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**FIELD CAMPS OF FORCES DEPLOYED ON
OPERATIONS: HARMONISATION OF SELECTION
CRITERIA FOR SITES AND IMPROVEMENT OF THEIR
PROTECTION.**

PROJET/DRAFT

Table of contents

0. BIBLIOGRAPHICAL DATA STUDY G.27.R

1. INTRODUCTION

- 1.1. General
- 1.2. Aim and Purpose
- 1.3. Field of application
- 1.4. Areas covered
- 1.5. Period of validity
- 1.6. Reference Documents
- 1.7. Definition

2. THE PRINCIPLES OF THE DESIGN OF A FIELD CAMP

- 2.1. The mission, the Concept of operations (CONOPS) and the Commander's intent
- 2.2. The type and size of forces
- 2.3. The purpose of the Field Camp
- 2.4. The life time of a field camp
- 2.5. The key elements
- 2.6. The footprint of a field camp
- 2.7. Water supply
- 2.8. Power supply
- 2.9. Environmental conditions
- 2.10. Topography
- 2.11. Natural conditions
- 2.12. Lines of Communication
- 2.13. Space requirement

3. THE LIFETIME CRITERIA AND HARMONISATION OF CONSTRUCTIONS OF FIELD CAMPS

- 3.1. The lifetime criteria for field camps
- 3.2. The harmonisation of the construction of field camps

4. THE THREAT

- 4.1. Standardised threat levels

5. PROTECTION MEASURES AGAINST THE THREAT

- 5.1. Required Operational Capabilities
- 5.2. Standardized protection levels
- 5.3. The protection of key elements
- 5.4. External Layout
- 5.5. Internal Layout
- 5.6. Common protection criteria for field camp sites

6. FIELD CAMP PROTECTION CAPABILITIES CURRENTLY AVAILABLE

- 6.1. Perimeter
- 6.2. Protection of sensitive rooms
- 6.3. Hardened accommodation and working facilities
- 6.4. Guard towers
- 6.5. Security and alert position with direct fire and fragmentation protection
- 6.6. Checkpoints
- 6.7. Guard building
- 6.8. Counter mobility measures
- 6.9. Anti-vehicle ditch with or without earth berm
- 6.10. Earth berm
- 6.11. Concertainer walls for fragmentation protection, direct fire protection, vehicle barriers, boundary of earth berms, visual protection
- 6.12. Mobile protective panel and wall systems

7. PROTECTION REQUIREMENTS FOR FIELD CAMPS IN FUTURE OPERATIONS

8. CONCLUSIONS AND RECOMMENDATIONS

- 8.1. Conclusions
- 8.2. Recommendations

ANNEXES

- Annex 1 : Example of a foot print of a Field Camp
- Annex 2 : Overview of the threat
- Annex 3 : Required operational capabilities
- Annex 4 : Standardised protection measures (STANAG 2280)

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<p>1. <u>References</u> :</p> <ul style="list-style-type: none"> - Minutes of the PME Meeting I/2007 FIN/SEC/27.161-PME dated 2 February 2007 - Draft mission paper G.27.R. 	<p>2. <u>Other references</u> :</p> <ul style="list-style-type: none"> - STUDY 2280 (Edition 1, ratification draft 1)- Classification of Field Fortifications and Deployable; - STANAG 2882- Field Sanitation; - STANAG 2885- Emergency Supply of Water; - STANAG 4133- Electric Power Generation; - NATO Guide for Field Accommodation (Working Paper 31.08.2006) PFP(NAAG-LCG/7)WP (2006) 0001 - AJP 3.14 (Force Protection) - AJP 3.15 (Allied doctrine for joint counter IED operations) - STANAG 4370 AECTP-200 - Study G.26.R Logistic Force Protection on a multinational operation; how to increase protection of logistic capabilities of Finabel nations deployed individually or collectively on operations. - Study G.24.R. Water Supply on operations. Recommendations concerning water production and storage.
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10. Key words :

Threat, Force protection, Physical Protection, Hazard Management, Camp Protection Capabilities, Lessons Learned/Lessons Identified, Reconnaissance.

11. Summary:

The study encompasses the whole range of missions and environmental conditions in future operations the forces of Finabel member nations might be involved in. It describes all the required criteria that field camps have to meet for the different joint and multinational units accommodated in succession. It facilitates the transfer to local government or an international organisation or non-governmental organisation. And it includes principles of active and passive protection for deployed forces.

12. Abstract :

Aim of the study :

The aim of this study is to investigate how Finabel nations can harmonise the criteria for sites, selected for the constructions of short term, semi-permanent and long term field camps and standardise the protection of these sites (personnel, equipment, stocks and camp infrastructure), in order to minimise the loss of combat effectiveness resulting from adversary actions.

Main aspects :

The study :

- Investigates the impact of the type of force and its mission on the criteria of field camp sites and force protection measures ;
- Investigates the impact of short term, semi-permanent and long term field camps on the criteria of field camp sites and force protection measures ;
- Investigates the impact of standardised threat-levels to harmonise the protection level measures on the criteria of field camp sites and force protection measures ;
- Defines and harmonises the selection criteria for the location and building of field camps;
- Defines and harmonises the basic elements of the layout of a field camp ;
- Recommends criteria concerning survivability and sustainability of field camps.

Main recommendations :

- The integration of Force Protection experts into the planning process of an operation from the very beginning ;
- Force Protection measures in initial and temporary field camps should be modular and must be adaptable to changing threat scenarios ;
- The classification and documentation of field fortifications and protective structures should be standardized among Finabel member states ;

- The protection of key elements should be prioritised ;
- The threat can change permanently. A periodical Vulnerability Assessment has to be performed for timely adjusting protection measures ;
- Field camp construction as part of a military operation will be executed by Finabel member states. These operations will not only be joint but also combined. Therefore the same field camp might be used by different Finabel member states so it is important to standardize protection constructions ;
- As far as possible create a base defence operation cell (BDOC) from internal assets, in order to identify and to establish Opposing Military Forces (OMF) courses of action to properly defend against attacks, to establish base defence rules and plans, to manage and to coordinate activities of Forces ;
- Establish permanent force protection teams (FPTs) providing security to the base. FPT is in charge of gate security, military police, internal QRF, control of local or civilian access and other tasks as needed ;
- Software programmes (MOTS), are available and can be used to harmonise criteria.

1. INTRODUCTION

1.1. General

For the designing of field camps one should permanently be aware of all influences during the life cycle of a field camp (building, maintaining and dismantling). Therefore a field camp must have the flexibility during his life cycle to adapt and meet specific requirements.

The design and adaptation of a field camp depends on the kind and the size of the force and its mission. In addition to this it also should also respond to the actual threat.

The outcome of a Threat Assessment (TA) defines the threat. This threat will be used as the basis for the selection of Field Protection (FP) measures which could be applied to the field camp.

A continuous evaluation of the threat is required to enable commanders to adjust force posture and protective measures. Therefore it's almost impossible during the designing phase to take into account all criteria's needed to meet all the requirements.

1.2. Aim and Purpose

The aim of this study is to investigate how Finabel nations can harmonise the criteria for sites, selected for the constructions of integral tactical, initial, temporary and permanent field camps and standardise the protection of these sites (personnel, equipment, stocks and camp infrastructure), in order to minimise the loss of combat effectiveness resulting from adversary actions.

1.3. Field of application

- The study encompasses the whole range of missions and environmental conditions in future operations the forces of Finabel member nations might be involved in¹.
- It describes all the required criteria that field camps have to meet for the different joint and multinational units accommodated in succession. It facilitates the transfer to local government or an international organisation or non-governmental organisation. And it includes principles of active and passive protection for deployed forces.

¹ There is no mention of the climatic zones where Ops should be possible. Those zones are described in the STANAG 4370 AECTP-200 (Environmental conditions

1.4. Areas covered

The study :

- Investigates the impact of the type of force and its mission on the criteria of field camp sites and force protection measures ;
- Investigates the impact of short term, semi-permanent and long term field camps on the criteria of field camp sites and force protection measures ;
- Investigates the impact of standardised threat-levels to harmonise the protection level measures on the criteria of field camp sites and force protection measures ;
- Defines and harmonises the selection criteria for the location and building of field camps ;
- Defines and harmonises the basic elements of the layout of a field camp ;
- Recommends criteria concerning survivability and sustainability of field camps.

1.5. Period of validity

Due to technological development of field camps and combined operations the study has a validity of 5 years. After this period the validity of this study can be extended up to further three years.

1.6. Reference Documents

The following were taken into account :

- NATO Documents
 - * STUDY 2280 (Edition 1, ratification draft 1)- Classification of Field Fortifications and Deployable ;
 - * STANAG 2882- Field Sanitation ;
 - * STANAG 2885- Emergency Supply of Water ;
 - * STANAG 4133- Electric Power Generation ;
 - * NATO Guide for Field Accommodation (Working Paper 31.08.2006) PFP(NAAG-LCG/7)WP(2006)0001 ;
 - * AJP 3.14 (Force Protection) ;
 - * AJP 3.15 (Allied doctrine for joint counter IED operations) ;
 - * STANAG 4370 AECTP-200.
- Finabel Documents

The following Finabel documents were taken into account :

- * Study G 26.R Logistic Force Protection on a multinational operation; how to increase protection of logistic capabilities of Finabel nations deployed individually or collectively on operations.

