



LA GUERRA DEI TUNNEL



AGENDA

GRUPPO NAZIONALE GUASTATORI

- **SCENARI OPERATIVI DI RIFERIMENTO**
- **PRECEDENTI STORICI**
- **COMPETENZE**
- **ADDESTRAMENTO**



SCENARI OPERATIVI DI RIFERIMENTO

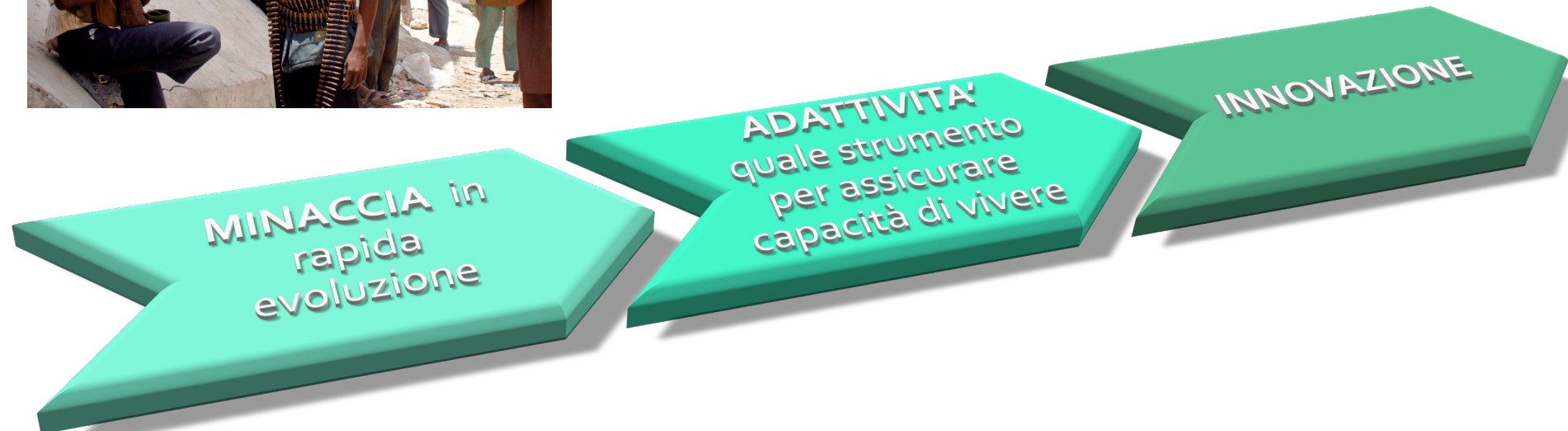
GRUPPO NAZIONALE GUASTTAORI





COMPLESSITA' DEI CONFLITTI – SCENARI FUTURI

GRUPPO NAZIONALE GUASTTAORI





"INNOVATION . . . IS GENERALLY UNDERSTOOD AS THE SUCCESSFUL INTRODUCTION OF A NEW THING OR METHOD . . . INNOVATION IS THE EMBODIMENT, COMBINATION, OR SYNTHESIS OF KNOWLEDGE IN ORIGINAL, RELEVANT, VALUED NEW PRODUCTS, PROCESSES, OR SERVICES."

"ALL INNOVATION BEGINS WITH CREATIVE IDEAS . . . WE DEFINE INNOVATION AS THE SUCCESSFUL IMPLEMENTATION OF CREATIVE IDEAS WITHIN AN ORGANIZATION. IN THIS VIEW, CREATIVITY BY INDIVIDUALS AND TEAMS IS A STARTING POINT FOR INNOVATION; THE FIRST IS NECESSARY BUT NOT SUFFICIENT CONDITION FOR THE SECOND".



