	STANDARD OPERATING PROCEDURE	S O P
	SURVEY OF MINE SUSPECTED AREAS AND/OR BUILDINGS	01.
	MINE SUSPECTED AREA (MSA) MARKING	01.02
HUMANITARIAN DEMINING		TO 523

- MARKING SYSTEM
- MARKING PLANNING
- MARKING PROCEDURE
- MARKING CRITERIA
- MARKING SYSTEM MAINTENANCE
- REPORTING AND ENTERING DATA INTO THE DATABASE

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INTRODUCTION

Marking of mine suspected area and marking maintenance is a priority and primary task of CROMAC.

Marking and marking maintenance and improvements in the MSA markings are performed continually, either as individual tasks or as a part of other mine action activities.

Marking of mine suspected area in the Republic of Croatia by means of mine hazard boards was executed in 2004 as part of general survey carried out on the total area of all mine and UXO contaminated towns and municipalities in order to define mine suspected areas in the Republic of Croatia.

Therefore, this SOP represents a certain upgrade of the existing marking system and it regulates the implementation of the following activities:

- Placing mine hazard boards on the border lines and safe paths and surfaces facing outwards mine suspected areas
- Fencing of mined and mine suspected fields and buildings
- Removal of mine hazard boards upon the completion of demining works, in order to enable productive use of surface areas

This SOP places a special emphasis on the importance of right timing in mine suspected area marking as well as importance of cooperation between CROMAC and units of local administration and self-governance and other MSA beneficiaries in mutual share of information regarding the situation, changes to and maintenance of MSA as a joint commitment.

Based on the developed MSA marking system, “MSA marking” operating procedures are stipulated with a view to maintain the marking system and inform population of mine suspected locations more efficiently.

Consistent implementation of SOP will ensure a standardised approach to the planned maintenance of marking system and monitoring of MSA marking maintenance in order to provide qualitative and timely information on mine threat existence in order to minimize the number of incidents involving people and animals.

SOP implementers are obliged to check their practicality and suggest possible improvements.

The Operations Department will analyse SOP applicability, identify possible amendments and modifications and ensure its compliance with regulations regarding mine clearance operations.

MARKING OF MSA

The marking of mine suspected areas represents a set of measures and activities implemented with a view to identify the exact borders between safe and mine suspected areas and buildings.
A planned marking of mine suspected area and buildings ensures a required marking level as well as timely informing of MSA users and the entire population of the danger from mines and other ERW.
A regular MSA monitoring allows for a prompt and timely marking of newly-defined mine suspected areas, as well as for providing timely information about the mine hazard to all responsible participants.

1. SCOPE

Standard operating procedures "Marking of MSA" stipulate all the activities related to marking of areas and buildings carried out by the Croatian Mine Action Centre.

Standard operating procedures define planning and execution of MSA marking.

The execution of marking comprises activities of additional marking, relocation of marking boards, marking control, the removal of unnecessary marking boards and documenting the performed activities.

Standard operating procedures stipulate the criteria for high-quality marking of mine suspected areas and buildings.

Documents to be used during marking and fencing, their contents and instructions on how the forms should be filled with relevant data are prescribed as attachments to the SOPs.

2. NORMATIVE REFERENCES

This SOP is based on International Mine Action Standards (IMAS 08.40), laws and by-laws regulating demining activities in the Republic of Croatia (Law on Humanitarian Demining, Book of Rules and Regulations on Methods of Conducting Demining Operations) and it is aligned with other CROMAC Standard Operating Procedures. Normative references are listed in the Annex A.

3. TERMS AND DEFINITIONS

This SOP is based on International Mine Action Standards defining the terms and definitions relating to marking mine/UXO hazards.

Terms and definitions are listed in Annex B.

4. GENERAL REQUIREMENTS AND MARKING SYSTEM

Marking of mined and mine suspected areas and buildings is carried out through the following actions:

- Marking with mine hazard boards and mine hazard signs,
- Marking with mine fences

4.1. Marking with mine hazard boards and mine hazard signs

Mine hazard boards and mine hazard signs (small square boards and triangular signs) are commonly used in marking mine suspected areas. They are placed individually and/or in combination with other means of marking mine suspected areas.

4.1.1. Mine hazard board

Mine hazard board represents the basic way of marking MSAs.

Mine hazard board is a clear visual warning of a serious mine hazard and the prohibition of entry into the MSA

Mine hazard boards are placed at possible access points to MSA (paths, roads and other areas used by people.

The position of mine hazard boards and the number of mine hazard boards used need to:

- warn of mine hazard, and
- prevent the entry of local population and other passers-by to mine suspected areas.

Hazard board must be visible and clearly recognised from a distance of at least 50 m.

Hazard board layout

A hazard board is made of aluminum plate; its dimensions are 800x600 mm with hardware iron structure and a vertical board pillar 2500 mm high. The background of the board is white. The hazard board contains the text: “NE PRILAZITE NA OVOM PODRUČJU JE VELIKA OPASNOST OD MINA” (written in Croatian only, meaning: “DO NOT APPROACH – MINE HAZARD”). The middle of upper third of the board bears white skull and crossbones on a triangular red background, and words “MINE - MINES”. On the right bottom of the board the CROMAC logo should appear.