- * Study G 24 R. Water Supply on operations.
Recommendations concerning water production and storage.

- UNHCR documents

- * UNHCR Handbook for Emergencies
- * UNHCR Water manual for Refugee Situations

1.7. Definition

Field camp

An area or locality consisting of facilities necessary for support of force activities including security, internal lines of communications, utilities, plants and systems, and real property for which the Armed forces have operating responsibility.

2. THE PRINCIPLES OF THE DESIGN OF A FIELD CAMP

It's obvious that several kinds of factors influence the protection criteria of field camps. This paragraph describes the essential factors and parameters of influence for the design criteria of a Field Camp. Most of these principles will be subject during the preparation of an operation and are often subject to discussion during a decision making process.

The Essential factors are :

2.1. The Mission, the Concept of operations (CONOPS) and the Commander's intent

- The mission²

The mission has a considerable impact on the protection criteria of the camp. These criteria depend on :

- * the aim of the mission (e.g. if its aim is to win the hearts and minds of the local population, a commander will not take an extreme defensive posture);
- * the intensity of the operation;
- * the expected duration and velocity of the operation and
- * the threats and the hazards in theatre.

- Concept of Operations (CONOPS)

The CONOPS clearly indicates which protective measures the commander is willing to adopt. It represents the vulnerability of the force and it reflects the Force posture the commander wishes to display to the local authorities and population.

² Each mission within the whole spectrum of military operations can be executed by Finabel members.

- The commander's intent

The operational commander has to define to which extent the protection measures of a field camp should take into account the current tactical situation and the particular location of the field camp. During a decision making process (DMP) some risks have to be taken into account.

These could be the decision to :

- * Protect against all possible threats and to over-design the site and waste assets;
- * Protect against threats from the current situation and the particular location, including the risk of having to adapt protection measures too often;
- * Protect against an accepted threat spectrum with defined capabilities available.

2.2. The type and size of forces

The type and size of forces and other parties that will occupy the camp, will determine the space needed to build the site. The level of physical protection should be flexible: to improve camp protection, additional measures should be possible in a later phase. Therefore the following questions have to be answered :

- What is the type and size of the forces or other parties?
- Does the perimeter allow extension?
- Does the perimeter allow a horizontal stand-off?
- In case of taking over existing infrastructure, are there any vertical protection measures along the perimeter?
- Main entrance :
 - * Does it provide creating a search bay ?
 - * Does it allow integrating of convoy³ parking inside the perimeter ?
 - * Is the access road long (and safe) enough for safe queuing ?
 - * Are there one or more separate exits or entrances needed ?

³ The entrance control for convoys depends on the Commander's SOP and might differ between Finabel member states.

2.3. The purpose of the Field Camp

Prior to the design the purpose of the field camp must be defined taking into account the following aspects :

- What kind of operation should the field camp support ?
- Where will be the location (Implantation in Host Nation, Controlled Area, Rear Area, Hostile areas, available space) ?
- What will be the volume of forces and support allocated for the protection, the construction and the maintenance ?
- What kind of opposing militant forces (OMF) will be expected ?
- What are the lower, upper and extreme average weather conditions?
- What are the military characteristics of the terrain ?
- Will there possibly be an expansion of the camp (due to extra functionalities or extra troops) ?
- Must the camp adapt to changing threat, mission and environmental conditions ?

2.4. The life time of a field camp

The duration of an operation defines the needed life time of a field camp. The life time dictates the required kind of the construction.

2.5. The key elements :

Each field camp has basic components to keep the field camp running. These components can be defined as key elements of a field camp. These elements are :

- Command & Control (C&C) facilities (communication centre and operations)
- Accommodations (dining, sleeping, welfare)
- Emergency electric power supply
- Emergency water supply
- Work areas
- Storage facilities (e.g. ammunition, fuel)
- Community facilities
- Medical care facilities

2.6. The footprint of a field camp

- Field camp sites can be divided into four main areas (from inside to outside): central area, supply area, parking area, perimeter area.
- These areas should contain facilities and objects as follows :
 - * Central area: living and working area, dining and recreation facilities (maximum protection level).
 - * Supply area: technical facilities, storage buildings and engineering utilities.

- * Parking area: parking spaces, antenna park, POL.
- * Perimeter area: fences, walls, gates, entrance control facilities.

See also Annex 1 (Example of a foot print of a Field Camp)

The principles of influence are :

2.7. Water supply

The most essential minimum requirement is the reliable potable water supply. The amount of potable water needed depends on the number of personnel and on the weather conditions. Potable water has to be available to supply some sanitary⁴ and medical service facilities. Domestic water can be used for the sewage system. The camp site should also have autonomy of production of water or a big reserve of water in reservoir. Potable water could be bottled and stored in warehouses and must include an adequate emergency supply.

2.8. Power supply

For the use of the usual electronic (command and Control, informatics devices) and electrical devices (Lighting, pumping water for sanitary and sewage system or fire fighting, freezers, kitchens, medical services...) the camp site should have autonomy to produce power with sufficient reliability in order to guarantee the maintenance of the key systems in case of malfunction of the electricity grid (emergency system).

2.9. Environmental conditions

- Animal hazardous: The areas where natural risks exist, created by natural vectors (mosquitoes, flies, snakes...) should be avoided or specific countermeasures must be taken.
- Dust: It creates problems for observation and surveillance, it can even create health problems or may cause the malfunction of vehicles and equipment (e.g. computers and communication systems).
- Soils: the characteristics of the soils could
 - * affect the mobility and the drainage and
 - * affect the works during the building of the camp (ditching, earthmoving ...).
- Toxic Industrial Material (TIM), Unexploded Explosive Ordnance (UXO) and pollution of air, soil and water must be taken into account.

⁴ STANAG 2885

2.10. Topography :

- The slope of the area must be limited to reduce the requirement for earth moving and to allow sufficient drainage of rain water for mobility support.
- Areas subject to the influence of water floods should be avoided.

2.11. Natural conditions :

- When designing a campsite the local likelihood of the occurrence of natural disasters (e.g. earthquakes, tornadoes, thunderstorms and heavy rains) must be taken into consideration.
- The climatic conditions (temperatures, rain, snow, frost....) could create restrictions to the mobility or to the selection of appropriate material for field camp construction.

2.12. Lines of Communication :

Field camps should be located in an area with sufficient lines of communication. Sometimes the camp could be near an APOD or a heliport is required (the size of the helicopter and the considered number of helicopters will have a significant influence in the needs of area available).

2.13. Space requirement :

For the camp management the following factors should be taken into account :

- Military Units to be employed (type and size) in accordance with the mission.
For example :
 - * Combat/ Combat Support Forces, e.g. Quick Reaction Forces (QRF) in Battalion or Company size.
 - * Provincial Reconstruction Team (PRT).
 - * Forward Support Base (FSB).
 - * Reception, Staging, Onward Movement (RSOM) camps.
- The purpose of the accommodation (e.g. additional requirements for accommodation of refugees or prisoners).
- Sensitive local sites as religious, historical and cultural monuments.
- Distance to the Logistic Support Bases and autonomy of the camp site considering :

- * Supply in general and particularly:
 - * Petrol, Oil, Lubricants (POL)
 - * Ammunition storage (the area requirements and distance to the accommodation or work areas, usually increase non-linearly).
- Maintenance : parking space and maintenance facilities are to be designed depending on the number and characteristics of vehicles. The helicopter workshop could require special attention.
 - Communications farms: Modern communications require a lot of and sometimes hazardous antennas. The area where these antennas will be located must be carefully selected.
 - Surveillance areas surrounding the camp site and a safe way to the helicopter landing sites.

3. THE LIFETIME CRITERIA AND HARMONISATION OF CONSTRUCTIONS OF FIELD CAMPS

3.1. The lifetime criteria for field camps

Although the lifetime of a field camp has only little influence on the choice of the camp site, it has a high impact considering the infrastructure works, especially during the designing phase (the need of a supplementary area in order to make a smooth transition between two different lifetime phases).

With regard to the lifetime of field camps, each Finabel member state uses its own criteria and priorities concerning space requirements, the comfort level and protection measures. The following approach might be a commonly accepted :

- Integral Tactical field camps : up to two months.
- Initial field camps : up to six months.
- Temporary field camps : six to 24 months.
- Permanent military camps : more than 24 months.

3.2. The harmonisation of the construction of field camps

This paragraph is a summary of characteristic requirements for field camp construction and may give assistance to Finabel member states to develop their doctrine concerning the construction of operational infrastructure during missions abroad.