AGENDA

GRUPPO NAZIONALE GUASTATORI

- **SCENARI OPERATIVI DI RIFERIMENTO**
- **PRECEDENTI STORICI**
- **COMPETENZE**
- **ADDESTRAMENTO**

GUERRA DI SUCCESSIONE SPAGNOLA

1706

GRUPPO NAZIONALE GUASTTAORI



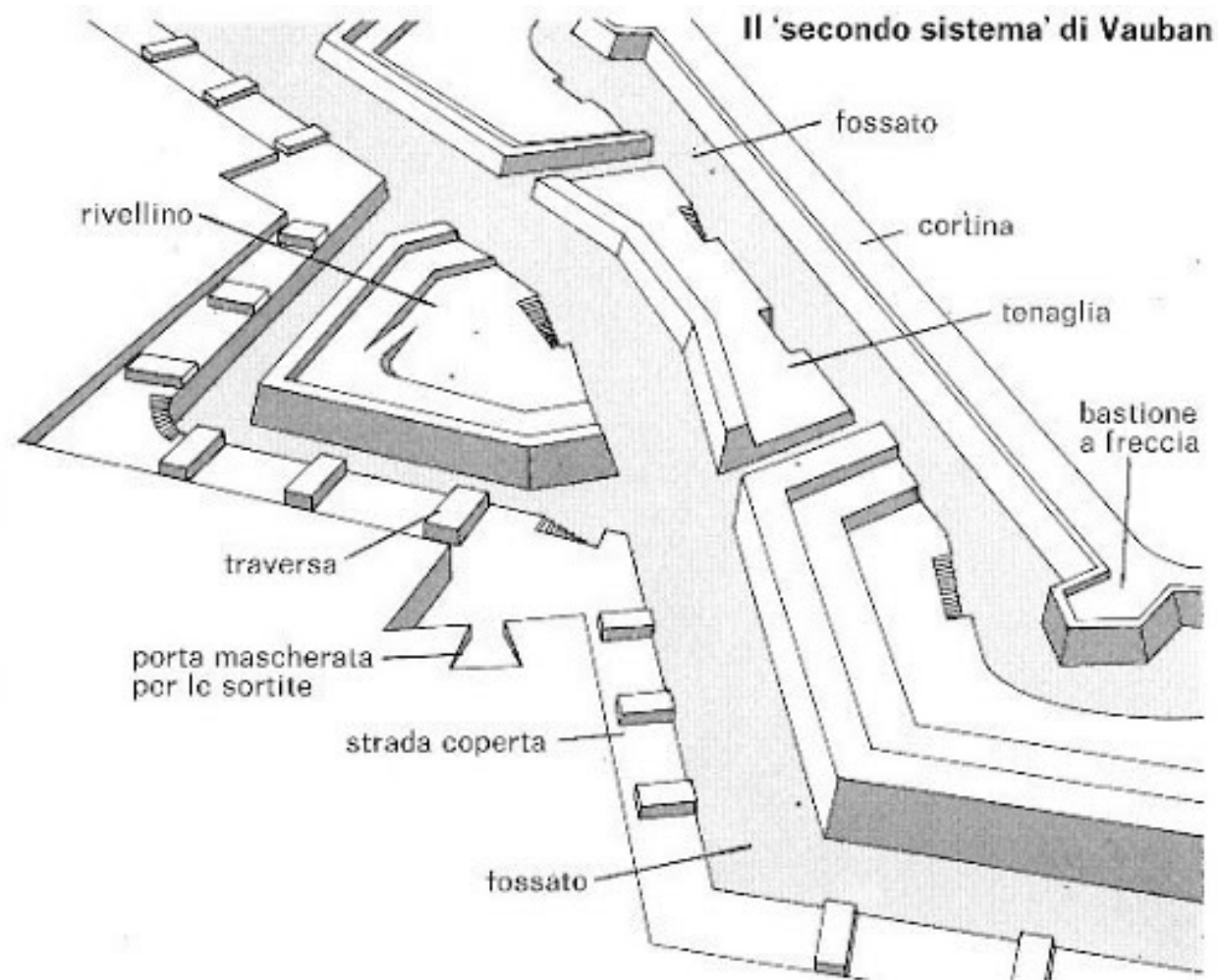


POLIORCETICA

GRUPPO NAZIONALE GUASTTAORI



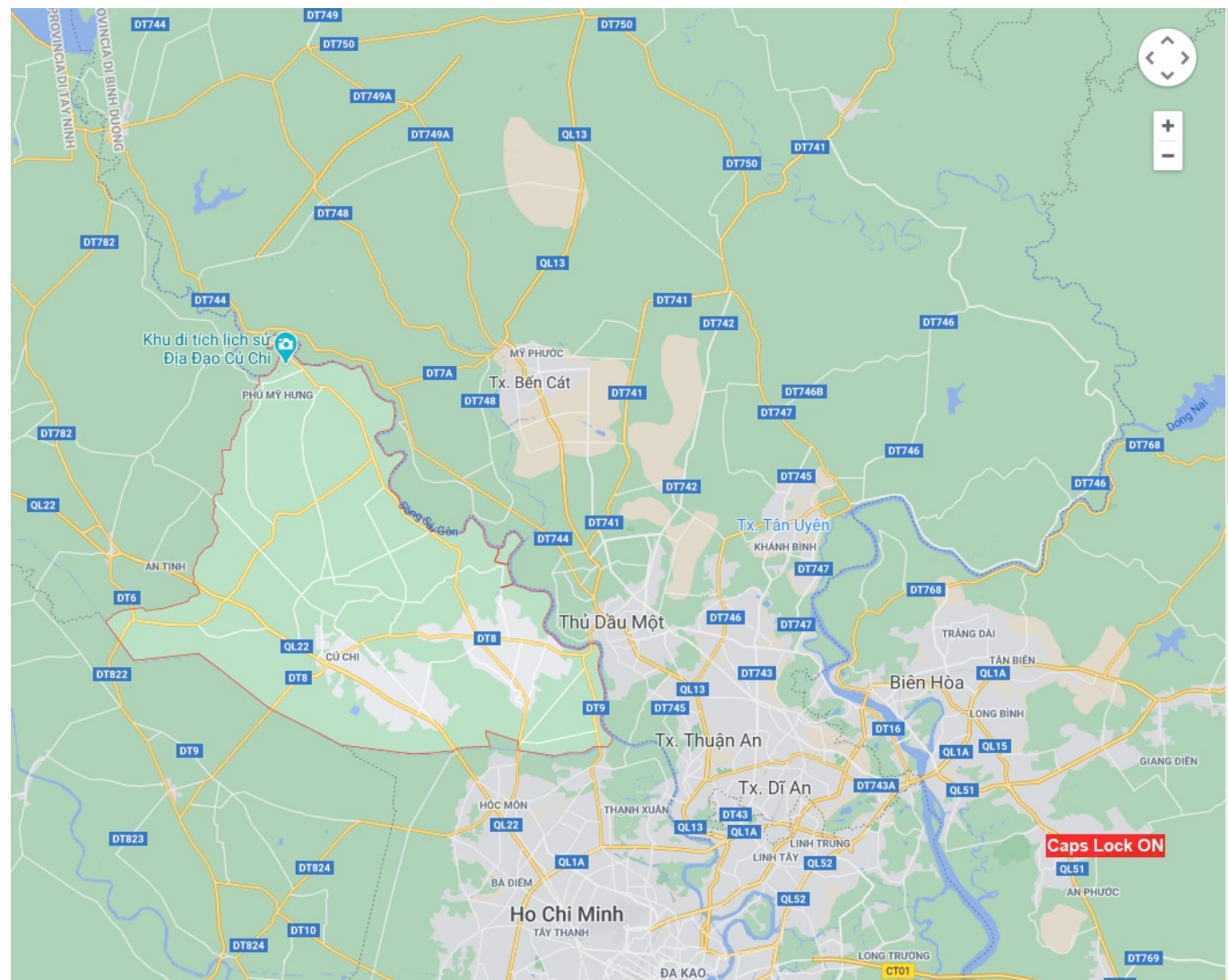
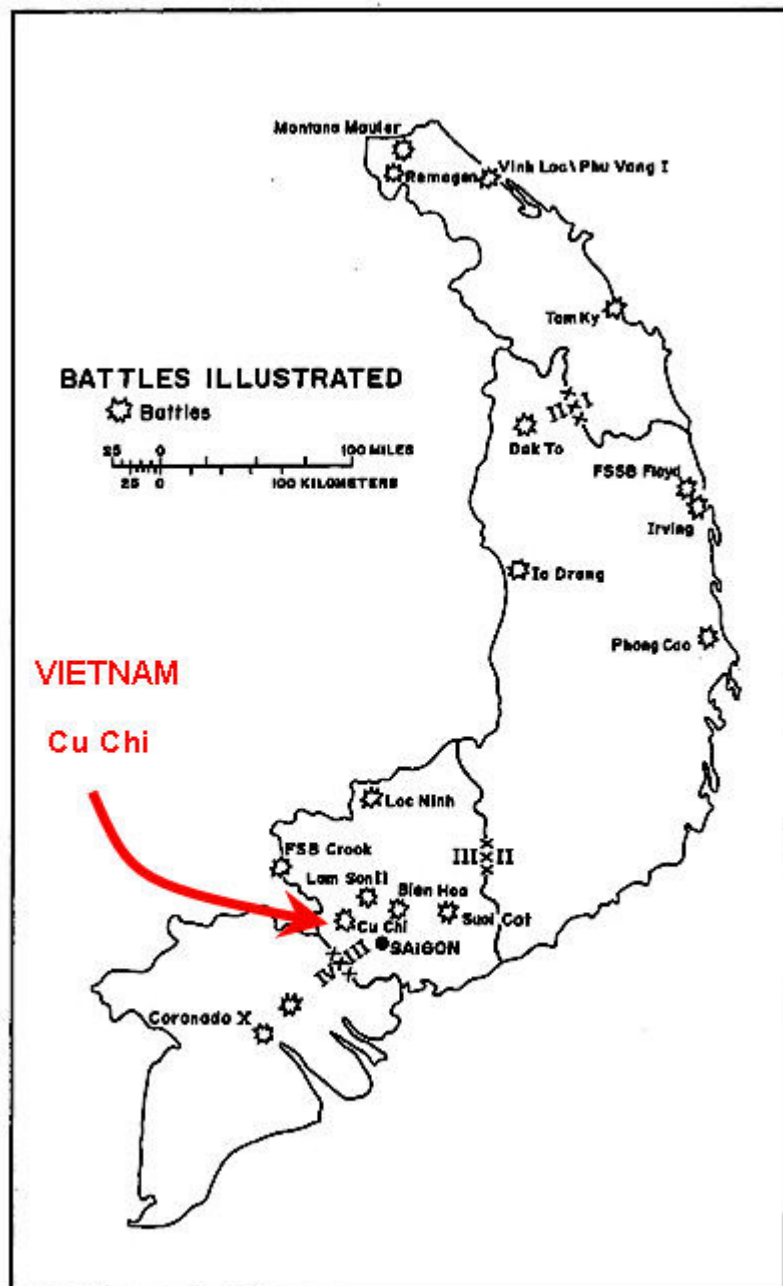
Sébastien Le Prestre de Vauban