An example of a hazard board is given in Annex C (Picture 3).

Apart from being placed on an iron pillar, the mine hazard board can be placed on a building, rock, trunk of a tree, fence or another firm carrier, provided that all above-mentioned conditions are met.

4.1.2. Mine hazard signs

Small mine hazard signs (small square boards and triangular signs) represent a clear visual warning of the significant mine hazard. Small mine hazard signs are displayed in prominent positions and must be visible and clearly recognised from a distance of at least 30 m.

Small mine hazard signs are placed:

- individually, in order to directly mark a place where MINES or UXOs are found,
- together with large mine hazard boards, as an appropriate form of marking fragmented small mine suspected areas and buildings in settlements,
- together with large mine hazard boards, in order to increase the efficiency of markings in a particular area,

- when constructing mine fences, as their integral part.

Hazard sign layout

Small triangular hazard sign: the sign is an isosceles triangle, with a base of 28 cm and two sides of 20 cm, 2 mm thick.
Small square sign: the sign is a square whose sides are 35 cm long.

The background of the sign is red. In the middle of the sign there is a skull and crossbones, above which the words “OPASNOST / MINE“ (“DANGER / MINES“) should appear.

An example of a hazard sign is given in Annex C (Pictures 1 and 2).

Small signs are made of aluminum plate. Small mine hazard signs are placed at the height of 100 to 120 cm, on a wooden square bar 5x5 cm, 140 cm long. Except in the above-described way, small mine hazard signs may be placed on a building, rock, cliffs, tree trunk, etc., provided the conditions described above in 4.1.2 of this SOP are fulfilled.

Apart from in the above-described manner, small mine hazard signs can be placed and written out in the field by means of colouring the patterns identical to small mine hazard signs presented on the pictures C1 and C2 (ADDITION C). This manner is particularly suitable for marking of highlands and mountain areas, where due to the type of soil and strong wind, placing mine hazard signs onto wooden or metal carriers would not be possible and/or efficient.

Mine hazard signs are placed exclusively on safe areas, facing outwards from mine suspected area and/or building.

4.2. Marking with mine fences

CROMAC marks MSAs by placing mine fences based on its own safety assessment. Marking by means of placing mine fences is generally used for marking those mine suspected areas in which the general and technical survey has established the presence of mine explosive barriers, and which are situated within populated areas in the immediate vicinity of schools, kindergartens, playgrounds, and other areas and buildings used intensively by population, and when safety assessment requires so.

Marking should represent a visual and physical obstacle to the movement of people, and must resist all weather conditions until the beginning of demining works.

Mine fences are placed exclusively on safe areas, facing outwards from mine suspected area and/or building.

Mine fence is composed of pillars connected by three rows of wire, with mine hazard signs attached.

Pillars used for mine fence are made of metal (at least 4x4 cm, square or angle bars) or concrete (at least 8x8 cm), and their height is 180 cm (150 cm from the ground) and painted red-white from the top down. The wire is placed uniformly, in three rows, maximally 25 cm from the top of the pillar and maximally 25 cm from the ground.
The pillars need to have hooks or holes to allow for safe and stable fitting of the wire. Mine signs are placed on the mine fence with a maximum distance of 8 meters from each other.
Signs warning of mine hazard have to be clearly visible, with a clear difference between the marked side indicating the mine danger from the safe side.

5. PLANNING OF MARKING

Marking of mine suspected area and marking maintenance is a priority and primary task of CROMAC.

Planning of marking system should ensure efficient maintenance of the marking system by controlling the changes in the defined MSA boundaries, the control over current marking system and informing the MSA beneficiaries of any changes arisen.

Planning of marking in towns and municipalities is performed by competent CROMAC regional offices.

CROMAC regional offices prepare the proposal of the annual MSA marking plan. The annual marking plan coordinates the activities marking performed as part of other CROMAC activities as well as those performed as an independent activity.

CROMAC regional offices are obliged to submit the annual marking plans to the Operations Division.

In their annual plans CROMAC regional offices coordinate marking plans with general survey plans, technical survey plans, search and demining plans, implementation survey plans required for project proposals, community requirements, Operations Division guidelines, available capacities and their own assessment on MSA marking situation.

The annual plan must ensure the annual control of the existing marking situation and required improvements in the marking system in cities and municipalities that under the jurisdiction of the CROMAC regional office.

CROMAC regional offices are responsible for conducting marking operations pursuant to the adopted annual marking plan and the deriving periodic and monthly operational plans.

Operational plan, as a specific plan unit, includes the name of the municipality/town, specific area, as well as the surface indication “P”, as a reference to marking operations to be executed.

The regional office conducts monitoring of marking activities and the realisation of the marking plan on a weekly and monthly basis, and submits the reports to the Operations Division.

