

# CROATIAN MINE ACTION CENTRE

Pursuant to Article 69 (2) of the Law on Humanitarian Demining (Official Gazette no. 153/05), the director of the Croatian Mine Action Center, having previously procured the opinion of the director of the State Office for Metrology, on 16<sup>th</sup> May 2007 passed the following

## BOOK OF RULES AND REGULATIONS

### ON TECHNICAL REQUIREMENTS AND CONFORMITY ASSESSMENT OF DEVICES AND EQUIPMENT USED IN HUMANITARIAN DEMINING

#### 1. GENERAL PROVISIONS

##### Article 1

This Book of Rules and Regulations stipulates technical requirements the devices and equipment need to satisfy (manual metal detector, manual prodder and protective equipment), the program (procedure) of verification and/or testing and the procedure for assessing the conformity with the regulations.

##### Article 2

The Book of Rules and Regulations shall determine the following elements:

- Basic and operative technical demands that need to be fulfilled by the devices and equipment used in humanitarian demining,
- Rights and obligations of legal and natural entities marketing and/or using the devices and equipment, - procedures for assessing the conformity with specified demands,
- Documents that need to be submitted to the authorized accreditation facility (laboratory/center) and CROMAC before putting the devices and equipment to use (issuance of the conformity assessment, procedure of accreditation in CROMAC, etc.),
- The manner of labeling devices and equipment used for humanitarian demining

##### Article 3

Devices and equipment used in humanitarian demining shall be marketed, i.e. used only if they are in conformity with the specified technical requirements and if they are labeled in accordance with regulations.

##### Article 4

On grounds of technical requirements and conformity assessment, it shall be decided if the devices and equipment can perform the designated tasks, if they are effective and acceptable in specific conditions and surrounding.

Assessment (evaluation) of conformity with requirements specified for manual metal detectors, manual prodders and protective equipment within the meaning of this Book of Rules and Regulations is a validation of fulfillment of requirements defined for metal detectors, i.e. the completeness of documentation with specified certificates for other equipment and devices used in humanitarian demining.

## Article 5

Terms and definitions used in this Book of Rules and Regulations are in conformity with HR and ISO standards, IMAS and CEN, and have the following meaning:

- *norm*: Document passed by consensus and approved by a recognized body, which provides rules, instructions or characteristics, for general or recurring use, for activities or their results with the aim of achieving the highest level of organization in a given context.
- *normative document*: A document providing rules, instructions or characteristics for a variety of activities.
- CEN: The European Committee for Standardization
- CWA: CEN Workshop Agreements.
- IMAS: International Mine Action Standards.
- STANAG: NATO Standardization Agreement.
- *technical specification*: Document stipulating technical requirements to be satisfied by a product, process or service.

Note: If necessary, technical specification shall provide procedures used to verify whether the prescribed requirements are satisfied. Technical specification may be the norm, a part of the norm or a separate document independent of the norm.

- *instructions for use*: A document that recommends methods and procedures of design, production, installation, maintenance or use of equipment, constructions or products. Note: Instructions for use may be the norm, a part of the norm or independent of the norm.
- *regulation*: A document containing mandatory legal provisions, and is passed by an administrative body.
- *technical regulation*: Document providing binding technical requirements, either directly or by referencing or incorporating the norm, technical specification or instructions for use. Note: Technical regulation may be supplemented by technical instructions, i.e. sufficient provisions describing the ways the requirements are to be satisfied.
- *accreditation*: A procedure by which the accredited body in the state (institution) officially acknowledges that a particular entity or person is qualified to perform particular tasks.
- *conformity assessment of metal detectors for demining*: Every activity relating to direct or indirect assessment of whether technical requirements prescribed for machines used in humanitarian demining operations have been satisfied.
- *placing metal detectors for demining on the market*: Point when a metal detector is for the first time transferred from the stage of manufacture or import with the intention of distribution or use. This definition does not refer to machines manufactured or imported for the purpose of sale on the foreign market.
- *placing metal detector into service*: Time of first use of metal detector in the Republic of Croatia by the end user
- *metal detector*: A device using the principle of electromagnetic induction for detection of metal in its surrounding.
- *detection*: Detection or discovery of a metal object. User is alerted of the detection of a metal object by a detection signal on the detection indicator.
- *area of detection*: A circle around the actual location of the target, inside of which a detection signal is considered a reliable indicator of detection in blind testing.
- *reliability of detection*: a degree to which a metal detector is able to achieve its purpose, which is to attain the maximum ability to produce reliable detection signals without false detection signals.
- *false detection signal*: Detection signal not caused by the presence of a metal object.
- *soil compensation*: Operative function of the metal detector intended to reduce or eliminate detection signal appearing in the magnetized ground, while at the same time retaining the ability to detect metal.