- Integral Tactical field camps :
Identified as camps using only Modified Table of Organisation and Equipment (MTO&E) and Common Table of Allowances (CTA) equipment without constructed improvements. This standard covers operations of two months maximum.
- Initial field camps :
The initial field camps are characterised by short term accommodation, frequent change of places, decentralised accommodation and restricted minimum requirements. These may be :

- * Sleep accommodation in tents
- * Shower, toilets and laundry facilities in containers
- * Kitchen facilities in tents/field kitchen
- * Protection of the site by tactical means (guards, patrols, ...) and a few fast infrastructural interventions
- * C&C/CIS : in tents or containers
- * Medical support : in tents or containers
- * Water supply : full water purification system
- * Electricity supply: full electricity supply, but wires (cables) on the ground
- * Logistic facilities (car wash, maintenance, POL station, ...) : tents
- * Mobility: only rapid road improvement (gravel)
- * Mobile accommodation
- * Duration of use: up to two months or as long as other accommodation cannot be provided (because of combat action, operations in motion, wide disposition of forces)
- * Duration for construction: less than 24 hrs
- * Construction is the responsibility of the respective service
- * In tents or vehicles
- * Transport of materiel together with deployed forces by aircraft
- * Personal security : foxhole and tents
- * Perimeter security : trenches and concertina's
- * Entrance security : roadblock and fences
- * Facilities : Sand wall
- * Identified as camps using MTO&E and CTA equipment with limited constructed improvements such as tent pads, prime power, limited plumbing (consisting of a small laundry area, showers, and potable water lines) and a wood frame mess facility. This standard covers exercises from four weeks to seven months in duration.

- Temporary field camps :

The temporary field camps are characterised by the absence of high intensity combat operations in close proximity to the field camp. Features of temporary field camps may be :

- * Sleep accommodation in containers (in the "near" future ?)
- * Shower, toilets and laundry facilities in containers
- * Kitchen facilities in containers and mess in tents
- * Protection of the site by tactical means (guards, patrols, ...) and large infrastructural interventions
- * Command and Control (C&C/Communication and Information Systems (CIS): in containers
- * Medical support : in containers
- * Water supply: full water purification system
- * Electricity supply : full electricity supply, wires (cables) posed on racks

- * Logistic facilities (car wash, maintenance, POL station, ...) : tents and containers
- * Mobility : massive road improvement (gravel, steel plates and hydrocarbon roads)
- * Stationary accommodation in field camps (Semi-Permanent) :
- * Duration of construction : 10 to 30 days
- * Construction in responsibility of Joint Service Support (JSS) by specialized engineers
- * Containers and tents (modular construction)
- * Transport of materials by truck, rail or sea, (by aircraft as an exemption)
- * Containers and tents are reusable
- * Personal security : Safe haven/ armoured container
- * Perimeter security : Hesco wall, observing post (OP)
- * Entrance security : Hesco wall, Traffic control space
- * Facilities : Armoured Key elements (comcen, Ops, Medical care facilities, Dining accommodation).

- Permanent military camp :

The characteristic feature of this field camp is that there are no combat operations of high intensity in close proximity. Features of permanent military camps may be :

- * Sleep accommodation in containers
- * Shower, toilets and laundry facilities in containers
- * Kitchen facilities in containers and mess in tents
- * Protection of the site by tactical means (guards, patrols, ...) and large infrastructural interventions
- * C&C/ CIS : in containers
- * Medical support : in containers
- * Water supply : full water purification system
- * Electricity supply : full electricity supply, wires (cables) posed on racks
- * Logistic facilities (car wash, maintenance, POL station, ...) : tents and containers
- * Mobility: massive road improvement (gravel, steel plates and hydrocarbon roads)
- * Duration of construction: 3 to 9 months (Identified as camps consisting of wood-frame structures or containers. This standard is applied to operations during more than two years.
- * Construction under responsibility of military administration
- * Existing or new built accommodation infrastructure.
- * Transport of material by truck, railway or sea or use of Host Nation Support (HNS) for purchasing material
- * Infrastructure can be handed over to host nation after the mission
- * Personal security : Armoured container/ concrete infra

- * Perimeter security : Hesco wall, OP's, surveillance by remote control sensors.
- * Entrance security : OP, barrier, vehicle search area.
- * Facilities : Armoured Key elements (comcen, Ops, Medics, Dining hall)/reinforced concrete infra

4. THE THREAT

The threat highly determines the protection measures that have to be adopted to protect personnel, equipment, stocks and key elements of the camp.

Each Finabel member state makes its own threat assessment of all area of responsibility. The estimated occurrence of the threats (incidental, regular, periodic) are taken into account and lead to three threat levels, depending on the National policy of each individual Finabel member state.

4.1. Standardised threat levels

The AJP 3.14 defines three standardised threat levels. These threat levels are :

- Low: no specific clues for a manifest of a threat present. Risk of vandalism by persons or groups of persons.
- Medium: clues for a manifest of a threat are present without indication of time and/or place. Severe risk of vandalism by persons or groups of persons is present
- High: specific clues for a manifest of a threat on short notice are present, including time and place. Severe risk of vandalism by persons or groups of persons is about to occur.

Annex 2 gives an overview of the threat that has to be countered.

The threat is dependent on the technical development and the capabilities of the opponent forces. Therefore the description and definitions of the threat in this annex are preliminary may not be sufficient.

5. PROTECTION MEASURES AGAINST THE THREAT

5.1. Required Operational Capabilities

Camp protection does not begin directly at the camp perimeter but can rather be conceptually viewed according to the layering principle. This means that all operations in the area of responsibility whether inside or outside of camps contribute indirectly/directly to their protection. Thus they have to be integrated operationally and technically into an overall protection concept.

Annex 3 describes a conceptual approach of the required operational capabilities

5.2. Standardized protection levels

The standardized protection levels are, according to STUDY 2280, the basis for calculation, construction, and application of Force Protection measures. At this moment the classification and documentation of field fortifications and protective structures are not standardized among Finabel member states. Nevertheless, STUDY 2280 establishes a good approach to this subject matter, stating that NATO commanders must follow and update a handover form concerning the protection level provided by a field camp.

See annex 4: Standardized Protection levels (STUDY 2280)

5.3. The protection of key elements

Key elements should have first priority and are best protected in order of priorities : ComCen, Opsroom, medical care, community rooms, sleep accommodation.

To protect these elements measurements can be taken concerning :

- Concealment
- Cover from direct and indirect fire.
- Use of easily defendable terrain
- Drainage and creating a surface that support vehicles in all conditions.
- Exits, entrances and adequate internal roads or trails.
- Enough space for dispersion of vehicles, personnel and equipment.
- Suitable landing site nearby for supporting helicopters.

5.4. External Layout

- Force protection (FP) has a main influence as part of the field camp design. FP must safeguard and secure people, facilities, equipment, supplies (storages), transportation network and information.
- A threat analysis must give answer to the following questions :
 - * what must be the effective standoff distance between the internal facilities and potential threats.(For example : in order to establish types of perimeter defences and standoff distances : knowledge of weapon systems (OMF), ranges and capabilities is necessary,
 - * what are the fields of fire, and avenues of approach
- Reconnaissance should answer the following questions :

- * Will there be enough space to establish very active and visible security measures (e.g. Random Patrols on foot and vehicle around the camp) ?
- * Are there enough access-points or access-roads to the camp ?

5.5. Internal Layout

- Main concern inside the perimeter of the compound is the response against direct attacks (from outside the perimeter) and protecting personnel and main equipment against indirect attacks. To allow observation of avenues of approach and critical point along the exterior perimeter force protection infra (towers, bunkers) and mounted weapon systems positions must be put in place.
- A few considerations concerning the threat while designing a camp are :
 - * Bunker systems must have a rapid access from both work and living conditions;
 - * Observation towers have to be placed to eliminate dead spaces, to observe avenues of approach and entrance points. These towers must be reinforced to withstand direct fire. They also should be camouflaged to prevent the silhouetting of the tower guards.
 - * Are there enough access-points or access-roads to the installations?
 - * Take into account the possible expanding of the camp. (due to evolution of the mission – duration – reinforcements...) and the local conditions (climatology)
 - * The camp layout should facilitate the deployment of a Quick Reaction Force (QRF)
 - * Perimeter clear zones should be located at least 50 meters from facilities to the perimeter fence in areas accessible by vehicles and 20 meters in non-vehicle accessible areas
 - * Living areas and mission essential vulnerable areas should not be located near public access roads along the perimeter.

5.6. Common protection criteria for field camp sites

- Common protection criteria for field camp sites are :
 - * Structural measures are to be assessed in an overall context together with other active and passive protective measures.
 - * Keeping safety distances is the easiest way of protecting against the effect of detonating explosives.
 - * Protection against directed weapon effects can be provided by an adequate material thickness of the exposed structure, measures to interfere with the formation of the shaped-charge jet, or prevent a direct line of sight.

- * Fire protection measures should be taken to prevent secondary fires caused by weapons.
 - * Physical protection measures should be taken to prevent the combined effect of a direct hit on explosive storages.
- What should be protected first :
- * Personnel are vital and most effective for the success of any operation
 - * Key elements require highest priorities in protection and in some cases adequate back-up systems are required
 - * Places where personnel is gathered require extra protection
 - * In case of alert unnecessarily movements should be avoided

Military of the shelf (MOTS), software programmes, like Compound.nl, are available and can be used to harmonise criteria.