5.1. Planning priorities

Marking plans define the realisation of marking activities according to the following priorities:

- marking of newly identified mine suspected areas/buildings included into MSA with mine hazard signs and mine hazard boards and informing communities of the new developments,

- marking the new perimeters of MSA with mine hazard signs and mine hazard boards upon the completion of demining works, search, and excluding the areas and buildings from MSA,

- fencing of mine suspected areas,

- removal of unnecessary mine hazard signs and mine fences, their relocation or return to the storehouse,

- maintenance of the marking system in general through checking the marked position, replacement of the missing boards and signs, and marking of new positions, as necessary.

6. MARKING PROCEDURE

Marking as an independent activity is executed based on monthly operational plans and order from the head of a Regional Office.

Marking refers to the following activities:

- placing mine hazard signs and boards,
- fencing mined and mine suspected areas and buildings,
- removing or replacing marking signs upon completion of demining works,
- checking and maintenance of marking signs and fences in place, and placing new ones in places where these are missing,
- reporting and input into the Mine Information System.

Marking is also carried out as a part of other activities, namely:

- Marking as a part of general survey
- Marking as a part of technical survey
- Marking as a part of project development
- Marking as a part of final inspection of mine clearance and mine search activities.

Marking is conducted on an individual level (one deminer) or on team level, depending on the situation in the field, i.e. the extent to which the area has already been marked.

Placing mine hazard signs and fences is conducted on the team level, while placing small mine hazard signs and boards is conducted by one person.

Marking of an MSA and mine searching on an area where a demining project has been completed is conducted by demining teams, under the supervision of a QA Officer, as support to the final inspection.

Marking is carried out on safe areas, and the mine suspected area is not entered.

6.1. Marking preparations

Marking preparations involve analytical preparation for marking and logistic preparation for the execution in the field.

6.1.1. Analytical preparation

Analytical preparation involves a detailed analysis of the MSA and the extent to which it has already been marked.

Analytical situation evaluates the situation and establishes the unknowns regarding the area to be marked.

Analytical preparation includes the following data analysis:

- Data on areas to be included in MSA (verification of proposal to include under way),
- Data on areas within the MSA,
- Data on areas excluded from the MSA,
- Reports on marking activities conducted on the area where clearing and searching projects have been completed,
- Data on compliance between the data in the database and those in the marking reports.
- Data on characteristics of the area and safe access roads to the MSA where marking is performed.

Analytical preparation should result in precise definitions of tasks and goals to be accomplished by the marking activities.

Analytical preparation for marking comprises the drafting of the following documents:

- Working topographic maps S 1: 25 000 and Croatian Basic Maps S 1: 5 000 containing the following data: surface areas within the MSA "P", numerical marks of the mine hazard sign positions, numerical marks of each fence position and planned positions to be marked. Data shown on the map is updated (or corrected) with data collected in the field as a result of the marking procedure.
- Report containing input marking data of municipality/city, as taken from the database, on which marking is to be performed in accordance with the SOP 01.01 Annex N. The report is updated with new marking data pertaining to newly marked positions, and the former situation regarding the marking of the MSA in question is updated.
- Requests for cooperation with local authorities, public institutions on conducting the marking on unfamiliar areas.
- The necessary logistic support.

Analytical preparation is conducted by a single deminer or a marking team, under the supervision and with the guidelines provided by the Head of the Survey Section.

A completed analytical preparation is verified by the Head of the survey team, on the basis of previous verification of prepared documents and the overall preparedness of the individual or team for conducting marking activities in the field.

6.1.2. Logistic preparation

Logistic preparation involves a check of completeness and correct functioning of the equipment to be used for marking, the organisation of accommodation and the provision of a travel allowance for the marking team. The working equipment must ensure the basic conditions for work.

6.2. Marking procedure in the field

Marking is performed according to the goal and tasks set, defined in the marking Order and the results of the analytical preparation.

Marking procedure sequence in the field:

a) Determine MSA boundaries by comparing the geo-topographic data from the map and the actual situation in the field,

b) Establish precisely safe access paths to the boundaries of areas included in the MSA and the boundaries of the MSA with other safe areas cleared, searched and excluded from the MSA in the general survey,

c) Establish the extent to which the MSA is already marked in relation to the situation in the database and the positions envisaged for marking on the basis of the analytical preparation,

d) Assess the efficiency of formerly defined and envisaged positions for marking, and apply any necessary corrections in order to optimize the marking,

e) Perform marking on the defined position by placing a hazard sing, board or fence,

f) Establish the coordinates of the position of the sign, board or fence using a GPS device,

g) Establish the coordinates of the position of the sign, board or fence by measuring on the map, so that they can be precisely entered into the map featured in the database,

h) Mark the positions of the performed marking into the Croatian Basic Map 1: 5 000 in accordance with the established coordinates obtained from the measuring on the map,

i) Document the marking by taking photographs and entering data as required by the Report on the marking and/or fencing, and the Report on the changes in marking and/or fencing of the MSA.

In the marking procedure conducted on unfamiliar areas, it is necessary to establish cooperation with the local population and/or representatives of the local community, associations and public institutions, in accordance with the conclusions of analytical preparations concerning the necessary cooperation and assistance.

In every marking procedure conducted, it is necessary to conduct checks of the marking already performed on the area in question by consulting the situation in the database, to replace the missing warning signs and register any changes in MSA marking.