CU CHI

GRUPPO NAZIONALE GUASTATORI





E GUASTTAORI



 alamy stock photo

DFXKP9
www.alamy.com



HAMAS

Gazan village:
Abasan al-Zrir

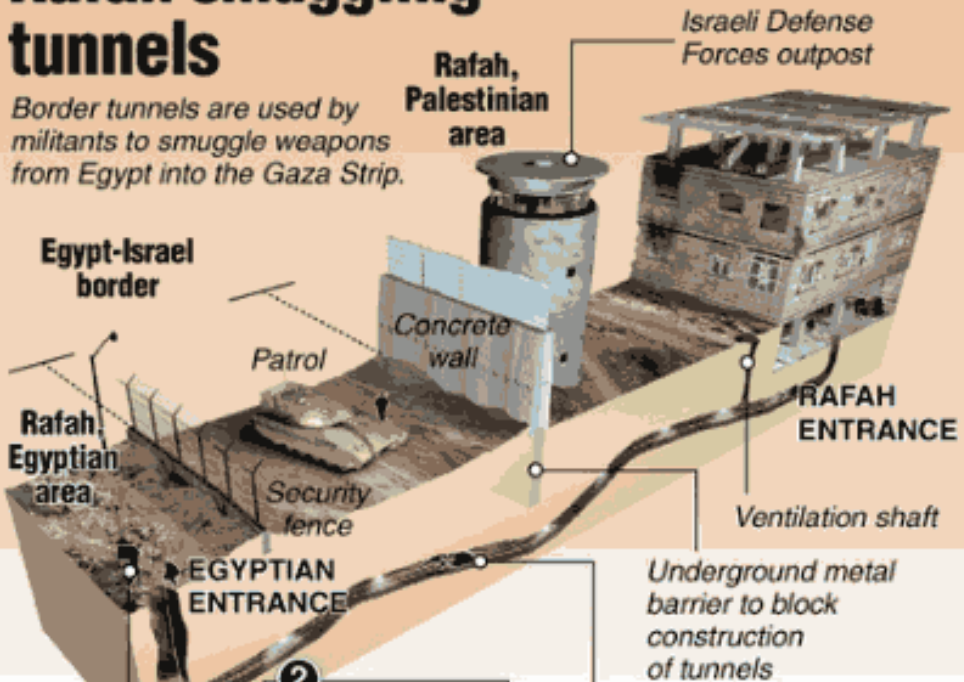
Distance from
the village

Tunnel depth at
entrance: 22 m

Tunnel dimensions:
Height: ~1.8 m
Width: ~1.0-1.2 m

Rafah smuggling tunnels

Border tunnels are used by militants to smuggle weapons from Egypt into the Gaza Strip.



①

Smugglers leave weapons at Egyptian entrance

②

Palestinian smugglers cross tunnel; load rockets, explosives, rifles on wagon

③

Smugglers crawl back to Rafah entrance

- 90 tunnels discovered since 2000; 36 demolished in 2003; a suspected 10 in use today
- Tunnel excavation can take up to two months to complete

