is to be given to factors such as wind direction, likely changes in wind direction and areas of high moisture content that may prevent effective clearance.

Search boxes are to be marked in a manner whereby the EDD handler is able to see the whole area within the box that is to be searched by the EDD and the perimeter markings.

Marking of search boxes is to conform to the general requirements for clearance marking systems covered in [Chapter 4 of NS 'Marking Systems'](#).

Where painted markers are used to mark the boundaries of EDD working areas, they are to be painted a minimum of one week prior to commencing operations to ensure that the paint is thoroughly dry.

### **11.2. Search Procedures**

All areas within the area to be cleared are to be searched by at least 2 different EDD.

During searches, separate EDD are to be at least 25 m apart so that working EDD are not distracted by the presence of other dogs.

Records of clearance by EDD are to include accurate detail of which search boxes were cleared by specific EDD teams.

### 11.3. Indication Requirements

EDD are to be trained to indicate target scents by sitting or lying down next to the indication. When indicating, they are not to be in physical contact with the point of the indication. If a EDD sits or lies down on the top of an indication or scratches at the ground during operations, training or testing, it is to be withdrawn from operational service and re-trained until the fault is corrected.

The location of an indication by a EDD is to be clearly and accurately marked by the EDD handler.

A EDD that indicates a target correctly may be rewarded. During rewarding, the EDD is not permitted to enter any un-searched area. If a EDD is difficult to control during rewarding; whether during operations, training or tests; it is to be withdrawn from operational service and re-trained until the fault is corrected.

### 11.4. Investigating EDD Indications

The investigation of EDD indications is to be carried out by a clearance technician with a minimum level 1 EOD qualification in accordance with [Chapter 8 of NS 'Explosive Ordnance Disposal \(EOD\)'](#).

When investigating EDD indications, the minimum area to be investigated is a 0.5 m radius around the point of the indication. Procedures and drills used for investigating EDD indications are where applicable, to be in accordance with [Chapter 7 of NS 'UXO Clearance Operations'](#).

### 11.5. Marking upon Completion of Search

The perimeter marking of a cleared search box is to remain in place until the whole cleared area has been permanently marked.

## 12. EDD Work Routines

Clearance organisations employing EDD are to establish work routines for EDD and lay down the criteria for rotation. However, the length of each search period for each EDD must be decided by the EDD handler based on the performance of the EDD.

If 2 EDD are used as a pair, they are to be rotated systematically between the roles of primary and secondary search. This rotation is to occur several times per day.

## 13. EDD Records and Log Books

### 13.1. EDD Records

Clearance organisations are to maintain records for each EDD to record important details concerning the health and work of the EDD. The records provide the clearance organisation and external QA inspection teams with a continuous written record of the EDD's health and work experience. The following information should be included:

- a. General data about the EDD such as breed, sex, genealogy, age (date of birth) and reproductive history.
- b. Medical details. This should include basic medical statistics of the EDD, dimensions weight etc; records of any illnesses, diseases or injuries and the treatment given; dietary requirements; and records of all routine health checks and inoculations.
- c. Training records to include the dates, duration and type of training carried out, including refresher training. Details should include instructors/handlers; environmental conditions

(weather, atmosphere and site); operating procedures; target objects and laying details; results of training; and an analysis of the EDD's performance during training.

- d. Records of accreditation testing.

### **13.2. EDD Log Books**

EDD log books are to be maintained for all EDD and updated daily by the EDD supervisor or handler. If EDD supervisors write the log book, the EDD handler is to sign the log after each entry to verify the entry and acknowledge the comment made. Log books are to record details of:

- a. Daily health checks.
- b. Daily tests.
- c. Work carried out, including an assessment of the EDD's performance.
- d. Rest and rotation routines of the EDD whilst working.
- e. Disease, sickness or injury to the EDD, including any comments or observations made by a veterinarian.
- f. Any other matters of relevance that may affect a EDD's health or performance.

The log book is to remain in the possession of the EDD handler at all times during operations in the field and is to be available for inspection by external QA inspection teams as required.

## **14. General Health and Care for EDD**

The requirements for health and care of MDD are detailed in [IMAS 09.44 'Guide to occupational health and general dog care \(Draft Edition 2\)'](#). Specific details are included in the following sections.

### **14.1. Kennel Facilities**

To satisfy their basic housing needs, EDD should be provided with a clean, healthy and lowstress housing environment. Basic kennel facilities should:

- a. Be adequately-sized to provide a certain degree of comfort, freedom of movement and freedom for the expression of natural behaviour.
- b. Have a non-slip, easy-to-clean dry floor that is safe for the EDD.
- c. Ensure the EDD have constant access to fresh water.
- d. Ensure the EDD have access to natural daylight and fresh air.
- e. Include suitable relief and exercise areas.
- f. Include lighting to enable observation of the EDD at any time.
- g. Ensure that EDD have the company of humans or other dogs.

### **14.2. Transportation of EDD**

EDD should always be transported in portable cages or in specially-designed EDD transport vehicles. A portable cage should be large enough to permit the EDD to shift position and turn

around inside, however the cage should not be larger than necessary. A small cage will prevent injury from the EDD tumbling around inside the cage during transportation.

During transportation, the EDD should be accompanied by its handler or another person trusted by the EDD. EDD should not be left unattended unnecessarily during transportation.

When an EDD is transported inside a vehicle the windows to the EDD compartment should be covered with reflective film or insulation material to prevent overheating.

Adequate ventilation should be ensured during transportation, especially when vehicles are stationary in hot climates. The EDD compartment or cage should be protected from dry air, exhaust fumes and dust. If necessary, the main ventilation should be supplemented by slots or holes distributed regularly around the cage. The EDD should not be able to poke its nose or paws through slots or holes in the cage.

On long journeys the EDD should drink every second hour and be exercised for at least 10 min every fourth hour.

## **15. UXO Used for EDD Training and Testing**

The following procedures apply to the management and control of UXO containing explosives used for the training and testing of EDD teams:

- a. Only unfuzed UXO or UXO fitted with transit plugs are to be used.
- b. No white phosphorus UXO are to be used.
- c. Explosive-filled UXO are not to be stored with inert Free From Explosives (FFE) training UXO.
- d. UXO containing explosives used for EDD team training are to be stored, transported and handled in accordance with the requirements of **Chapter 22 of NS 'Storage, Transportation and handling of Explosives'**.

## **16. Miscellaneous Provisions**

The requirements for disposal of UXO, progress reporting, completion surveys, clearance worksite documentation, visitors and community liaison as described in **Chapter 7 'UXO Clearance Operations'** also apply to EDD UXO clearance operations.