- Vulnerability Assessment

A vulnerability assessment (VA) is a self-assessment tool used to evaluate an evolving threat to a field camp. The outcome of this assessment can be used for the adaption of protection measures. While the threat can change constantly a VA has to be done periodical to adjust protection measures to the threat. VA is done by a small group of experts, for example :

- * Assessment-team chief.
- * Section 1 : (Medical & Health and Safety specialist)
- * Section 2 : (Intelligence and/or counterintelligence specialist)
- * Section 3 : (Operations specialist)
- * Section 4 : (Infra-Engineer, CBRN & Environmental specialist)
- * Section 6 : (Signals specialist).

6. FIELD CAMP PROTECTION CAPABILITIES CURRENTLY AVAILABLE

The infra-structural protection capabilities for key elements available within the armed forces of Finabel member states to counter the standardised threat levels are :

6.1. Perimeter

- Standard solutions like
- * Bastion wall set.
 - * Fencing: chain link – barbed wire – barbed tape or concertina.

* Utility Openings: e.g. drainage ditches, culverts, vents, ducts etc.

- Improvised constructions.
- Lightning system (e.g. pylons of 8 and 12 m high).
- Wiring Systems: The wiring circuit should be arranged so that failure of any part of the system will not leave a large portion of the perimeter line or a major segment of a critical or vulnerable position in the blind.
- Electronic Security Systems: consists of sensors interfaced with electronic entry-control devices, Closed Circuit TV (CCTV), alarm reporting displays (both visual and audible), and security lighting.

6.2. Protection of sensitive rooms

- Burglar resistant physical protective measures.
- Monitoring systems.
- Earth covered (sea)containers.
- (armoured) Shelters.
- Armoured Containers (clustered).
- Jammer.

6.3. Hardened accommodation and working facilities

- Containers with homogeneous basic protection.
- Partial protection against rooftop bursts of 155 mm artillery shells.
- Fragmentation protection against 120 mm mortar.
- Reinforced container, can be upgraded by using Bastion Wall concertainers or armoured plates.
- Armoured container (skeleton container with adjustable armoured plates), can be joined to create large rooms. Mainly used for key elements.

6.4. Guard towers

- Direct fire protection.
- Protection against shaped-charge rounds (RPG-net).
- Blast protection.
- Guard post containers.
- Guard tower set (fortified container).

6.5. Security and alert positions with direct fire and fragmentation protection

- Observation post
- Two-man security position

6.6. Checkpoints

- Visual protection
- Fragmentation protection
- Direct fire protection
- Partially protected control area
- Intrusion protection (personnel and vehicles)
- Jammers

6.7. Guard building

- Fragmentation protection
- Direct fire protection
- Blast protection
- Protection against Personnel Based Improvised Explosive Devices (PBIED) or Vehicle Based Improvised Explosive Devices (VBIED)
- Detection probability
- Jammers

6.8. Counter mobility measures

- Road bump–tubes with concrete filling.
- Trapezoid steel bumps.
- Aluminium "hedgehog" barriers.
- Anti-vehicle mines (if agreed to by the Rules Of Engagement (ROE) and by international law).

6.9. Anti-vehicle ditch with or without earth berm

- Without earth berm (protection level E2/STUDY 2280)
- With earth berm (protection level E3/STUDY 2280)

6.10. Earth berm

- Non-reinforced.
- Reinforced without supporting framework.
- Reinforced with supporting framework.

6.11. Concertainer walls for fragmentation protection, direct fire protection, vehicle barriers, boundary of earth berms, visual protection

- Chain-linked concertainer systems.
- Baskets filled with stone (e.g. gabions).

6.12. Mobile protective panel and wall sys

- Fragmentation protection.
- Direct fire protection.
- Visual protection.
- Heavy-duty vehicle barrier.

7. PROTECTION REQUIREMENTS FOR FIELD CAMPS IN FUTURE OPERATIONS

- 7.1. Also in future operations Finabel member states will execute operations in the complete spectrum of violence. The theatre of operations will be mainly located outside NATO territory or at the periphery of this territory.
- 7.2. Field camp construction as part of a military operation (e.g. RSOM) will be executed by Finabel member states. These operations will not only be joint but also combined. Compounds will be shared by several nations. Therefore it is important to standardize protection measures.
- 7.3. The infrastructure requirements do not only depend on the threat levels. The tactical commander should know his vulnerable points and his priorities of activities to protect key assets and infrastructures in case of fire, multiple bombings or other terrorist activities :
- In case of damage.
The damage assessment determines the ability to plan for and respond to an attack against key elements and other infra structures.
 - In case of recovery procedures.
The recovery procedures assessment determines the capability to recover from the temporary or permanent loss of key assets and infrastructures. Based on this assessment, the staff establishes recovery procedures to accomplish the mission.
Further detailed force protection requirements see annex 4.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

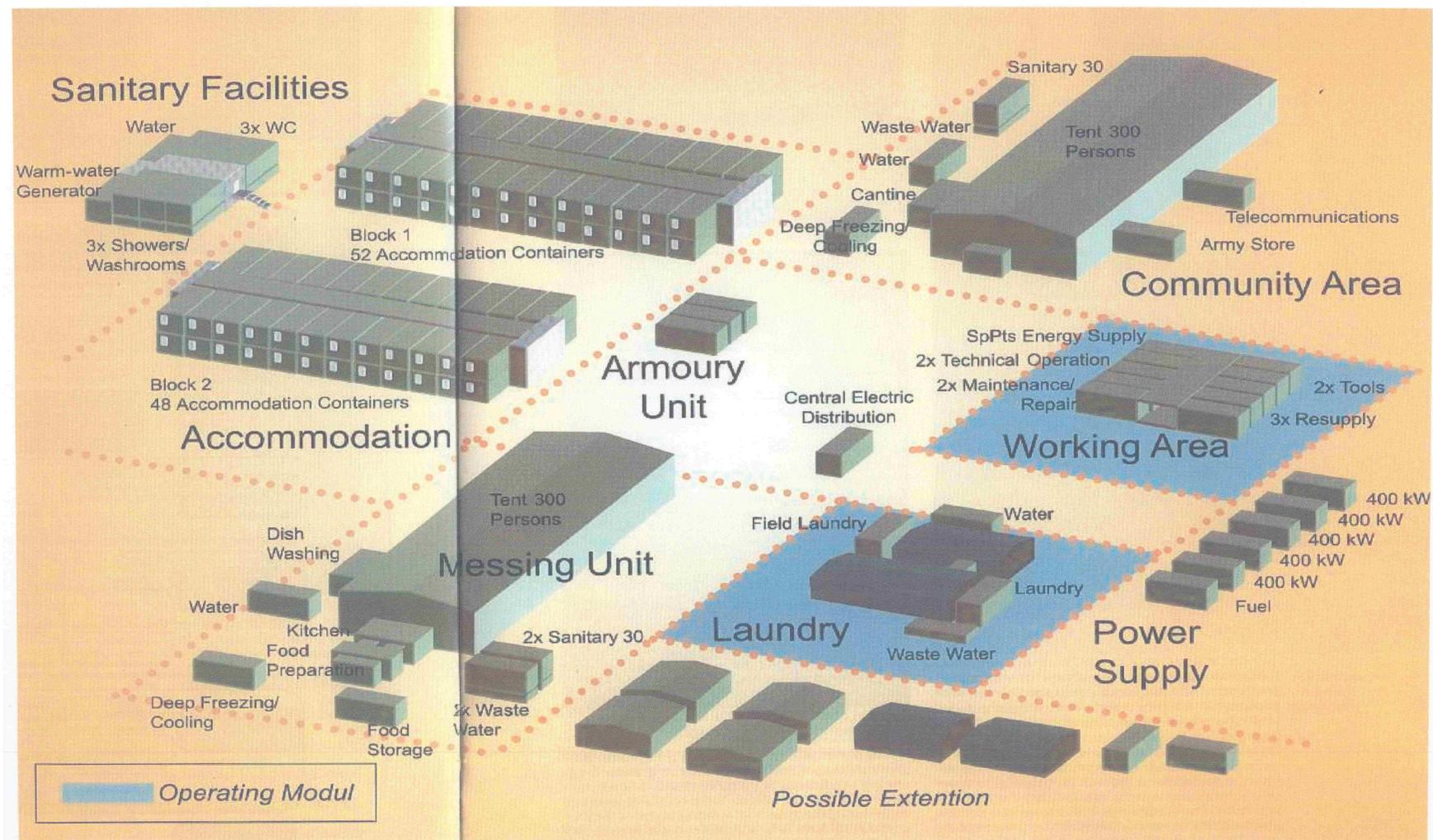
- There are essential principles and principles of influence for the designing and construction of a field camp.
- Finabel member states have a common understanding on Integral Tactical field camps, initial field camps, temporary field camps and permanent military camps.
- It's not possible to harmonise all the constructions that are used by Finabel member states. Each Finabel member state uses its own criteria and priorities concerning space requirements, the comfort level and protection measures. In this study the harmonisation is limited to an overview of constructions that can be used in a foreseen lifetime period of a field camp. Force protection has a main influence as part of the external and internal field camp design.
- Each Finabel member state makes its own threat assessment of all areas of responsibility. The estimated occurrence of the threats (incidental, regular, periodic) must be taken into account and lead to three threat levels, depending on the National policy of each individual Finabel member state.