Source: UNRWA, Israeli Defense Forces
Graphic: MCT Staff



© 2009 MCT

dug by the Israeli
and the tunnel

Israeli village:
Ein HaShlosa

Distance from Ein HaShlosa to
detection point: ~2,800 m



Depth: 18 m

Israel
was

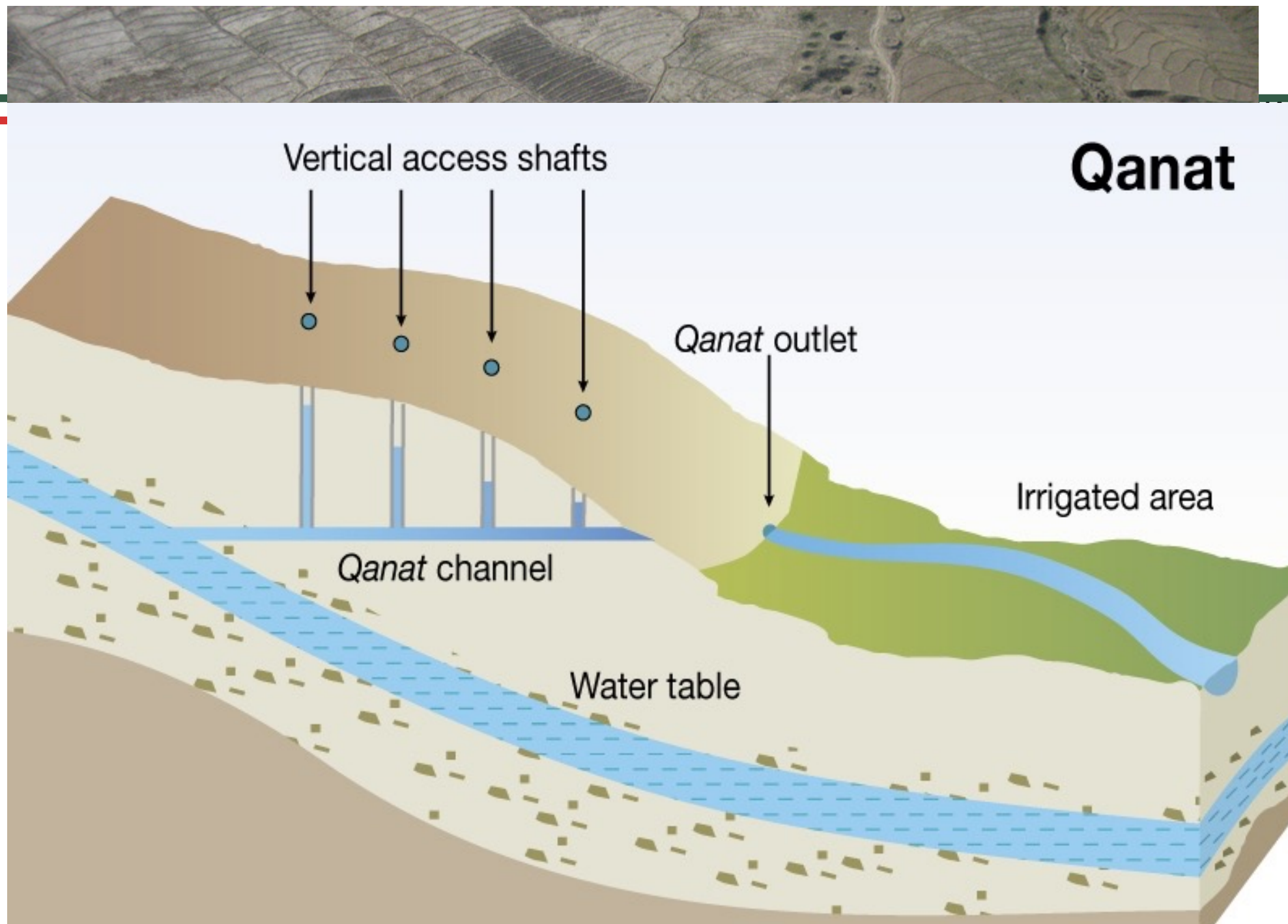
Not to scale



HEZBOLLAH

SUA STTAORI









TIPOLOGIA DI INFRASTRUTTURA

GRUPPO NAZIONALE GUASTATORI

Table 1-1. Subterranean environmental categories

CATEGORIES	Category 1 TUNNELS, CAVES, AND NATURAL CAVITIES		Category 2 URBAN SUBSURFACE SYSTEMS		Category 3 UNDERGROUND FACILITIES (Military Purposed)	
Subcategories	Rudimentary	Sophisticated	Substructures	Civil works	Shallow	Deep
Description	Lack of shoring	Shoring; basic amenities	Basements, parking garages	Subways, sewers, aqueducts	Silos, bunkers (<20 m)	Military bases (>20 m)
Functions	Civil: commercial operations, transportation, and storage enemy: C2, operations, storage, production, protection				C2, operations, storage, production, protection	
Supporting amenities/ infrastructure	Power cords, small generators, lights, ventilation shafts, small pumps		Electrical power, transportation corridors, life support systems, environmental controls, communications lines *Internal redundancies may exist allowing the facility to operate for extended periods independent from external support			
Common threats	Personnel, improvised explosive devices, traps, direct fire methods				Military offensive and defensive measures	
Common hazards	Environmental (poor air quality, dangerous gases, wildlife), materiel (munitions, fuels), structural integrity					
Legend: C2 – command and control, m – meters						



