



Chapter 3

Marking System

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1. Introduction

An effective marking system is essential for the safety, effectiveness, and efficiency of UXO Clearance, the purpose of the marking system is to identify areas with explosive remnants of war and to enable effective command and control of UXO clearance. The marking system is also used to permanently mark the boundaries of cleared land.

2. Scope

This standard operating procedure applies only to UXO clearance, not to landmine clearance, and specifies the detailed standards for the marking system used by the Silavan UXO Survey, Clearance and Ordnance Disposal Company Limited (SLV).

3. Activities at the UXO clearance site and before clearance

For UXO clearance operations in Lao PDR, clearance technicians are allowed to enter and operate at clearance sites. Such permission is granted only when it is confirmed that the site does not pose any danger or risk to personnel, such as no mines, booby traps, or high-risk explosives. This verification may be obtained from technical surveys, information from local people, current land use, or other reliable information.

- a. Operators moving in the area to be cleared must inspect the area ahead to avoid trampling or disturbing UXO.
- b. Do not dig or drive stakes into the ground unless the area has been inspected with a metal detector and certified safe.

4. Responsibility for setting the marking principles.

4.1 Marking of land containing UXOs or Landmines

In general, the Silavan UXO Survey, Clearance and Ordnance Disposal Company Limited (SLV) will not mark the boundaries of land containing UXO or landmine remnants throughout. In the event that an area with landmines is found during operations, the company will report the basic information of the area with landmines to the NRA Office.

4.2 Reporting of UXOs

During the operations of the Silavan UXO Survey, Clearance and Ordnance Disposal Company Limited (SLV), if reports of UXO are received outside its area of responsibility, the company will mark them in accordance with national standards (NS) and report them to the NRA office or other clearance organizations operating in that area.

Purpose of the marking system.

The Marking has three purposes:

- a. It is a warning sign to local people about the dangers of UXO/landmines or the location of UXO.

- b. To help the management and control of the clearance process safely and effectively.
- c. To mark the boundaries of land that has been given handover for use or has been completed cleared.

5. Marking the location of UXO

Marking the location of UXO serves to alert local communities that unexploded ordnance is present and also helps the company's clearance team locate the marked UXO for future Ordnance disposal. However, in some cases, marking the location of UXO may result in the UXO being disturbed or collected for scrap metal.

5.1 Risk assessment

Before marking any UXO, the company's explosive ordnance disposal team must assess the likelihood that the UXO will be intercepted or moved as a direct result of the marking. This assessment takes into account the following factors:

- a. The situation of scrap metal collection
- b. UXO types (some types of UXO, such as BLU 26, will not be collected for scrap metal).
- c. Location of UXO associated with the community.
- d. Ease of finding UXO for demolition in the future.
- e. The dangers that may arise if UXO is not marked.

5.2 How to mark the location of UXO.

If it is necessary to mark the location of UXO during company operations, the following procedure shall be followed:

- a. UXO found during the survey
If UXO detected in a forest or near trees, use red spray to spray the trees or use warning stakes/signs to mark them. However, before marking, conduct a risk assessment as specified in paragraph 5.1 above.
- b. If UXO detected in the clearance area is found in an open area, use a 1-meter-long red-painted wooden stake, made into three pieces, and cover it with sandbags.

6. Introduction to the marking system for local communities.

The person in charge of the company's clearance or survey work is responsible for informing and advising local people about the marking system used by the clearance unit, whether it is marking for area clearance, survey work or UXO marking.

7. Maintaining a marking system area with UXO/landmines.

In the event that the clearance unit of Silavan UXO Survey, Clearance and Ordnance Disposal Company Ltd. (SLV) has surveyed an area at the request of the customer, but the area has not yet been cleared, the customer must be responsible for protecting the markings made.

8. Marker symbols for Area Clearance

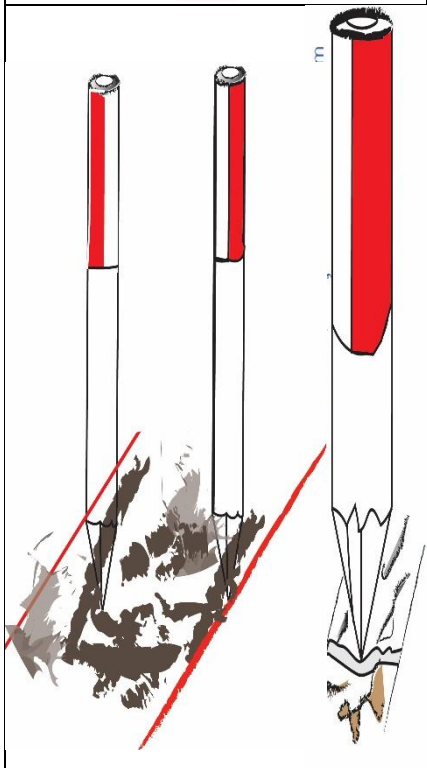
The marking system used is to ensure safety and effectiveness in commanding UXO area clearance. It is divided into 2 main parts:

