**TOPIC 3/4**

**SURVIVABILITY tasks AND FUNDAMENTALS**

Survivability includes all aspects of physically protecting personnel, weapons, and materiel from the effects of adversant weapon and detection systems. It may also include deception measures.

**The Threat.** An adversant may use massive firepower for suppression or destruction and to enhance the shock action of its attacking forces. They may also deploy an extensive array of surveillance and target acquisition systems. On the other hand, an asymmetric foe may also seek to inflict disproportionate levels of damage on Alliance forces by unconventional means such as human or vehicle borne explosive devices including suicide attacks.

**The Concept.** All arms/branches are responsible for their own immediate survivability requirements. Engineers will augment and enhance unit survivability measures within the limits of available resources and the priorities of the commander. Engineer effort will be concentrated on tasks requiring specialist skills or equipment. Survivability measures begin with the use of all available concealment and cover, followed by digging and constructing fighting and protection positions.

During military operations other than war or combat, the design, resourcing and construction of appropriate force protection facilities including camps and other facilities, will usually become an engineer responsibility. This key task will demand a range of specialist skills and equipment to protect the force and enable it to conduct operations effectively in a cross-spectrum environment.

**Main Tasks.** The main engineer survivability tasks are:

* Assistance in the preparation and construction of field fortifications.
* Assistance in the hardening and construction of protective infrastructure works. This includes collective protection against the CBRN threat.
* Assistance with camouflage, concealment and deception.
* Assistance in the clearance of fields of fire.
* Explosive threat Management. Those are tasks related to minimizing the threat posed by all kinds of explosive devices, both manufactured and improvised, to friendly forces. This includes all actions from providing advice and engineer intelligence to deliberate actions such as disposal, search and support to EOD/IEDD/C-IED tasks. Note that this task is not exclusively executed as a survivability task, it is often conducted as a mobility task when the explosive threat hinders FOM of friendly forces.

**SURVIVABILITY SUPPORT IN OFFENSIVE OPERATIONS**

During offensive operations, use of multiple routes, dispersion, highly mobile forces and wise use of terrain are the best ways to ensure survivability. Planned measures must not unduly restrict the force’s ability to manoeuvre at will. This will allow the commander to achieve concentration, speed and flexibility. The following engineer measures may be used:

* Field fortifications.
* Camouflage.
* Deception.

**Fortifications.** Engineers may construct fighting positions for tactical vehicles and weapon systems. Although not as extensive as in the defense, protective emplacements for artillery, air defense units and logistic concentrations are normally considered in the plan. Commanders may require hardening of key command and control facilities, especially those with a detectable electronic signature. Engineer assistance during offensive operations also may be required to provide field fortifications for:

* Reserves waiting in hide areas.
* Assault forces consolidating on an objective.
* Manoeuvre forces which are required to halt during the advance.
* Supplementary and alternate positions.

**Camouflage.** In a fast-moving offensive situation, time may not allow extensive camouflage measures to be taken. Engineers advise on site selection and proper use of terrain to provide the most expedient camouflage.

**SURVIVABILITY SUPPORT IN DEFENSIVE OPERATIONS**

The lethality of modern weapons systems makes the battlefield an increasingly hostile environment. Where there is a threat from adversant offensive air support (OAS), aviation and direct/indirect fires, considerable attention must be paid to survivability. This is likely to become more significant in the future with the advent of a medium weight capability which by definition is likely to lack protection. Survivability may also be threatened by the adversant’s satellite, air reconnaissance an interdiction capability. When facing an asymmetric threat, the requirement for effective survivability is not diminished. The need to protect the force from a range of possible threats is enduring and must include threats posed by vehicle borne IED and suicide bombers for example. Responsibility for survivability depends on the levels of protection required. Basic survivability is an all arms/branches responsibility with engineers providing increased levels of advice and construction support as the complexity of survivability tasks increase. Survivability includes all aspects of protecting personnel, weapons and supplies by employing:

* Sound tactics
* Dispersion and frequent unit moves.
* Camouflage and concealment.
* Deception.
* Emission security.
* Engineer Support to Force Protection.

Major engineer survivability tasks will include assistance to other arms/branches in:

* Field Fortifications.
* Protection of combat supplies.
* Camouflage, concealment and deception.
* Camp and facility construction where appropriate.

**Fortifications.** The preparation of field fortifications is an all arms/branches responsibility and is a sub-set of the broader issue of Force Protection Engineering (FPE). When time is short or the nature of the terrain requires special techniques, such as the use of earthmoving equipment or explosives, engineers may provide support in accordance with the commander’s priorities. Possible engineer tasks include:

* Advice on the construction of field fortifications.
* Construction of command posts.
* Construction of artillery gun positions, tank scrapes and weapon pits.
* Preparation of alternate positions.
* Preparation of sites for tactical air and aviation units.
* Construction of storage facilities for ammunition and other materiel.
* Advice on, and on occasions, assistance with, the construction of protective barriers.
* Strengthening field fortifications.

**Protection of Combat Supplies.** Combat supplies should be protected in particular against blast, shrapnel, incendiaries and CBRN contamination. It is most important to provide protection for ammunition and fuel stores. The types of shelter built will depend upon the terrain and soil type as well as on the availability of existing buildings and natural cover. By giving advice to the logistic commander on the selection of the most suitable storage sites, the requirements for engineer support may be considerably reduced.

**Camouflage and Concealment.** In general, all units are responsible for their own concealment and local camouflage. Major positions, facilities, and operational sites, may, however, require special camouflage stores and measures. The tactical commander may then require engineers to undertake such tasks, as advised by his engineer commander. Efforts must be made to mitigate the distinctive signatures that engineer work in preparing battle positions can create. Apart from the use of camouflage nets and natural camouflage material, special camouflage measures often require the employment of engineer equipment and devices. This is especially true for large-scale camouflage requirements.