- *metal detector model*: Specimen, a prototype of metal detector used in production of metal detectors.
- *metal detector type*: Basic format of metal detector for demining which is common for a group of detectors distinguishing them from other detectors used for demining (specimen, model); the metal detector whose key characteristics distinguish it from others within the same kind.
- *characteristics of a metal detector*: Key features and characteristics of a metal detector.
- *performances of a metal detector*: The totality of required characteristics of a metal detector, requirements that need to be fulfilled or taken into account when assessing the conformity of a metal detector for demining.
- *testing*: Formulation of one or more characteristics (of a metal detector) in conformity with the procedure
- *air testing*: Testing with the aim of determining the characteristics and performance of the metal detector, without the influence of soil.
- *ground testing*: Testing with the aim of determining the characteristics and performance of the metal detector in respect of targets buried in the ground.
- *blind testing*: A kind of testing where the user of a metal detector has no information about the location, depth or nature of the target he is searching.
- *open testing*: A kind of testing where the user of a metal detector has information about the location, depth or nature of the targets he is searching.
- *ground noise*: Noise produced by the soil that by its composition and/or stratification or structure reduced the quality of work of metal detectors to a point that it makes it difficult to use the detector.
- *test target*: The object used for testing the quality of operation of a metal detector. It is a metal object that can be structured so as to simulate the reactions of a mine or parts of a mine, or it can be a regular metal object used for testing sensitivity.
- *testing*: A series of tests organized systematically, resulting in a wholesome assessment of a component, equipment or a system.
- *sensitivity of a metal detector*: Measure of its quality to detect metal objects.
- *insensitivity (to electromagnetic interference)*: Characteristic of a device, equipment or a system to work with unreduced quality in the presence of electromagnetic interference.
- *metal detector acceptance*: Capacity of a machine to work in the environment where it is intended to be used and the possibility to detect or discover a metal object on the requested depth, in a specific category of soil.

## 2. TECHNICAL REQUIREMENTS FOR MANUAL METAL DETECTORS

### *a) General requirements*

#### Article 6

Manual metal detectors are devices using the principle of electromagnetic induction for detection of metal in its near surrounding.

#### Article 7

General requirements that manual metal detector used in humanitarian demining operations shall satisfy:

- sensitivity (the measure of its characteristic to detect mines and UXO) measured as the maximum distance from the detector head to the specific test target on which it can detect a target or sensitivity expressed as the minimal target (within the meaning of size, shape and material) that can be detected on a specific height above the target,

- reliability of sensitivity (sensitivity set not to decline regardless of working conditions, weakened batteries, and to work with unreduced quality in the presence of electromagnetic interferences, etc.),
- the ability to compensate the influence of soil (to reduce or eliminate detection signal appearing in the magnetized ground, while at the same time retaining the ability to detect metal),
- positive detection signal shall be repeatable in the same conditions and uninterrupted,
- warning and alarming system Detection indicator shall enable a characteristic detection sound.
- reliability of detection
- precision of locating (maximal ability to provide reliable detection signals without emitting false detection signals).

#### *b) Operative requirements*

##### Article 8

Operative requirements shall refer to specific performances of a particular kind and type of manual metal detector. In the accompanying documentation, the manufacturer of a metal detector or/and the user of a metal detector for humanitarian demining (legal entity or a natural person with accreditations) shall provide information stated in item 5, table 1 CWA 14747: 2003, which refer to the testing and the category of testing of a metal detector.

##### Article 9

Classification of metal detectors object of this Book of Rules and Regulation shall be made according to the principle of operation, i.e. the technology they use:

- induction metal detectors,
- magneto metrical metal detectors,

##### Article 10

Induction detectors which are the object of this Book of Rules and Regulations shall be distributed into two groups according to the technology they use:

- continuous signal detectors
- pulse signal detectors.