6.3. Reporting

A report on the marking activities is prepared by the deminer who has performed the marking, the Head of the marking team, or the QA Officer, in accordance with Annex E and/or F.

The following documents are drawn up and enclosed in the report:

- Report on changes in the MSA marking on the area where marking is performed, in accordance with Annex N and/or N/1,

- Photographs of mine hazard sings, boards and fences,

- Map S 1:25000 with marked MSA and marking data,

- Map S 1: 5 000 with marked MSA category according to the demining method, area codes “P”, minefield data (vectors, minefields, mine incidents, other indicators) and marked marking and fencing positions with numerical marks of the positions.

Head of the Survey Section analyses checks and verifies the Report and submits it to the Head of CROMAC Regional Office for final approval.

6.4. Entering data into the Database

Marking data may be entered into the database by the deminer who performed the marking on his own, the head of the marking team, the QA Officer, or a database consultant.

Data entry includes:

- drawing positions of the performed MSA marking with mine hazard signs and boards,

- drawing the position of the performed MSA marking by fencing in the form of vectors,

- updating the data on changes in MSA marking.

6.4.1. Drawing marking positions on the map

Data are entered onto a map S 1:5 000 showing the MSA of the municipality/city and the previous marking situation. The previous marking situation is updated with the following data (symbols) pertaining to the performed marking:
- MSA positions already marked,
- MSA positions to be marked (new positions or previously defined positions from which mine hazard warnings have been removed or permanently damaged – marking incomplete).

Positions are drawn on the basis of X and Y coordinates established in the GIS and confirmed in the field.

Positions on which the MSA is marked by fencing (line object) are drawn with multiple coordinates (X, Y) if a fence consists of several sections (road, railway, or canal crossing, and other areas outside the MSA), or if the fence is curved and has turning points.

Head of Survey Section analyses, checks and verifies the entered data on the performed MSA marking.

6.4.2. Database update

On the basis of the Report on the performed MSA marking, the data in the database is updated with regard to the changes in the marking on the MSA belonging to a municipality/city, in accordance with Annex N and/or N/1.

Updating of data comprises the following:

- entry of data on new MSA marking positions,

- entry of data on the checks, removal or relocation of mine hazard signs and fences,

- entry of data on the established disappearance or permanent damage of mine hazard signs and mine fences, and an assessment of justifiability of reporting the established damage to the markings to police authorities.

CROMAC local offices must submit to the Operational Sector a Report on the changes in MSA marking (Annexes N and N/1) on the first Monday of every month.

Marking data entered in the database should enable monitoring of the situation and changes in the marking of each position where marking has been performed or is to be performed, and any changes in MSA marking by the municipality/city, counties and the Republic of Croatia.

7. MARKING REPORT ANALYSIS AND VERIFICATION

A marking Report drawn up by the deminer who performed the marking, or the team leader is subject to verification based on the analysis and check of the data entered into the database on the basis of the report.

The Report undergoes final checks and verification by the Head of the CROMAC local office, on the basis of the previously conducted detailed analysis, quality control and verification of the Reports of previously conducted marking, performed by the Head of the Survey Section, as well as quality control of the marking data entered into the central database, performed by the Head of the Survey Section and a database consultant.

The accuracy and authenticity of the marking data are the responsibility of the deminer who performed the marking, or of the team leader, if the marking was performed by a team.

8. MARKING CRITERIA

By setting marking priorities and an appropriate choice of the positions to be marked, it is necessary to ensure efficient information of MSA users and the local population about the danger of mines and other explosive remnants of war, so as to minimize casualties.
Marking positions are determined in the marking procedure through analytical preparation and from the data collected in the field, as set out in point 6.2.
Positions to be marked are determined by the marking team leader, applying the following criteria:

8.1. Criteria for setting priorities

- High risk mined areas where mine incidents have taken place;

- Populated mined or mine suspected areas: family houses including surrounding plots, school grounds, churches, cemeteries, facilities owned by institutions and companies, and other mine suspected areas in immediate vicinity of the population and their everyday activities;

- Mined and mine suspected areas and buildings near roads, field of forest paths, water streams and other water areas, used by the local populations and other passers-by who are not familiar with the area and/or are not informed about the new situation in the MSA (tourists, hikers, hunters, fishermen, etc.)

- Mined areas where existence of mines has been confirmed by a technical survey, mine clearance, or a general survey.

8.2. Criteria for setting marking positions

- In determining the positions to be marked, it is of primary concern to establish safe access roads and paths entering the MSA, and safe adjacent areas;

- Marking position is determined on a safe area, usually along the border of the MSA;

- On inaccessible areas, the marking position is determined on the closest safe area possible to the pedestrian access to the MSA border;

- Marking is performed in the direction of possible movement towards the MSA;

- Marking on the defined position must be visible and recognizable. A large mine hazard board must be visible from a 50 m distance, while the small mine hazard signs must be visible from a 30 m distance;

- In selecting the marking positions on unfamiliar areas, it is necessary to collect data pertaining to existing roads, paths and other suitable ways of access to the MSA. The data is gathered in cooperation with the local community, police authorities and other users of the MSA who are familiar with the area.