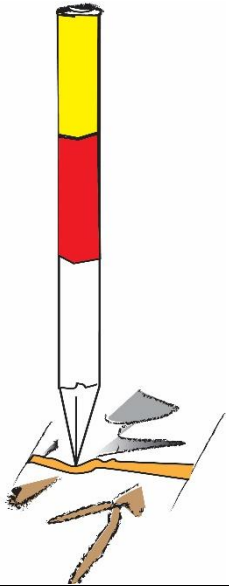
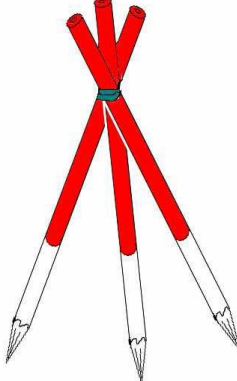
- a. Marker symbols for the boundaries of the area to be cleared.
- b. Marker symbols used for UXO area clearance.

9. Marker symbols for the boundaries of the area to be cleared.

	Marker stakes system, boundary of land to be cleared • All turning points on the clearance site are marked with black, white and yellow wooden poles 120 cm long. The black pole at the top is 20 cm long and the white pole in the middle is 30 cm long. The yellow pole at the bottom is 10 cm long. • From one turning point, you must be able to see the next turning point. • The boundary markers used shall be maintained until the clearance is complete and permanent boundary markers are erected.
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10. Marking symbols used for UXO area clearance

	Marker stakes system inside area clearance: • The corners of the clearance lane are marked with 1 meter long red-and-white wooden poles painted red-and-white, each pole 10 cm long. • Every corner of the clearance lane must be marked with this long red-and-white wooden post. • Once the clearance is complete in that lane, this stake may be removed on a case-by-case basis.
	The lane markers of break time and changing work shifts: • During breaks or shift changes, the clearance lane should be marked with a 30 cm long wooden pole, painted red and white in contrasting colors. This 1 m long red and white pole is also used as a marker to mark the clearance lane. The ropes are tied to this pole or cleared in long lines (in the case of clearing a lane 2 m wide or more, they are tied to both sides). • Note: White side mark area that have been cleared, red side indicate area that have not been cleared, either on the left or right side, depending on the case.

	Marking the clearance lane, before leaving work each day. • Before leaving work each day, the deminer must dig a trench to mark the area that has been cleared. • This trench must be dug sufficiently deep and about 5-10 cm wide. • Note: If the marker is removed, the boundary can be determined by the trench left behind. • Also, the task progress will be marked on the drawing map.
	Marking the UXO found at clearance site. • UXO found during clearance are marked with three 1-meter-long red-painted poles tied together to cover the location of the UXO. This will also be marked on the progress map of the clearance site.

11. Marking system for survey

Markers used during the survey will serve as reference points to define the boundaries of the land area for UXO clearance. Survey markers may be created during a survey to collect data to support future clearance, or may be created after clearance is complete.

Survey marking:

- a. A reference point (RP) is a point that is permanently identified and located at a reasonable distance outside the area to be cleared.
A reference point is defined as a permanent and dominant feature of the area. The location of the reference point must be the point used to establish a benchmark (BM) from other reference points.
- b. A benchmark (BM) is a permanent point used to define the location of various points along the boundary of an area clearance site. In large clearance area site, more than one benchmark may be required to cover the entire area of the site. The benchmark must be outside and not adjacent to the clearance site area.

- c. The starting point (SP) is a point on the boundary points of the area to be cleared from which the demarcation of the clearance site will begin.
- d. Turning points (TPs) are any points along the boundary of the area to be cleared. These points will be the points where the boundary changes direction.
- e. Intermediate points (IPs) if the distance between two turning points is more than 50 meters, it is necessary to use intermediate points to ensure that the direction between the two turning points can be followed easily and with greater accuracy.

For details on the symbols and use of the above punctuation markers, please see the appendix A to this chapter's operating standards.

12. Demarcation of the area allows for use.

The Silavan UXO Survey, Clearance and Ordnance Disposal Company limited (SLV) will hand over - receive land for use only with the clearance of the area. Upon completion of clearance and before handing over and receiving back to the customer, the company's clearance unit responsible for carrying out the task must mark the boundaries of the area has been cleared and record the information.

To mark the boundaries of cleared area, proceed as follows:

- a. Use a cement block that has been poured and buried at every turning point in the cleared area.
- b. The cement pole is 10 cm in diameter and 30 cm long, with a steel bar in the center of the pole that extends far long enough to be buried in the ground.

Note: Since boundary markers may be moved or lost after handover during this issue, it is essential that the turning points and reference points be permanent.

- c. The cement blocks embedded in each point should be marked with their location, such as the starting point, the turning point 1, 2, 3, and so on.

Marking and demarcation must be completed before the land is handed over for use.

When marking the boundaries of cleared land, any excavation or piling into uncleared land, including any work deeper than the clearance depth, must be inspected with a UXO/Mine detector and certified safe.

13. The appendix A, Permanent Marker Symbol

Appendix A
Permanent Marker Symbol

- 1) Red color indicates area not cleared



2) White color indicates area cleared.

Note:

- ☞ For red marker, use a turn or jump to an uncleared point/area.
- ☞ For white marker, use a turn to the direction of the area that has been cleared.