AGENDA

GRUPPO NAZIONALE GUASTATORI

- **SCENARI OPERATIVI DI RIFERIMENTO**
- **PRECEDENTI STORICI**
- **COMPETENZE**
- **ADDESTRAMENTO**



COMI

ASTTAORI

PER USO ESCLUSIVO D'UFFICIO

STATO MAGGIORE DELL'ESERCITO

Reparto Pianificazione Generale e Finanziaria
Ufficio Pianificazione



Edizione 2003

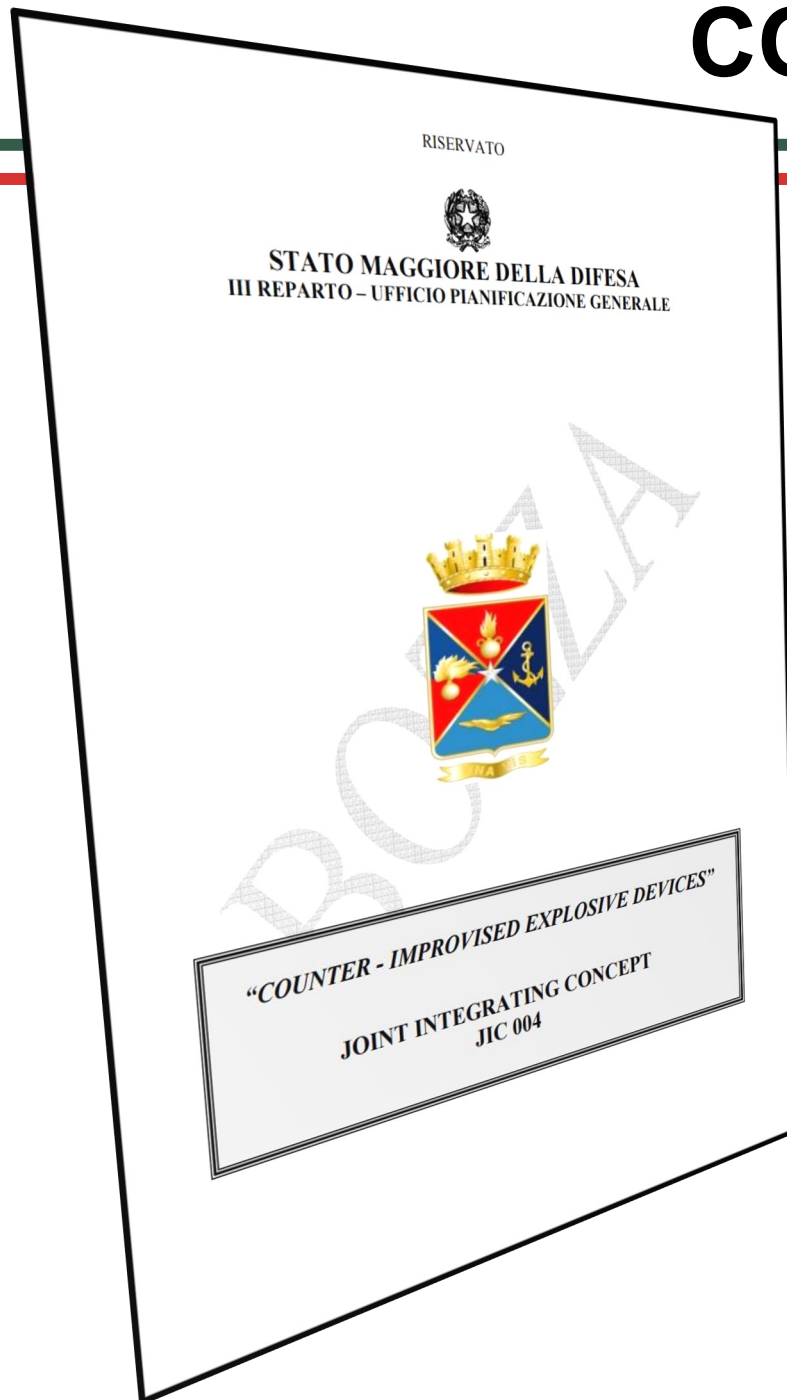
PER USO ESCLUSIVO D'UFFICIO

FUNZIONE:	COMBAT SUPPORT
MODULO OPERATIVO:	ACRT (ADVANCED COMBAT ENGINEER & RECON TEAM)
MISSIONE:	FORNIRE IL SUPPORTO ALLE "ENGINEER OPERATIONS" MEDIANTE LA RACCOLTA DI DATI ED INFORMAZIONI DI INTERESSE DEL GENIO PER LA PIANIFICAZIONE DELLE OPERAZIONI TERRESTRI
REQUISITI DI BASE:	QUALIFICA MINEX PER GUASTATORI
CAPACITA':	- Fornire il supporto tecnico necessario per la determinazione delle aree di interesse del genio, per la raccolta di dati ed informazioni essenziali per lo sviluppo della manovra in ambiente permissivo/non-permissivo; - garantire la condotta di ricognizioni tecnico-tattiche per la raccolta di informazioni determinanti per: • la localizzazione ed identificazione di campi/aree minate; • classificazione delle opere d'arte di interesse tattico quali ponti, guadi, attraversamenti, corsi d'acqua, gallerie e di tutte le opere d'arte stradale di minore interesse; • la classificazione di strade ed itinerari in relazione agli STANAG di riferimento; • identificazione e classificazione delle opere fortificate; - garantire la condotta di "Mine/contermine Operations" in ambienti particolari; - classificazione ed identificazione di tutto il munizionamento NATO e non ed all'identificazione di UXOs; - Supporto alle forze di manovra nelle operazioni