- For marking MSAs on unfamiliar territory, the local CROMAC office must request and provide guides, with the help of local authorities.

9. MARKING SYSTEM MAINTENANCE

The marking system for MSA needs to be maintained by checking the performed marking and upgrading the marking on the basis of the changes in MSA borders which have occurred.

System maintenance is a permanent responsibility, and has to be conducted regularly as a separate activity, and within other demining activities performed in the field.

Marking tasks are planned and performed within the following activities:

- General survey,
- Technical survey,
- Project survey,
- Inspection of search and demining activities performed,
- Cooperation with municipalities/cities, public companies and institutions (national parks, nature parks, etc.), the Ministry of the Interior, etc.

9.1. Marking system maintenance as a part of general survey

A general survey includes the following activities:

- defining priority positions and placing mine hazard signs for the purpose of marking areas and buildings to be included in the MSA,
- defining priority positions and placing mine fences for the purpose of marking mine suspected areas,
- placing mine hazard signs and fences on previously defined positions from which signs have been removed due to adverse weather conditions or by an unknown perpetrator,
- replacing mine hazard signs and fences which have suffered permanent damage,
- defining new positions and placing (relocating) mine hazard signs and fences based on the Opinion issued by the Director of CROMAC, excluding an area or building from the mine suspected area,
- removing unnecessary mine hazard signs or fences, and returning to the warehouse upon an Opinion issued by the Director of CROMAC, excluding an area or building from the mine suspected area,
- checking of markings on an MSA on the area of a general survey on the positions on which marking has been performed against the situation in the database.

A Report on marking (Annex E) and/or fencing (Annex F) conducted within a general survey, is drawn up in cases in which new positions of signs, board or fences where established during the marking.

A survey team leader or surveyor himself draws up a Report on the marking performed and enters the data in the database, as set out in point 6.3 and 6.4 of the SOP.

Head of the survey team or the surveyor himself draws up a Report on the changes in MSA marking pertaining to the checks conducted of the marking and/or fencing on the area covered by the general survey, without defining new positions of signs, boards or fences, in accordance with Annex N and/or N1.

Check, analysis and verification of the Report on marking are conducted in accordance with point 7 of the SOP.

9.2. Marking system maintenance as a part of technical survey

The technical survey comprises the following marking activities:

- definition of priority positions and placing of mine hazard signs on locations for which data is collected in the technical survey (or based on information provided by the local population), suggesting that they should be included in MSA. The head of CROMAC Regional Office must be informed immediately of the activities, for the purpose of additional technical survey and inclusion of areas and buildings in MSA.
- definition of priority positions and placing of mine hazard fences for marking areas and buildings for which data is collected in the technical survey (or based on information provided by the local population), suggesting that they should be included in MSA. The head of CROMAC Regional Office must be informed immediately of the activities, for the purpose of additional technical survey and inclusion of areas and buildings in MSA.
- replacing mine hazard signs on previously defined positions on the territory where technical survey has been conducted, which have either disappeared due to adverse weather conditions, or have been removed by an unknown perpetrator,
- replacing permanently damaged mine hazard signs on the territory where technical survey has been conducted,
- comparing the marking situation in the field, on the positions where the technical survey has been conducted, to the situation in the database.

Report on the marking (Annex E) and/or fencing (Annex F) is carried out in cases in which new positions of tables, signs or fences were defined during marking operations

Leader of the technical survey team draws up the Report on the marking and enters data into the database, in line with point 6.3 and 6.4 of the SOP.

Leader of the technical survey team draws up a Report on the changes in the marking of the MSA on the checks conducted over the marking and/or fencing, without defining new positions of signs, boards or fences, in line with Annex N and/pr N/1.

Review, analysis and verification of the Marking report is conducted in line with point 7 of the SOP.

9.3. Marking System Maintenance as a Part of Survey for Project Development

Survey for Project Development comprises the following marking activities:

- comparison between the marking situation of the MSA in the field and the situation in the database, in line with Annex N;
- Report on marking (Annex E) and/or fencing (Annex F), conducted as part of a survey for project development, drawn up only if new positions are defined for mine hazard signs during the marking;
- reporting to the Head of the regional office regarding the marking on the territory covered by the project;
- priority reporting to the Head of regional office regarding information gathered during the survey, relating to the inclusion of areas in the MSA through a supplementary general survey and marking

A consultant or associate in charge of the design draws up a Report on the marking and/or Record of the marking situation for the MSA in line with Annex N, enters data in the database and submits the said documentation to the Head of the regional office. The latter instructs the Head of the Section regarding subsequent procedure concerning the marking situation on the area on which designers are to work.

Checks, analysis and verification of the marking Report is carried out in line with point 7 of the SOP.

9.4. Marking System Maintenance Upon Completion of Mine Clearance/Mine Search Operations

Immediately upon completion of mine clearance/mine search on the project area, but not later than 3 days after the completion, a pyrotechnical supervisor and the Head of the survey section of the competent regional office will assess the marking situation of the MSA, with regard to the changes which resulted from the mine clearance/mine search of the project area.