##### Article 11

Technical requirements and conformity assessment shall be defined regardless of the technology used in manufacturing, and the assessment of conformity shall be conducted in accordance with IMAS 03.40 and CEN Agreement CWA 14747:2003.

### 3. PERFORMANCE OF A METAL DETECTOR

#### *a) The detection of buried metal*

##### Article 12

Manual detector used in humanitarian demining operations shall detect metal in the near vicinity. Detection shall be signaled by a sound alarm.

#### Article 13

A requirement for detection shall be that detector emits a continuous, uninterrupted detection signal repeatable under the same circumstances, which can be heard by a normal hearing person (for sound alarms).

#### Article 14

To assess the performance of a metal detector, a relation between the size of the metal object and the distance from which it can be detected shall be used.

#### *b) Detection in the air*

#### Article 15

Every manual metal detector shall have the ability to discover (detect) metal objects in the air. This characteristic shall be defined by the maximal height of detection.

#### Article 16

Maximal height of detection shall be equal to or higher than 25 cm. The distance measured shall be the one from the base of the detector's sensor head to the top of the target in operative working conditions.

#### *c) The smallest target detectable*

#### Article 17

Depending on the configuration of the metal detector and the size of the installed coil, we shall define the sensitivity of the detector in the function of the height of detection. We shall establish the modification of maximal height of detection with the size of the target.

#### Article 18

In the enclosed documentation, the user of metal detector shall have the sensitivity curve of the maximal detection distance in relation to the size of the target and the detection curve for minimal targets. The curve shall define the possibility of detection on any height above the target, in the sense of a minimal metal ball that can be detected at that height.

#### *d) Detection of specific targets*

#### Article 19

Detection of specific targets shall be defined with maximal height of detection in the air for standard real targets (mine simulations, mine surrogates or mines according to the Annex B CWA 14747:2003). Maximal height of detection in the air for standard real targets shall be less than 20 cm for each of the stated real targets.

## Article 20

Due to the possibility of modification of sensitivity characteristics due to the influence of soil, every metal detector shall have the possibility to be calibrated and its manual shall include a detailed description of the calibration process.

### *e) Sensitivity profile*

## Article 21

Sensitivity profile shall be defined as modification of sensitivity with location on the level parallel to the detector's sensor head. The size and shape of the profile depend on the type of target, its size, orientation and height of the sensor above the target.

## Article 22

Sensitivity profile shall be enlisted in the enclosed documentation of the manufacturer of the metal detector, i.e. its manual. If a metal detector can detect targets searched on a particular depth only if the target is strictly below the central part of the sensor head, the manual of the device shall define to which extent the movements of detector shall overlap.

### *f) Insensitivity to the surrounding and operative conditions*

## Article 23

In the "Users Report" (CEN according to the table 1 CWA 14747:2003), which shall be the integral part of documentation enclosed with metal detectors, metal detector manufacturer shall state the influence of unfavorable conditions on the ability of detection and the possibility of modification of the ability of detection in the air due to external circumstances, such as:

- moisture on the sensor head,
- extreme temperature,
- extreme temperature changes,
- sensitivity during battery operation,
- influence of electromagnetic and radio interference.

### *g) Detection of a buried target*

## Article 24

Manual metal detector shall have an effective soil compensation function (to reduce or eliminate the influence of soil). The manufacturer shall provide detailed procedure of the compensation procedure in the metal detector's manual.

## Article 25

Testing detection of targets buried in the ground shall be conducted at accredited entities (laboratory/institute/center) according to item 8 of the CEN Agreement CWA 14747:2003.

## Article 26

Metal detector shall safely reveal (detect) minimal targets that are equivalent of the smallest buried antipersonnel mines. The testing measures the modification of the detection ability with the depth of

targets (item 8.2 CEN Agreement CWA 14747:2003). Results of the testing shall be displayed in the form of curves that define the smallest target possible to detect with regard to its depth in the ground. For the purpose of comparison, the same graphic presentation shall also include a curve of detection in the air, bearing in mind the height of searching. These graphic presentations shall be integral parts of the documentation the party requesting the testing and/or annual verification of metal detector's characteristics shall submit.

#### Article 27

Metal detector shall detect any target (mine) in different soils with certain adjustments of sensitivity. Maximal depth of detection (plus the height of searching) shall be compared with the maximal height of detection in the air so as to measure the influence of soil on the ability to detect a particular target. Certain types and models of metal detectors shall require documentation about conducted testing.