offensive nel combattimento nei centri abitati con particolare riferimento a: • ricognizioni per la determinazione dell'entità e delle tipologie di ostacolo esistenti; • ricognizioni per la determinazione di vie di accesso/fuga e delle aree sensibili sia a livello superficiale sia sotterraneo; • condotta di operazioni c/ostacolo; • accesso ad edifici/locali in aree urbane mediante l'ausilio di attrezzature meccaniche ed esplosive (anche con ausilio di microcariche); - Supporto alle forze di manovra nell'acquisizione di informazioni relative agli assetti "combat engineer" avversari; - garantire il supporto tecnico per l'effettuazione della "terrain analysis" e del "terrain intelligence"; - assicurare la gestione informatizzata degli elementi fondamentali dell'engineer intelligence (Mobility Database, etc..) inerenti le principali aree tematiche sopra descritte; - condotta di attività ricognitive in ambiente permissivo/non-permissivo mediante l'ausilio di unità cinofile del genio.



COMPETENZE

GRUPPO NAZIONALE GUASTTAORI



Military Search:

- ACRT
- EOD/IEDD
- Integrazione con unità cinofile



English ▾



[Who We Are](#)

[IDF Activity](#)

[Terror and Threats](#)

[IDF Sites](#)



< [Special Forces](#)

Yahalom Unit



Share With



Caps Lock ON

The special unit of the Combat Engineering Corps is the Yahalom unit, the spearhead of the corps. As such, the unit





US ARMY

GRUPPO NAZIONALE GUASTTAORI

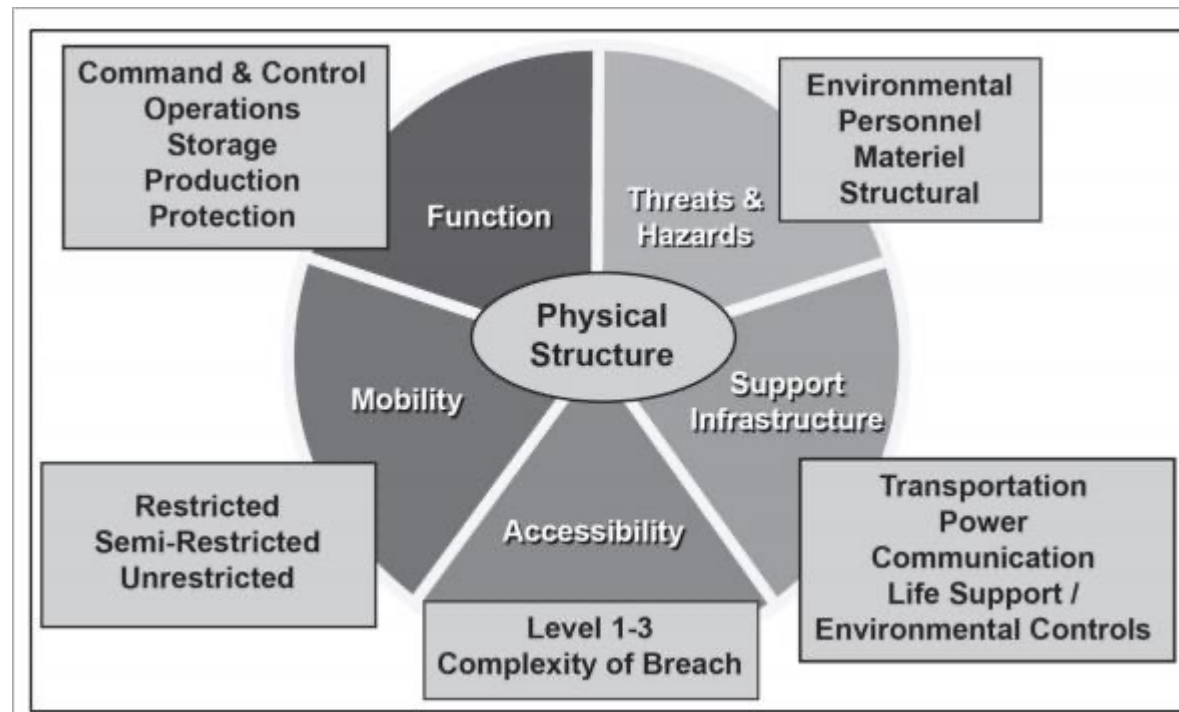
ATP 3-21.51

Subterranean Operations

NOVEMBER 2019

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.
This publication supersedes ATP 3-21.51, dated 21 February 2018.