Assessment of the marking situation should establish the following:

- positions from which mine hazard signs, previously placed in the vicinity of the cleared or searched area, need to be removed;
- new positions which need to be marked with mine hazard signs;
- need for additional marking of MSA with an assessment of the number of necessary mine hazard signs;
- need for fencing the borders of project area in cases in which the mine barrier is to be cut;
- positions from which previously mine fences should be removed, in the vicinity of the area cleared from mines within a project.

On the basis of the assessment and established need, a QA Officer with his team, acting as support during the final inspection, within the inspection of clearing and/or searching activities, will remark the MSA.

The QA Officer draws up a report on the marking conducted on the area of final mine clearing/searching and enters the relevant data in the database, in line with points 6.3 and 6.4 of the SOP.

The QA Officer submits the report to the Head of the survey section.

Checks, analysis and verification of the marking Report is carried out in line with point 7 of the SOP.

9.5. Cooperation with Municipalities/Cities and the Ministry of the Interior in Marking System Maintenance

The cooperation with municipalities/cities and the MI in marking system maintenance should ensure timely information for local communities and population in general on the marking and fencing operations conducted.

Feedback should also be requested regarding the quality of marking and the needs for additional marking and fencing of MSA.

The cooperation should raise awareness of the common obligation to protect the population from mine hazard.

The cooperation should ensure timely feedback to CROMAC on the marking situation and the disappearance of mine hazard signs following adverse weather conditions or removal by unknown perpetrator.

CROMAC regional offices must report the removal of the signs by unknown perpetrators to the competent police department or station.

Marking system maintenance should be integrated into local programmes, programmes of associations and public institutions for the purpose of informing the population about mine hazards and in order to reduce mine incidents to the lowest possible level.

10. ATTACHMENTS TO SOP

Annex A:	Terms and definitions
Annex B:	Normative references
Annex C:	Hazard markers – MSA
Annex D:	Order for MSA marking and fencing
Annex E:	Report on MSA marking
Annex F:	Report on MSA fencing
Annex G:	MSA marking symbols
Annex N:	Record on changes in MSA marking
Annex N/1:	Record on changes in MSA fencing

ANNEX A

Terms and Definitions

Mine suspected area (MSA): is an area which is dangerous due to the presence or suspected presence of mines/UXO, and is disused for safety reasons. It is defined as a polygon.

Hazard marking system is a combination of measures and activities conducted in order to define clear boundaries between safe and mined or mine suspected area, and serves as a mine hazard warning for the population. Mine hazard signs or warning signs may also be used, or physical barriers can be erected – standard mine fences.

Fencing is a system of physical and visual barriers to movement of people and livestock, and is conducted on the basis of safety assessment conducted by CROMAC.

Mine hazard sign is a sign warning the population about the presence of mine, when it is placed as a part of the marking system.

ANNEX B

Normative references

- Book of Rules and Regulations on Method of Conducting Humanitarian Demining NG 53/2007
- Law on Humanitarian Demining NG 153/2005 and OG 63/2007
- IMAS 08.40 Marking Mine and UXO Hazards
- SOP – General Survey
- SOP – Technical Survey
- SOP – Quality Assurance and Quality Control of Demining Activities
- SOP – Demining Project
- Protocol on the Prohibition or Restrictions on the Use of Mines, Booby-Traps and other devices, as amended on 3 May 1996 (Protocol II to the 1980 Convention, as amended on 3 May 1996)
- Convention on the Prohibition of Use, Stockpiling, Production and Transfer of Anti-personnel Mines and on their Destruction.