#### Article 28

Testing of detection of targets on unchanged depths in different soils is required according to item 8.4 of the CEN Agreement CWA 14747. The user shall submit the information about conducted testing on a prescribed form according to the Annex D 6 of the CEN Agreement CWA 14747.

#### Article 29

Testing the reliability of detection shall strive to assess the reliability of detection of the metal detector when it is used by a user (deminer) who does not know the location of mines. A possible result of detection when the metal detector is used by a deminer on the work field shall be classified as:

- a reliable detection signal (reliable positive),
- a missed target (false negative),
- a reliable negative,
- a false detection signal (false positive)

Testing procedure, result analysis and reporting shall be conducted according to item 8.5 CWA 14747.

#### *h) Distinguishing neighboring targets*

#### Article 30

Metal detector shall distinguish targets buried close to each other, regardless of their respective sizes.

#### Article 31

The enclosed documentation shall include, either in the users report or the report on acceptability testing, measured minimal distances between the targets at which the targets can be distinguished.

#### Article 32

The testing shall be conducted according to item 9.4 CWA 14747, processing and presentation of results according to the form in Annex D 9 CWA 14747.

## Ergonometry and endurance

### Article 33

Basic ergonomic requirements according to item 10 CWA 14747 shall be the following:

- compactness and easy handling: in upright, kneeling and lying position.
- short time needed for the modification of detector's configuration for different working positions,
- working mass of the detector and point of balance appropriate for longer operation (for example, 2-3 hours),
- impossibility to accidentally mute the sound signal,
- indicator of detector's correct functioning (for example, reliability sound),
- universal battery use (alkaline batteries, rechargeable batteries or carbon zinc batteries)
- handle adjustable to different lengths and protected cables.

### Article 34

Manufacturers of metal detectors shall produce sufficiently enduring detectors for rough handling occurring in operative use and transport in the field.

### Article 35

Endurance shall be tested for shock, i.e. if detector can sustain a mechanical blow without losing any of its characteristics. The assessment of ergonomic and operational characteristics shall be conducted according to the item 10 CWA 14747:2003.

### Article 36

Endurance tests shall be integral parts of the documentation the party requesting the testing and/or annual verification of metal detector's characteristics shall submit.

## 4. PROCEDURE FOR ASSESSING THE CONFORMITY OF METAL DETECTOR

### Article 37

Assessment of conformity of metal detector used in humanitarian demining operations shall refer to every activity that directly or indirectly serves the purpose of determining whether the required technical requirements for metal detectors stated in this Book of Rules and Regulations are fulfilled.

### Article 38

Assessment of conformity and testing of metal detector's characteristics shall be mandatory for all metal detectors used in humanitarian demining operations. Assessment shall be based on tests and verifications in therefore equipped laboratories, ranges or worksites.

### Article 39

The authorized legal entity or company that has developed manufactured or bought a metal detector for demining (hereafter: the consignee) shall submit a request for the assessment of conformity of the metal detector and deliver the information about the detector according to Annex C (Manufacturer data) CWA 14747.

### Article 40

In an appendix to the request, the consignee shall enclose the "Users report" and/or "Report on acceptability testing" according to CWA 14747.

#### Article 41

A request for conformity assessment, including all prescribed documentation shall be submitted in Croatian, to the accredited laboratory/center authorized to issue conformity assessments.

#### Article 42

Minimal prerequisites for acquiring and holding a certificate (verification) of conformity for metal detectors shall be the following:

- the consignee of the testing-verification satisfies the provisions of CWA 14747;
- the consignee satisfies the requirements stipulated in this Book of Rules.

#### Article 43

If the institution performing the testing of metal detectors shall consider that not all requirements for conformity assessment have been fulfilled, it is obligated to relate it to the consignee in the shortest time possible. It shall identify the problems and define corrective measures to be undertaken by the consignee. The consignee of testing shall show and document the activities conducted in order to satisfy the requirements.

#### Article 44

Head of the accredited laboratory/center shall issue a certificate or validation about the circumstance and possibilities of use of the metal detector.

#### Article 45

If detector undergoes significant modifications influencing the detection ability in relation to projected requirements, conformity assessment shall be repeated.