Headquarters, Department of the Army





SPECIALIST CAPABILITIES

GRUPPO NAZIONALE GUASTATORI

- **Military working dog teams** (detection of explosives and threat personnel).
- **EOD teams** (detect, locate, access, identify, diagnose, render safe, recover, exploit, and dispose of WMD and explosive hazards; has robotic capabilities).
- **Combat engineers** (breaching, clearing earthen material).
- CBRN units (detection, classification, and transportation of WMD or hazardous material, decontamination of personnel and equipment).
- **Information collection** and cyberspace assets (site analysis and exploitation).
- MP (**forensics, site exploitation**, securing and processing of detainees).
- Electronic warfare assets (jamming of enemy communications).
- Additional transportation assets.
- Coordination with joint, special operations forces (SOF), interagency, or multinational elements.



POSSIBILI ATTREZZATURE NECESARIE

GRUPPO NAZIONALE GUASTATORI

- **Robotics.**
- **Air quality and CBRN sensors.**
- **Ballistic shields.**
- **Infrared and white lights.**
- **Breaching equipment.**
- **Additional communications equipment.**
- **Self-contained breathing apparatus.**



AGENDA

GRUPPO NAZIONALE GUASTATORI

- **SCENARI OPERATIVI DI RIFERIMENTO**
- **PRECEDENTI STORICI**
- **COMPETENZE**
- **ADDESTRAMENTO**

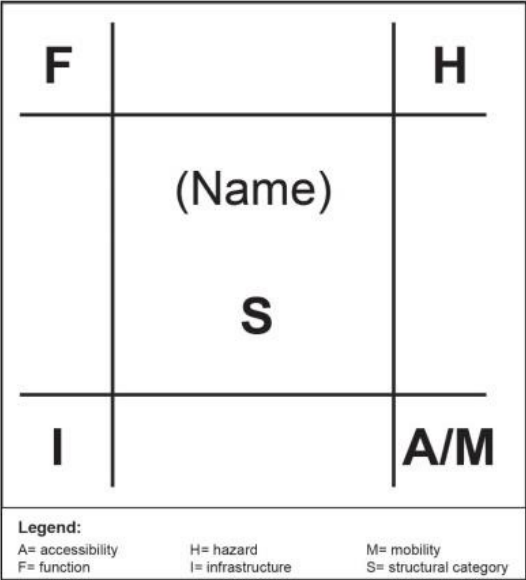


Figure 3-10. Graphic depiction of an underground facility

3-85. Table 3-1 defines the data fields associated with the graphic symbol in figure 3-10. Each data field has associated codes to provide additional information as shown in tables 3-2 and 3-3.

Table 3-1. Graphic data fields for underground facilities

Field	Field type	Description
S	Structure classification	Code that designates structural classification
F	Function	Code that designates primary operational function
H	Hazard	Code that identifies the most dangerous hazard
I	Infrastructure	Letters that identify known support infrastructure
A	Accessibility	Code that identifies required breaching assets
M	Mobility	Letters that designate portal or passageway size and effects on movement

3-86. Table 3-2 depicts the codes associated with structural category (data field “S”). See chapter 1 for additional information on structural classification of subterranean spaces.

Table 3-2. Structural category codes

Category	Code	Description
Cave or tunnel	CV	Cave or natural cavity
	TUNR	Tunnel, rudimentary
	TUNS	Tunnel, sophisticated
Urban or civil works	SUBS	Substructure or basement
	CWKS	Civil works, sewers, subways, aqueducts
Underground facility	UGS	Shallow underground bunkers
	DUG	Deep, underground, hardened





PFN: 052-21B10-K01
Date: 041210



TRAINING SUPPORT PACKAGE COMBAT ENGINEER

Execute Manual Breaching

PREPARED BY
U.S. Army Engineer School



Victoria L. Palmer
Foreign Disclosure Office (Approval)

13 Dec 04
Date

Deanna P. Papp
Safety (Approval)

17 Dec 04
Date

James P. Allen
Environmental (Approval)

27 Dec 04
Date

Reynold S.
POI Manager (Reviewer)

28 Dec 04
Date

James T. Kullback
Course Manager (Reviewer)

28 Dec 04
Date

[Signature]
Directorate of Training (Approval)

7 JAN 05
Date

GRUPPO NAZIONALE GUASTTAORI





LA GUERRA DEI TUNNEL