- Based upon different threats STUDY 2280 has standardized the passive protection measures. This table is the basis for calculation, construction, and realisation of Force Protection measures.
- Infrastructural requirements do not only depend on the threat levels. Any commander should know his vulnerable points and his priorities of response in case of damage. A permanent overview of recovery capacity is essential.

8.2. Recommendations

- The integration of Force Protection experts into the planning process of an operation from the very beginning.
- Force Protection measures in initial and temporary field camps should be modular and must be adaptable to changing threat scenarios.
- The classification and documentation of field fortifications and protective structures should be standardized among Finabel member states.
- The protection of key elements should be prioritised.
- The threat can change permanently. A periodical Vulnerability Assessment has to be performed for timely adjusting protection measures.
- Field camp construction as part of a military operation will be executed by Finabel member states. These operations will not only be joint but also combined. Therefore the same field camp might be used by different Finabel member states so it is important to standardize protection constructions.
- As far as possible create a base defence operation cell (BDOC) from internal assets, in order to identify and to establish OMF courses of action to properly defend against attacks, to establish base defence rules and plans, to manage and to coordinate activities of Forces.
- Establish permanent force protection teams (FPTs) providing security to the base. FPT is in charge of gate security, military police, internal QRF, control of local or civilian access and other tasks as needed.
- Software programmes (MOTS), are available and can be used to harmonise criteria.

ANNEX 1

EXAMPLE OF A FOOT PRINT OF A FIELD CAMP⁵

⁵ The figure is just an example, but if there is a need for a production system for potable water, the sanitary facilities should be closer to the other great consumers of potable water (e.g. kitchen, ...).
On the figure the accommodations are positioned between the sanitary facilities and the kitchen.

ANNEX 2

OVERVIEW OF THE THREAT

THE THREAT

1. THE THREAT TO FIELD CAMPS

Field camps will be threatened by planned and prepared attacks of symmetrical fighting forces especially in high-intensity operations. Attacks by asymmetrical operating forces, however, must be expected across the whole mission spectrum.

Moreover, the threat to field camps depends on their location, e.g. built-up areas or open, flat or mountainous terrain.

The lessons learned from ongoing and recent operations determine the following prioritisation of threats :

- Direct fires (RPG⁶, ATGM⁷ und SAF⁸).
- High-angle fires (RAM⁹).
- Unmanned aerial vehicles (UAV¹⁰/UCAV¹¹).
- Unexploded ordnance incl. IED.
- Chemical, biological and radiological agents or hazardous substances.

When dealing with threats to semi-permanent or long term field camps, consideration must be given to the possibilities of passing radioactive material into air conditioning systems of buildings to make them uninhabitable as well as of poisoning food or polluting water on premises with chemical agents to cause epidemics involving many victims. Because of the expected considerable damage to environment and economy and the resulting uncertainty in the population CBRN terrorism must be assumed to be highly attractive as seen from a potential attacker. This makes the employment of such agents more likely.

A basic threat to soldiers within a field camp arises also from contagious diseases that might be communicated from animals, human beings or food entering, or being already present in the respective installation or object.

⁶ RPG = **R**ocket **P**ropelled **G**renade

⁷ ATGM = **A**nti **T**ank **G**uided **M**issile

⁸ SAF = **S**mall **A**rms **F**ire

⁹ RAM= **R**ockets **A**rtilery **M**ortars

¹⁰ UAV = **U**nmanne**d** **A**erial **V**ehicle

¹¹ UCAV = **U**nmanne**d** **C**ombat **A**erial **V**ehicle

2. THE THREAT SPECTRUM

The basic threat spectrum for field camps comprises as follows :

- Reconnaissance and espionage.
- Disturbances caused by demonstrators, sabotage agents, foreign personnel.
- Infantry weapons.
- High-angle fires (e.g. rocket launchers, artillery pieces, mortars).
- Armed vehicles, armed vessels.
- Manned aircraft¹².
- Missiles and unmanned aerial vehicles¹³.
- Other flying objects¹⁴.
- MANPADS¹⁵ (with IR-technology and under command guidance).
- Unexploded ordnance including IED.
- NBC agents and hazardous substances and.
- Electronic Combat measures and CNO.

In the analysis of the threat potential under the aspect of asymmetric threats, special attention must be given to irregular forces and their options of using weapons, weapon systems, explosive ordnances and employing subversive, criminal and terrorist means.

3. THE THREAT BY INFANTRY WEAPONS

Infantry weapons hold a significant share in the threats to field camps. These weapons are available on the commercial and on the black market. Regular and irregular forces are equipped with hand-held weapons of any type, the majority being automatic weapons such as assault rifles or submachine guns, hand grenades and shoulder-fired AT weapons.

Sniper weapons of any calibre will represent a permanent threat also to logistic forces and installations because the sniper is hardly to detect and causes a strong psychological effect. The introduction of bigger calibres with HE-FRAG¹⁶-projectiles will in the future raise the quality of the threat to vehicles, objects and installations.

¹² Any fixed and rotary wing aircraft operated by a crew.

¹³ Unmanned, permanently or phase-wise driven ballistically and/or aerodynamically flying objects launched from ground-based, sea-based or airborne platforms and usable across a broad functional spectrum (e.g. UAV and CM).

¹⁴ Airdropped ammunition ((guided) glide bombs with increasing range and precision, vertical bombs), ballistic projectiles (unguided missiles) as well as all other airmobile or air-transportable platforms, objects or weapons (e.g. paragliders, parachutes, balloons, airships etc.).

¹⁵ MANPADS Man Portable Air Defence Systems.

¹⁶ HEFRAG High Explosive, Fragmentation.

Aside from the heavy machine guns of calibre 12,7 mm x 99, 12,7 mm x 108 and 14,5 mm x 114 the combat support weapons also include automatic grenade launchers of calibre 30 mm and 40 mm. The latter are suitable to fight soft-skinned and light-armoured targets because of the grenades' high explosive power and fragmentation effect. The engagement of both point and area targets from a distance of up to 1700 m is realistic. Some grenade launcher ammunition of both common calibres has already been seized in the areas of operation. It must be expected that HE-FRAG and HEDP ammunition will be used against installations and objects as well as against office and residential buildings in the areas of operation.

Also the use of thermo baric ammunition of these calibres cannot be excluded within the forthcoming ten years. A new quality of the threat also to logistic forces and installations would arise if in the next few years weapons with time-fused ammunition fell in the hands of irregular forces.

4. SHOULDER-FIRED ANTI-TANK WEAPONS

The shoulder-fired AT-weapons widely produced by different countries are offered in large numbers and at favourable prices on the weapon market. Low weight, portable by one individual, partially to be stripped (launching equipment, ammunition) or even expendable as well as a simple sight equipment make the shoulder-fired AT-weapon an effective weapon for terrorists. Also bunkers, ships and slow-flying aircraft (helicopters) represent suitable targets in particular during their approach, landing and take-off phases.

The shoulder-fired AT-weapon has become an accurate and relatively long-ranging weapon. The engagement range has increased to 1000 m. Modern electronics have improved the sighting equipment to a degree that was years ago to be found only on battle tanks. In the past years, the penetration power of the shoulder-fired AT-weapons was adapted to match the protection level of modern combat vehicles. The low procurement costs are an advantage for irregular forces that must not be underestimated.

5. MORTARS

Mortars, as a means to direct support of dismounted forces with distributed fires against light-armoured and soft-skinned targets, are of particular value. Their calibres range from 50 mm to 240 mm. Mortars will continue to be used worldwide over the next years because a considerable amount of their ammunition is still kept on stock. Modern armoured wheeled and tracked vehicles are used as weapon carriers.

Small-calibre mortars will come more and more in the focus of attention of irregular forces for their asymmetric warfare. Their small size make these weapons hardly detectable when they are transported and operated. Their unique advantages include low weight and excellent mobility as well as their capability of being both covertly transported and rapidly positioned, especially in built-up areas and on difficult terrain.

6. ROCKET ARTILLERY

Ballistic rockets of calibre 107 mm and 122 mm are widespread weapon systems. Their unconventional applications and the large number of fielded pieces make them an effective combat means for irregular forces. The rockets are easy to handle, have a low weight and are hardly to detect during the launch phase.

Therefore also less trained personnel can effectively operate the rockets of calibre 107 mm. Their simple mounting on different carrier systems, their easy handling and the uncomplicated launching preparations make them particularly attractive for terrorists. From the hasty firing of a stone pile to applications as single or multiple rocket launchers, everything is possible. When firing the rockets in a makeshift fashion, engagement ranges up to 8.000 m may be achieved.