#### Article 46

The testing consignee shall report and document all modifications and repairs made on the detector that could influence the quality of detection during demining operations.

#### *a) Performances testing*

#### Article 47

The test is used to verify and validate, in controlled circumstances, the detection of mine at different depths, in different soils and different vegetation and climactic circumstances. Testing and validation is conducted in conformity with CWA 14747:2003.

#### Article 48

Testing is obligatory for all metal detectors, regardless of the sort and type, used in humanitarian demining operations.

#### Article 49

Enclosed manufacturer's documentation and "Users report" and/or "Report on Acceptability Testing" authenticated by an accredited institution, shall clearly display that testing was conducted in conformity with CWA 14747:2003 and that results of testing presented are in accordance with this Book of Rules and Regulations.

#### Article 50

Metal detectors with complete documentation according to this Book of Rules undergo only the annual characteristics verification on the basis of which the annual conformity assessment shall be issued.

#### Article 51

Verification of metal detector's characteristics (regular – annual and/or exceptional) shall determine the state of metal detector in relation to the state determined in the conformity assessment procedure. Verification shall be conducted once a year in an appropriate area, range or worksite of the mine clearance or mine searching project. Annual verification shall be conducted by the accredited laboratory/center.

#### Article 52

The annual verification of characteristics shall include:

- previous assessment of metal detector operation,
- sensitivity at the beginning of operation,
- modification of sensitivity,
- detection ability for specific targets,
- minimal target possible to detect depending on the depth of the target in the ground.

#### Article 53

All items of Article 54 shall be verified according to the procedures stipulated in CWA 14747:2003. Exceptional verification of metal detector characteristics is done upon the request of CROMAC.

### Previous assessment of metal detector faultlessness

#### Article 54

Previous assessment shall be conducted with the aim of initial selection of metal detectors reported for the annual verification of characteristics, so as to immediately exclude detectors that do not satisfy provided technical requirements "at first glance".

#### Article 55

Previous assessment shall include: visual check-up, completeness of detector according to the enclosed documentation, possibility of calibration and basic testing of sensitivity in the air (according to CWA 14747).

#### Article 56

Negative previous assessment shall result in the return of metal detector to the consignee, i.e. the accredited laboratory/centre with the agreement of the consignee of testing. Positive previous assessment shall enable the continuance of verification according to Article 54.

#### Recurrence of sensitivity at the beginning of operation

#### Article 57

Testing shall be used to verify the recurrence of characteristics after every setting or preparation for operation. The modification of maximal height of detection with successive settings shall be determined, and in procedures before operation. Testing and validation shall be conducted in conformity with item 6.4.4. of CWA 14747:2003.

#### Modification of sensitivity

#### Article 58

Testing shall determine modifications in the ability of detection of metal detector during a period of operation. A modification of maximal height of detection of the target is determined in the period of three hours after the adjustment and specified preoperative procedure were performed. Testing and validation shall be conducted in conformity with item 6.4.5 of CWA 14747:2003.

#### Ability of detecting specific targets

#### Article 59

Testing shall determine maximal height of detection in the air for any target and specific sensitivity. Targets can be mine simulators (Annex B, CWA 14747:2003), surrogates or mines. Testing and validation shall be conducted in conformity with item 6.5.4 of CWA 14747:2003.

#### Minimal target possible to detect depending on the depth

#### Article 60

Testing shall determine the modification of ability to detect mines in specific soil depending on the depth of mines in the ground. Targets can be mine simulators (Annex B, CWA 14747:2003), surrogates or mines. Testing and validation shall be conducted in conformity with item 8.2 of CWA 14747:2003.

### 5. TECHNICAL REQUIREMENTS FOR MANUAL PRODDERS AND PROCEDURES FOR CONFORMITY ASSESSMENT

#### Article 61

Manual prodder for detecting mines consists of three basic parts: sharp spike, handle and an extension. Prodder can be folded. All basic parts of the prodder shall be separable with the ability of replacing different extensions in order to obtain different versions of prodders, depending on demining needs.

## Article 62

Stick with the sharp spike shall be made of stainless steel - prochrome (antimagnetic), extensions and/or additions have to be made of aluminum alloy, and the handle made of steel coated with rubber or aluminum alloy.