HAZARD SIGNS FOR MARKING MINE SUSPECTED AREAS

Figure C1: Mine hazard sign

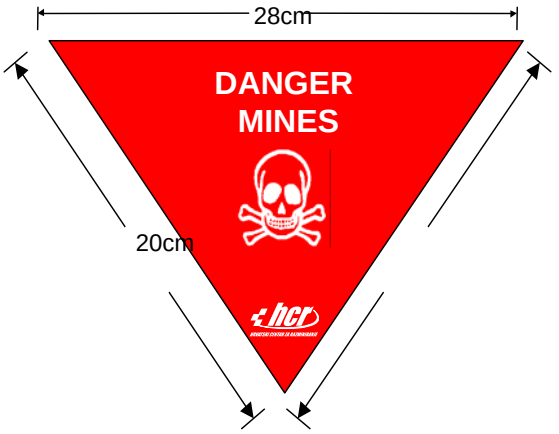


Figure C2: Mine hazard sign

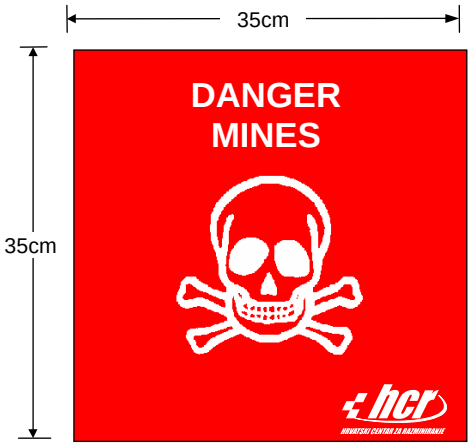
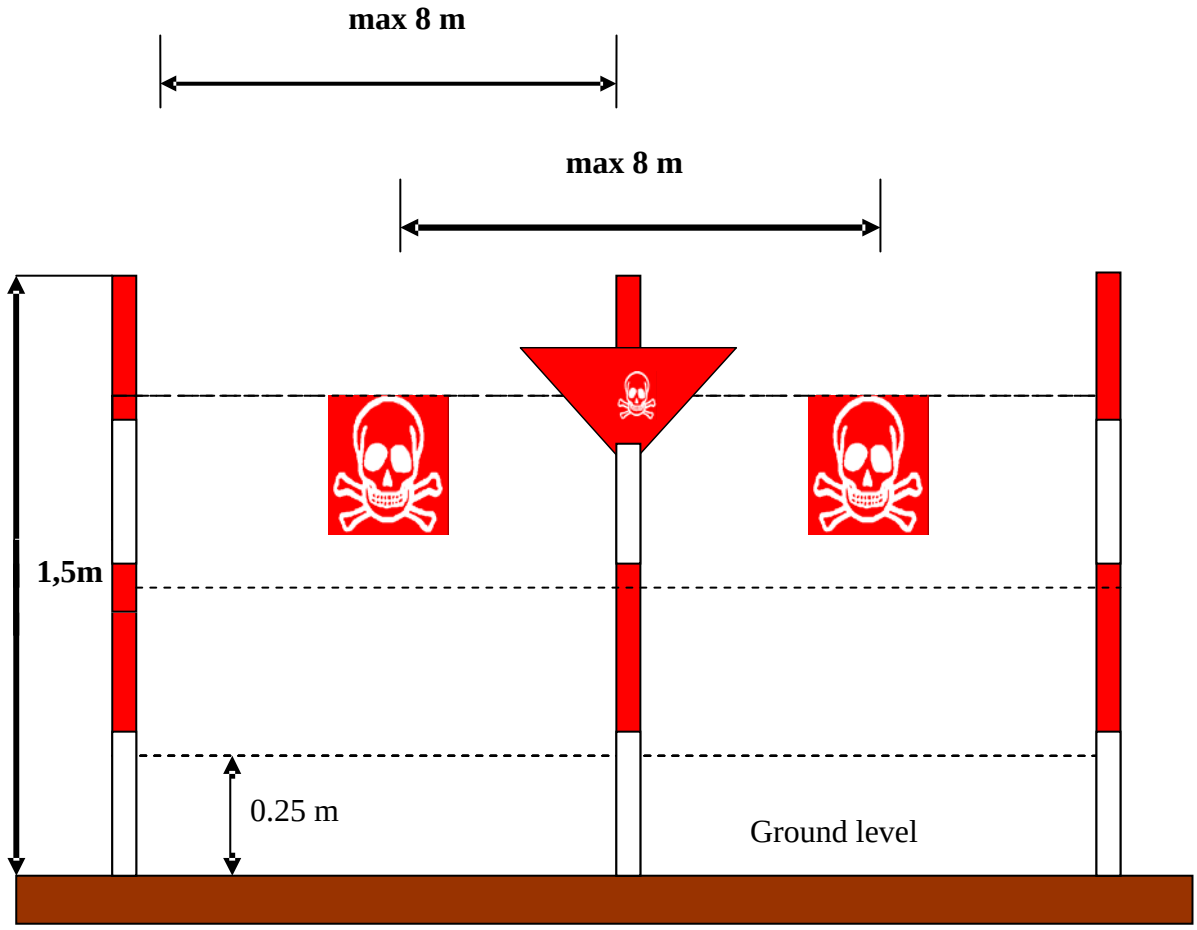


Figure C3: CROMAC mine hazard board for marking MSA

Figure C4: Standard mine fence



ANNEX D

Regional office _____
Date:

Order form for MSA marking and fencing

Class:		Ref.no.:	

Order form mark:	e.g. NOBI157-130500-2	Date:	
County:			
Municipality / City:			
Village:			
Team leader:		Team members:	
Preparation – commencement:		Preparation completion:	
Marking/fencing commencement (date, time):		Marking deadline (date, time):	
Marking area:	area	Type of marking:	ⓒ marking ⓒ fencing
Basis for task execution:	ⓒ plan ⓒ special tasks	Referring document:	e.g. GP 5.1.-3-1
Marking objective:			

Marking tools:	ⓒ tape	ⓒ uprights	ⓒ wire	ⓒ signs	ⓒ boards

Anticipated marking area (m^2):		Anticipated marking length (m^1)	

Enclosures:

1.
2.