The rockets of calibre 122 mm are nowadays fired from most diverse launcher systems including even DIY-welded launch frames. Single or double tube launchers operated by two men have also been recognized in the field. The variety of usable warheads is enormous. Engagement ranges of up to 20.000 m, with newer productions of more than 30.000 m are achieved.

7. TUBE ARTILLERY

Most different types of tube artillery pieces in various calibres are worldwide available. There is a difference made between field artillery pieces (unprotected, mostly vehicle-towed but also self-propelled pieces) and the armoured self-propelled artillery. The tube artillery forces are organized into firing units (batteries, battalions and above). Tube artillery ammunition is capable of destroying, smashing, dazzling or illuminating individuals, soft-skinned, lightly armoured and infrastructural targets. Here also engagement ranges of up to 20.000 m, with newer productions of more than 30.000 m are achieved.

Basically only regular forces may be expected to employ the complex tube artillery pieces due to the relatively high manpower requirements. However, it cannot be excluded that also irregular forces may occasionally have some pieces ready.

8. COMBAT DRONES AND UAV (MODEL AIRPLANES INCLUDED)

Combat drones are unmanned and as far as possible stealth aerial vehicles capable of engaging pre-programmed even far remote single targets in defined target areas with highest accuracy. In addition, unarmed UAVs are employed particularly for reconnaissance operations at any range. All modern armed forces have UAVs of different range and size on stock.

In view of the asymmetric spectrum, also aerial vehicles designed for different usages must be considered. An adequate know-how provided unmanned aerial vehicles that are freely available on the market and employed for building, farming or surveying purposes can be equipped with explosives and so converted into combat drones. Owing to their capabilities they represent an attractive combat means not only for financially weak countries but also for non-governmental actors, e.g. terrorist organizations. The technology is accessible without problems.

Model airplanes are very suitable for the espionage and reconnaissance of target objects and for terrorist attacks because they are available worldwide, relatively easy to operate and capable of carrying additional payload. Provided an undisturbed line-of-sight, they can be remote-controlled by radio over several hundreds of meters. The hand-over to a second person with a second remote-control system next to the target location is possible.

The threat depends on the foreseeable explosive payload and on the available remote control capability. Commercial model airplanes with their take-off weight of some 25 kg may carry a maximum payload of 12 to 15 kg (e.g. ordnance, explosives or optical systems). This payload allows covering a broad operational spectrum. Irregular forces will probably prefer models with low-noise drives because the surprise factor plays a decisive role. The existing air defence systems provide only a limited degree of protection against this type of threat.

9. MAN-PORTABLE AIR DEFENCE WEAPONS (MANPAD)

Almost all armed military forces employ MANPADs (Man Portable Air Defence). Because they have a relatively low weight and can be disassembled and therefore easily transported, they are in general ideal for terrorist operations. MANPADs have primarily been designed to engage flying targets and reach here their highest efficiency. However, they may also be used against static logistic installations.

Before a MANPAD with IR-technology is fired, it must have already tracked a target. The more a target stands out from its environment, the better can the search head usually track the target. The infrared signature of the target and the spectrum in which the search head operates are decisive. Older systems like the SA-7 have shown how excellently they can track searchlights due to their integrated IR-technology so that they may generally be employed against illuminated installations on the ground.

With MANPADs that are operated under command guidance the operator aims at the target through an optical system and guides the aerial vehicle actively into that target. The operation of systems of this kind may be compared with guiding anti-tank missiles. The possible ranges are determined for all systems by the time the warhead is armed and the maximum flight time (self-destruction).

In particular the older generation of MANPADs has so far been identified in the spheres of irregular forces. A further spread of systems of this kind among irregular forces must be assumed.

10. THE THREAT BY IED

One of the biggest potential threats to military forces in all types of operations consists of attacks with improvised explosive and incendiary gadgets. They have often been assembled in an unusual manner, but they can also be technically complex which makes them hard to detect, remove and/or clear or to jam by electronic countermeasures. Virtually every military operation is endangered by attacks with IED. In the context of the worldwide fight against terrorism a dramatically increased use of IED by irregular forces must be recognized. Logistic forces are especially vulnerable to this threat.

An IED usually consist of a firing device, a fuse and an explosive load. IED generate explosive pressure, fragments, projectiles, shaped charge effects, flames or any combination.

Aside from the intended effect, the type of IED depends especially on the technical and tactical abilities of their designers, the available materials and the conditions at the target location.

A description of the best known types of IED that can threaten a Field camp :

- Vehicle-Borne IED (VBIED) are tightly attached to vehicles and move with them to the target. They can be designed either as suicide bombs or as booby traps. The vehicle is a fixed part of the IED and carries the explosive load during the operation. VBIED are used against infrastructure, armoured vehicles or other valuable targets within a convoy. Should the target be protected, special devices may be installed which direct the explosive power or reinforce it by fragments.
- Under Vehicle Devices (UVD) covertly attached to the target vehicle are preferably used to assassinate priority targets.
- IED (Personnel-Delivered IED, PDIED) are fixed to the body of individuals for suicide attacks. Variants used so far include belts, backpacks and waistcoats filled with explosives.

Quantity and composition of the used explosives determine the size of the effective area which in turn directly influences the way the IED is transported to, and emplaced at, the target (personnel, material and infrastructure). Known emplacement methods include, among others, depositing unsuspecting objects (suitcases, bags), delivering letters or parcels, parking, or breaking through with, vehicles carrying large amounts of explosives, but also attaching explosives to military vehicles.

11. THE THREAT BY CBRN AGENTS AND NATURAL AND INDUSTRIAL DANGER POTENTIALS

The survivability of military forces both in operations and during routine duty receives a new dimension considering the threat of using, or the actual use of, nuclear, biological, radiological and chemical (CBRN) agents. Dangers by CBRN agents can't be excluded, despite several international agreements. For the time being, a massive attack with CBRN weapons is rather unlikely. The most likely scenarios describe covert operations at low level. The danger has significantly increased because less predictable adversaries, who are prepared to take high risks¹⁷, try to provoke conflicts both within and between countries by terrorist attacks – also with the aid of weapons of mass destruction. In addition, there are comparable threats arising in areas of operation from industrial NBC danger potentials due to technical deficiencies or terrorist acts which might cause accidents or collateral damage in plants of the nuclear, pharmaceutical or chemical industry. The resulting dangers such as contaminations by chemical, biological or radiological substances to man and environment are threatening also field camps.

¹⁷ STANAG 2451/AJP 3.8., Kapitel 1, Nr.0105, Asymmetric means: “ In the face of continuing NATO superiority in conventional military capabilities, adversaries may seek unconventional strategies and tactics, including the use of NBC agents and TIM, to reduce this advantage ”.

ANNEX 3

REQUIRED OPERATIONAL CAPABILITIES

1. GENERAL DESCRIPTION

- 1.1. The protection of Camps is dependant on the threat and is always part of the full-spectrum of operations in the entire intensity spectrum of the missions of joint and combined armed forces.
- 1.2. Camp protection does not begin directly at the camp perimeter but can rather be conceptually viewed according to the layering principle. This means that all operations in the area of responsibility whether inside or outside of camps contribute indirectly/directly to their protection. Thus they have to be integrated operationally and technically into an overall protection concept.

Figure 1 distinguishes the Area of Responsibility (AOR) and the Camp Protection Area (CPA).

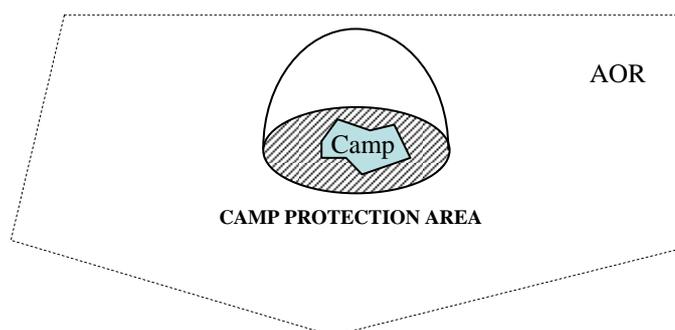


Figure 1: Area of Responsibility and Camp Protection Area

- 1.3. The AOR is the area for which the operational commander of the forces occupying the camp site has responsibility. The CPA is a subset of the AOR and is the area for which the person responsible for the protection of the camp has responsibility.
- 1.4. The camp protection area can be divided in :
 - an area beyond line of sight (BLOS) ;
 - an area within line of sight (WLOS) ;
 - the camp perimeter with the camp accesses and ;
 - the interior area of the camp.