## Article 63

Dimensions of basic parts of manual prodder are:

- length of the stick with sharp spike: at least 400 mm,
- thickness of the stick with sharp spike (diameter): at least 8 mm
- length of the handle: at least 90 mm,
- length of an extension: at least 400 mm,
- outer diameter an extension: at least 20 mm.

Total weight of the manual foldable prodder (spike + extension + handle) shall be less than 600 g.

## Procedures for conformity assessment for manual prodders

## Article 64

Enclosed documentation of the manufacturer and/or user of the prodder working on humanitarian demining (legal entity or natural person with accreditations) shall include information on materials used and certificates for those materials.

## Article 65

Conformity assessment shall be mandatory for all manual prodders used in humanitarian demining operations, and shall be conducted once a year.

## Article 66

Conformity assessment for manual prodders used in humanitarian demining operations shall consist of the control of accompanying documentation and certificates of installed materials, and visual inspection of the completeness/faultlessness of the prodder.

## 6. TECHNICAL REQUIREMENTS FOR PROTECTIVE EQUIPMENT AND PROCEDURES FOR CONFORMITY ASSESSMENT

## Article 67

Basic protective equipment used in humanitarian demining operations consists of a helmet with visor and ballistic protection life vest. For direct manual removal of mines and UXO, protective equipment is ballistic suit.

## Article 68

Equipment for personal protection for performing mine searching and/or mine clearing of mine suspected areas shall be subject to quality assurance tests according to military and civil standards (in conformity with product quality regulations).

## Article 69

Helmet with a visor shall ensure the protection of head and face from an antipersonnel mine explosion. Visor for complete protection of the face shall enable high level of protection against debris (fragmentation), high pressure, explosion induced acceleration and heat/fire.

#### Article 70

Basic requirements for a helmet shall be:

- protection from debris,
- protection from the strike wave (overpressure),
- small weight,
- protection from blows,
- value V50: level of ballistic protection at least 450 m/s.

Quality of protective helmet shall comply with the standards of NATO STANAG 2920.

#### Article 71

Basic requirements for a visor shall be:

- protection from debris (impenetrable to steel debris),
- protection from the strike wave (overpressure),
- small weight,
- protection from blows,
- minimal thickness (special fiber for visor): 5 mm,
- value V50: level of ballistic protection at least 250 m/s,
- easy placement and removal of the helmet.

Apart from the above requirements, visor shall have the possibility to be fixed in the working position and to be raised during rest.

#### Article 72

Basic requirements for the protective vest are:

- protection from debris (impenetrable to steel debris),
- protection from the strike wave (overpressure),
- small weight, - protection from blows,
- value V50: level of ballistic protection at least 480 m/s.

Quality of the protective vest shall comply with the NATO STANAG 2920 standard.

### Procedures for conformity assessment of protective equipment

#### Article 73

Enclosed documentation of the manufacturer and/or user of the protective equipment used in humanitarian demining (legal entity or natural person with accreditations) shall include information on materials used and certificates for that material i.e. shall include the Report on testing issued by the accredited laboratories/institutes/centers.

#### Article 74

Conformity assessment shall be mandatory for all helmets, visors and protective vests.

Conformity assessment is conducted once a year.

#### Article 75

Conformity assessment for protective equipment used in humanitarian demining operations shall consist of inspection of accompanying authenticated documentation with the Report on testing (according to Article 73) and visual inspection of the completeness/faultlessness of protective equipment.

#### Article 76

Certificate and validation of conformity of devices and equipment used in humanitarian demining operations shall be issued by accredited laboratories/centers in accordance with this Book of Rules and Regulations.

### 7. FINAL PROVISIONS

#### Article 77

Costs of testing and/or annual verification of characteristics of devices and equipment used in humanitarian demining shall bear the consignee of the testing/verification. Cost of examination, testing and/or verification of devices and equipment for respective types shall be determined by the accredited laboratory/center for testing.

#### Article 78

On grounds of validation (certificate) of conformity issued according to Articles 39 and 76 of this Book of Rules and Regulations, CROMAC shall issue to the consignee of the testing/verification an assessment as to the terms and possibilities of use of devices and equipment used in humanitarian demining operations (usability assessment).

#### Article 79

This Book of Rules and Regulations shall come into force on the eighth day of its publication in the Official Gazette.

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Sisak, 16<sup>th</sup> May 2007.

Director:  
**Oto Jungwirth, v. r.**