Order issued by:

Order received by:

Head of regional office:

ANNEX E

Regional office _____
Date: _____

Report on execution of marking

Class:		Ref. no:	

General data

Report mark:	e.g. IOBI 0157-130500-2	Marking tool:	ⓞ boards ⓞ signs
Name of area:			
Marking order:	e.g. NOBI 0157-130500-2	Area previously marked:	ⓞ YES ⓞ NO
Marking objective:			

Cartographic data

County:		Municipality / City:	
Village:			
Topographic map 1:25000:	Map sheet		
Basic Croatian map 1:5000:	Map sheet		

Information on team and expenditure

Commencement date:		Completion date:	
Team leader:			
Team members:			
Expenditure:	ⓞ signs (pcs)	ⓞ boards (pcs)	

Data on marking procedure of area "P"

Area mark "P"	Area category	Additional marked positions on area "P"	New positions to be marked on area "P"

Information on new hazard marker positions (marking in place or position for marking envisaged)

Position	Hazard board coordinates				Position reference point					Demarcation point		Board type: large or small or envisaged
	On map		On GPS		Reference point of position	GPS coordinates		Azimuth: board position – reference point	Distance from board position to reference point	Demarcation point	Azimuth: ref. point – demarc. point	
	X	Y	X	Y		X	Y					

Conclusion on marking of MSA according to marking order:

Enclosures:

1.

2.

Report completed by:

Report verified by:
Head of survey department:

Final verification by:
Head of Regional Office:

Data on new fencing positions (fencing in place or fencing positions envisaged)

Position marks	Turning points	Fence position coordinates				Fence position reference point					Demarcation point		Type of fence: Permanent or Temporary or Envisaged
		On map		On GPS			GPS coordinates		Azimuth: fence position - ref. point	Distance from fence position to reference point	Demarcation point	Azimuth: ref. point – demarc. point	
		X	Y	X	Y	Name of reference point	X	Y					

Conclusion on fencing of MSA according to order:

Enclosures:

1.

2.

Report completed by

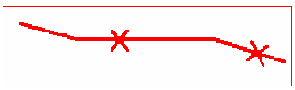
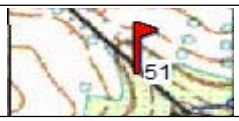
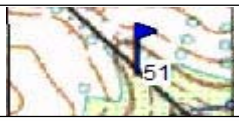
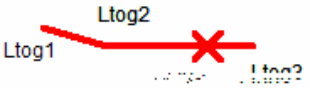
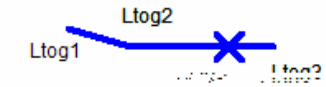
Report verified by:

Head of survey section:

Final verification by:

Head of Regional Office:

MSA marking symbols

Marking mode	Symbol design	
	Marked position	Position to be marked
Large mine hazard board		
Small mine hazard board		
Triangular mine hazard sign		
Small die-drawn mine hazard sign		
Mine fence		
Board position mark		
Fence turning point		

DODATAK N

R E C O R D
ON CHANGES IN MSA MARKING OF MUNICIPALITIES / CITIES

	Type Of survey or report on marking	Date of first board placing in position	Mine hazard board position on map		Date of check / board removal / board relocation	Data on missing or permanently damaged board			Conclusion on marking		Marking or changes in marking carried out by (Name)
			Y	X		Date of espied disappearance or permanent damage to board	Date of replacement	Date of report on missing/permanently damaged board to Police Dept / Report necessary / not necessary	Position marked with mine hazard board (YES / NO / NOT NECESSARY)	Type of placed board (Large / Small/Template)	
1	2	3	4	5	6	7	8	9	10	11	12
1											
2											
3											
4											
5											
6											

MSA of municipality/city_____ marked on _____ position(s) of mine hazard boards on _____ (date).

Information on changes in comparison to previous situation:	
Number of placed boards compared to previous situation (according to database):	
Established number of missing and permanently damaged boards (by survey or marking checks):	
Number of replaced mine hazard boards:	
Number of missing and damaged boards reported to the Police:	
Number of previously marked board positions, no longer used for marking (positions w/o boards):	

ANNEX N/1

R E P O R T
ON CHANGES IN MSA FENCING OF MUNICIPALITY / CITY _____

	Type of survey or Marking report	Date of first board placing	Turning point coordinates according to map		Date of checking / fence removal / fence relocation	Data on missing or permanently damaged fence			Conclusion on marking		Fencing Or changes in fencing carried out by (name)
			Y	X		Date of espied disappearance or permanent damage of fence	Date of repair or building of a new fence	Date of report on missing / permanently damaged fence to the PD/ Report necessary / Report not necessary	MSA fenced on position (YES / NO / NOT NECESSARY)	(N/A)	
1	2	3	4	5	6	7	8	9	10	11	12
1											
2											
3											

MSA of municipality/city_____ marked on _____ position(s) by mine hazard fence on _____ (date).

Information on changes in comparison to previous situation:	
Number of placed fences compared to previous situation (in relation to database):	
Established number of missing/permanently damaged fences (by survey or marking checks):	
Number of rebuilt or repaired fences on old positions:	
Number of missing or damaged fences by unknown perpetrators report to the PD:	
Number of positions that are not fenced:	
Number of new positions established during marking:	
Number of new fence positions (in relation to database):	
Number of positions to be fenced (fencing not completed):	

Note:

Date: _____

Report by: _____
(Name, signature)