This is illustrated in figure 2 :

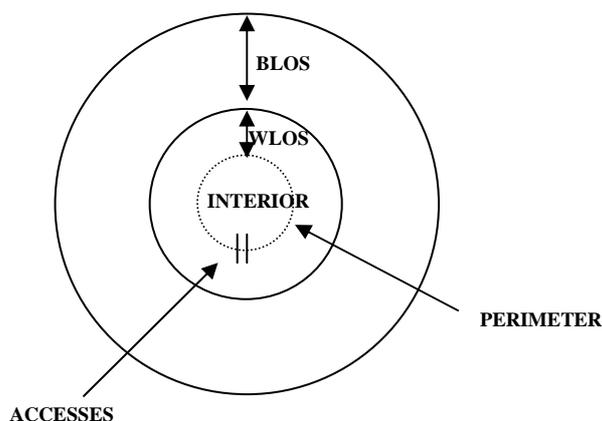


Figure 2 Camp Protection Area

1.5. For the protection of camps capabilities are required that guarantee the protection of the camp against attacks from outside as well as the protection of special functional areas and personnel against attacks/hazards from inside the camp. These could be as follows :

- set up/operation of stationary/mobile barriers against personnel and all kinds of carrier platforms ;
- set up/operation of stationary/mobile networked observation posts ;
- set up/operation of alert posts and security positions ;
- set up/operation of automatic networked surveillance systems ;
- detection and identification of arms, weapons and devices (including CBRN hazardous materials), wherever possible standoff capable (e.g. by long-range detection devices) as well as integrated into the access/surveillance facilities ;
- protection from the effects of direct and indirect fire ;
- reduction of the effects of fragments, debris and fires ;
- reduction of the blast effect of detonations ;
- military police measures in the theater and facility defense¹⁸ including close protection and escort inside and outside of facilities and objects and ;
- marking of facilities and objects protected by international treaties with distinctive emblems.

1.6. All capabilities have to be operational 24 hours a day, 7 days a week, in all weather conditions and in all terrain. All systems have to be complementary, modular and interoperable so that they can easily be put in a local network.

¹⁸ Cf. partial capability Bundeswehr Military Police, p. 18, No. 3.3.5.

2. MEASURES FOR THE COMMAND AND CONTROL (C²) OF CAMP PROTECTION ASSETS

2.1. Camp Protection C² general considerations

- The goal of Camp Protection C² is to provide forces with a safe and secure environment. Command & Control (C2) considerations for Camp Protection will vary depending upon the size and layout of the camp, the nature of the threat and the capabilities needed to accomplish the mission.
- Given that Camp Protection is a military task with a dedicated organisation and dedicated assets then command, as the authority invested in a person, encompasses responsibility for planning and activating all appropriate camp protection measures to fulfil his mission. Control is the process through which a commander given responsibility for the protection of a camp, assisted by his staff, organises, directs and coordinates the activities of the assets allocated. It implies the continuing oversight, direction, and coordination of assigned assets in accordance with the operational commander's plan and intent. It allows regulation and oversight of activities of the assets allocated in accomplishing the mission. To achieve this, the camp protection commander and staff use standardised procedures in conjunction with the equipment, communications, and information systems (CIS) available. Together, these two processes form C², which the commander, his staff, and his subordinates use to plan, direct, coordinate, and control camp protection operations.

2.2. Camp Protection C² requirements

The following C² capabilities are required for the protection of camps :

- Dedicated interoperable communication and computer networks to support camp protection planning and decision-making processes in order to ensure coordination and control of camp protection assets.
- Dedicated information networks to screen, assess, edit and distribute information required to generate a relevant " Camp Protection " operational picture as part of a Common Relevant Operational Picture (CROP). Network assets should be interoperable with existing local area networks and allow the integration of other assets contributing to camp protection such as dismounted patrols, tactical reconnaissance, security forces, MP forces etc.). The requirements regarding CROP are illustrated in the system capability requirement " Provision of a Common Relevant Operational Picture (CROP) ".
- Network enabled interoperable sensors and collectors linked with a data fusion centre generating required information for the " Camp Protection " part of the CROP.
- A dedicated, interoperable and responsive camp protection alerting and warning system based on the camp protection part of the CROP.

- Dedicated interoperable communication, computer and information networks for the transmission and processing of secure information.

2.3. Establishment and Maintenance of Information Superiority

In order to maintain information superiority, the screening, assessing, editing and distribution of C²-relevant information from the Communication Information Systems (CIS), the Combat Direction Systems (CDS) as well as from intelligent¹⁹ sensors needs to be ensured. This requires access to the CROP, feeding information from sensors and collectors as well as other relevant technical reconnaissance assets and the display of protection-specific events.

This requires :

- that data can be integrated into and displayed by the prevailing CIS/CDS and ;
- the availability of a “ Camp Protection ” part of the CROP that can be modified to operation specifications, keeping all available data for the protection of camps relevantly retrievable in a geo and time-referenced way, and allowing the input of protection-relevant information.

2.4. Planning and Preparation of Camp Protection Measures

The planning of protection measures for camps has become increasingly complex not least due to the complex nature of the threat spectrum. For this reason, an IT-based planning tool is required for assisting in the planning and preparation of relevant camp protection measures. The planning tool needs to be adaptive to different geographic conditions as well as to constant changes in the threat assessment.

3. INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE (ISR) CAPABILITIES

3.1. General

- ISR capability for the protection of the camp is required to collect information by technical and non-technical means on all threats affecting the security of the camp. The ISR capability needs to assess and exploit this information in order to enable near to real time situational awareness and generate the camp protection part of the CROP.

¹⁹ here, intelligent means the capability of automatic warning and IT-based pre-selection of relevant information from the current surveillance (e.g. by pattern recognition and alteration matching).

- The ISR capability for camp protection relies on the effective use of sensors and other appropriate assets, within the camp protection area. These assets can either be dedicated camp protection assets or non-dedicated ISR assets contributing indirectly to camp protection.

For non-dedicated assets the commander's staff responsible for the protection of the camp needs to be able to generate requests for information and be integrated in the overall intelligence collection plan. In addition to the ISR capabilities required in the CPA the commander's responsible for the protection of camps need to be integrated in the network providing information from ISR operations in the rest of the AOR that can be indirectly beneficial for the protection of the camp.

3.2. Threats within the line of sight, especially at the perimeter, its accesses, and the interior of the camp

- In the immediate range of a camp (up to 500 m), quick reaction is of great importance for repelling a threat and preventing the intrusion of forces. The entry control of personnel and vehicles plays an essential role here.
- In order to repel and or neutralise threats within the line of sight, especially at the perimeter, its accesses, and the interior of the camp autonomously operating technical assets (e.g. electro-optical cameras, thermal cameras, video and IR systems, sniper detection systems etc.) in combination with human assets (e.g. observation posts, patrols etc.) are required.

3.3. Surface, nearby-surface and air threats beyond the line of sight

- ISR of surface, nearby-surface and air threats beyond the line of sight require a combination of technical (e.g. ground surveillance radars, target acquisition radars, UAVs, unattended ground sensors, aerostatics etc.) and human assets (e.g. patrols, HUMINT, reconnaissance units etc.) are required.
- With regard to the technical means in both cases, the right selection of sensors has to be put in place in accordance to the assessed threat. Once a possible threat has been detected, it has to be tracked in order to allow an accurate identification and evaluation. IFF systems or other appropriate technologies have to be put in place to facilitate the distinction between friendly and opposing forces.

4 EFFECTIVE ENGAGEMENT CAPABILITY

4.1. General Considerations

- Effective engagement capability for camp protection has to ensure that possible threats and not as friendly identified individuals/assets are quickly repelled or neutralized both within and beyond the line of sight from the camp. Effective engagement capabilities for camp protection span the following technical and non-technical means :

- * lethal and non-lethal weapon systems and ammunitions and ;
 - * Force operations such as patrols, crowd and riot control and QRT arresting suspects in cooperation with the local police.
- Effective engagement capabilities can be dedicated and non-dedicated camp protection capabilities and have to cover at least the whole CPA as well as take into account that effective engagement operations conducted beyond the CPA in the AOR can be indirectly beneficial for the protection of the camp. This requires that the commander responsible for the protection of a camp has to be able to plan and conduct dedicated camp protection effective engagement operations as well as be able to be an integral part in the overall planning and conduct of operations in the AOR.
 - The main characteristics required for effective engagement capabilities (all characteristics are not always applicable for every system) are quick and timely intervention, precision and accuracy, gradual engagement of non-lethal and lethal means and full automatic or semi-automatic engagement.
 - The threats or possible threats that have to be repelled and/or neutralized, appearing at the camp accesses, the camp perimeter, within or beyond the line of sight, are :
 - * the small arms fires ;
 - * hand thrown threats ;
 - * the shoulder launched weapons' fire ;
 - * the indirect fires ;
 - * the placed, delivered, personnel- and ground vehicle-borne IED at the perimeter, especially at the accesses of the camp ;
 - * the suicide aircraft- or helicopter-borne IED and aerial delivered bombs ;
 - * the unarmed threats posed by crowd demonstrations and theft intrusions.

4.2. Measures for Effective Engagement in Immediate Range (500m) and the Access Area for the direct Protection of Facilities and Objects

- Ground-Based Direct Fire and Weapons
 - * For the protection of camps, the capability of quickly repelling and or neutralizing short-range ground-based threats by small arms and shoulder-fired anti-tank weapons need to be ensured. This requires ;
 - * Detection of shooters with small arms and shoulder-fired anti-tank weapons;
 - * Near to real time automated detection of small arms fire and launches of shoulder-fired anti-tank weapons ;
 - * Lethal and non-lethal action against shooters with small arms and shoulder-fired anti-tank weapons ;

- * Detection of weapons, mines, adhesive charges; this includes the recognition of insertion into subterranean systems (tunnels).
- Access Control Measures
- * Access control systems are required that monitor the access and thus are primarily intended to impede and take effective action against unauthorized access. Systems are required for this task that render an effective personnel and vehicle control feasible, requiring minimal expenditure on personnel and of time, that makes the information collected in the process immediately available without media conversion ;
 - * For the detection of arms, ammunition, weapons and explosives as well as CBRN hazardous materials systems are required in the access area that are also operated with minimal expenditure on personnel and of time ;
 - * Whenever possible, these systems should be integrated into the access and surveillance facilities, in which the exposure to danger of the personnel and, at second rate, of the infrastructure shall be minimized.
- Stand-off capable Measures for Effective Engagement in Close-In Range and Short Range (500 m to 40 km) for the direct Protection of Installations
- * For the protection of camps, an integrated capability of repelling and or neutralizing ground-based threats of arms and weapons are needed as follows :
 - Detection of shooters with small arms/shoulder-fired anti-tank weapons as well as positions fit for the use of direct and indirect-firing weapons;
 - Detection of small arms fire, launches of shoulder-fired anti-tank weapons as well as direct and indirect fire ;
 - Lethal and non-lethal action against shooters with small arms/shoulder-fired anti-tank weapons as well as weapon systems/emplacements ;
 - Detection and pursuit of personnel and vehicles, and ;
 - Stand-off detection of weapons.
 - * This includes the capability of collecting information by technical means in close-in range (up to 5 km) and short range (5 to 40 km) of camps and contemporarily assessing them as well as taking action in these ranges with direct and indirect firing weapons.
 - * The assessment of all information and detection results shall always present a complete operational picture almost in real time. Therefore it is required to be capable of alerting and warning as soon as possible, especially of :

- field artillery ammunition ;
 - mortar projectiles ;
 - rockets and guided missiles ;
 - small arms ;
 - weapons (primarily remote-triggered or vehicle-borne IED) ;
 - measures degrading the C² capability, and ;
 - suspect personnel and vehicles (ground, air, surface and subsurface vehicles).
- * In order to reduce the threat, the following indirect effective engagement capabilities will be required in the future among others :
- reconnoitring potentially violent force as soon as possible, detecting attack preparations ;
 - hampering and eventually preventing attack preparations as soon as possible ;
 - military police measures in the approaching area (e.g. elicitation) ;
 - cooperation with the local police, authorities and organizations ;
 - information compression by area and point defense tasks as well as search-and-seize operations.
- * These measures need to be executed in the scope of the conduct of operations of the operational forces, and the results are required to be entered into the prevailing integrated information network.

5. SURVIVABILITY AND PROTECTION CAPABILITY

Not every threat will be detected by the ISR Capability, and not every attack will be timely repelled and/or neutralized by the effective engagement capability. There can be technical and/or human failures. Moreover resources will always be limited, so a 100% ISR and effective engagement solution will probably never be put in place. Thus a survivability and protection Capability will always be needed. The following capabilities can be identified.

5.1. Ballistic protection from surface, nearby-surface and air threats

- Depending on the situation and threat-appropriate infrastructure there is a requirement for mobile/movable, modular and re-usable protection systems that reduce the effects of explosive ordnance and direct and indirect fire.
- The main emphasis has to be on the special key functional facilities/assets and on the access area.

5.2. Protection against action in the Electromagnetic Spectrum and Enemy Intelligence Collection and Reconnaissance

- As a rule, potential enemies prepare attacks against friendly installations by employment of appropriate reconnaissance. This ranges from visual observation without auxiliary means to the use of technical reconnaissance assets in the entire electromagnetic spectrum. Moreover, information collection forces (e.g. elicitation and targeted elicitation) are employed.

In order to effectively protect Camps and other installations against enemy information collection and reconnaissance (incl. the electromagnetic spectrum), action as well as intrusion and sabotage attempts, the following capabilities are required :

- * Access controls for personnel, motor vehicles, items and other material ;
 - * Reduction of signatures in the :
 - acoustic ;
 - optical ;
 - IR and radar spectrum.
 - * Surveillance of the environment of the object against intrusion attempts and;
 - * Sabotage from air, ground and sea (e.g. UAV²⁰, ground sensor equipment, diver detection sonar, battlefield radar), and ;
 - * Detection of launch sites (e.g. sound ranging, radar control COBRA²¹).
- Camps are exposed to electronic threats, such as attacks on their IT systems by electronic means as well as the employment of sensor systems using the electromagnetic spectrum that are used by the enemy for target acquisition and weapon guidance. In order to effectively protect facilities and objects against this type of threat, the following capabilities are required :
 - * Protection of friendly communication systems and reconnaissance systems against jamming and deception;
 - * Ensuring the confidentiality, availability, liability and integrity of C² information;
 - * Detection and assessment of signatures of the facility/the object in the entire electromagnetic spectrum using sensor and management systems;
 - * Threat-appropriate reduction of especially compromising signatures in the entire electromagnetic spectrum;

²⁰ UAV Unmanned Aerial Vehicle

²¹ COBRA Counter Battery Radar

- * Detection and qualified warning of the utilization of reconnaissance sensor systems in the electromagnetic spectrum (electro-optical and radar systems in special) and illumination by laser devices, and
- * Detection of the employment of sensor-controlled weapon systems by using electronic support measures, and engagement by using electronic countermeasures in the entire electromagnetic spectrum or stand-off defense measures.

5.3. Protection against Conflagration Hazard

Fire fighting and fire hazard containment include organizational, structural and technical measures in order to minimize or exclude the probability of occurrence and effects of fires, ensuring the protection against the dangers originating from fires and accidents, and taking precautions for fire hazard containment. The protection of personnel, materiel and environment shall be ensured by an active fire hazard containment capability.

5.4. Medical Protection

In order to reduce the number of casualties by incidents caused by the opposing forces, accidents and environmental hazards of every kind, to the strict minimum a medical capability has to be installed in the camp. This capability can be a full medical capability able to provide every kind of medical treatment. At least a minimum medical capability has to be present in the camp. In that case an evacuation capability to a full medical capability in that theatre of operations has to be provided.

5.5. Protection against Environmental Hazards

In order to protect from diseases and animals, camps are to be positioned spatially, equipped structurally and to be protected by disinfection measures in such a way that animals that pose directly or indirectly a potential threat for humans (wildlife, if appropriate also livestock, snakes, scorpions, spiders, insects and other arthropods) don't have access at all and can be kept spaciouly away. Pathogen carriers (vectors) have to be deterred effectively.(e.g. by using insect screens, automatically closing doors, air lock areas, etc.). Persistent vector monitoring provides an up-to-date knowledge of the risk of infection by potential pathogens and special preventive-medical facilities (e.g. medical air locks) have to be set up when needed.

5.6. Protection against Naval Threats

- The main tasks of the Naval Protection Forces include the shore and naval protection of navy units and their facilities ashore, in ports, harbors and roadsteads and littoral waters. The threat of asymmetrically acting forces is rather to be assumed than the threat of classic means of naval warfare; this includes surface as well as subsurface threats. The timely detection of potential threats is decisive for an effective protection.
- This requires the capability of assessing the naval threat situation, the use of diverse surface and subsurface sensors, their combination in a multiple sensor network, and an effective employment of weapons (on mobile platforms, too). Moreover, the capability is required to take precise action against small, highly mobile, sometimes very fast surface and subsurface targets as well as individual persons.

ANNEX 4

STANDARDISED PROTECTION MEASURES (STANAG 2280)

	A Small/medium calibre projectiles	B Shoulder launched weapons/Rifle grenades	C Battlefield rockets, Artillery and Mortars	D Small/Personnel- borne IEDs	E VBIEDs
5	Automatic cannon 30 mm APDS	Advanced ASM Anti Structure Munition	155 mm artillery 122 mm rocket	Bag/Suitcase 20 kg TNT	Heavy truck/similar > 4000 kg TNT
4	Heavy machine gun 12.7 - 14.5 mm AP	Anti-tank Shaped charge	120 mm mortar 107 mm rocket	Body-born device 9 kg TNT, fragments	Medium truck 4000 kg TNT
3	Assault/Sniper rifle 7.62 mm AP WC	Anti-personnel Thermobaric charge < 2.5 kg /Conventional	82 mm mortar	Large briefcase 9 kg TNT	Van 1500 kg TNT
2	Assault rifle 5.56 - 7.62 mm AP	40 mm Rifle grenade Shaped charge	60 mm mortar	Package 1.5 kg TNT	Passenger vehicle 400 kg TNT
1	Assault rifle 5.56 - 7.62 mm Ball	(Reserved)	Hand grenade	Letter bomb 0.125 kg TNT	Motorbike 50 kg TNT