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NATO STANDARD

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INCAPACITATION AND SUPPRESSION

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NORTH ATLANTIC TREATY ORGANIZATION

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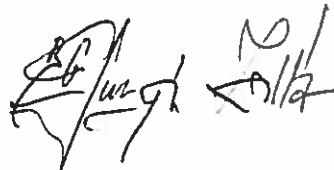
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26 July 2018

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CHAPTER 1 INTRODUCTION

1.1. Details of agreement

The details of the agreement are given below and can be divided into three parts:

- a. definition of the terms incapacitation and suppression;
- b. principles of suppression;
- c. supporting annexes.

1.2. DEFINITION OF THE TERM INCAPACITATION

A combatant is incapacitated when they are unable to carry out their main task, or their ability to conduct the task is reduced due to being physically or physiologically prevented. Two time intervals are thought to be essential to incapacitation. The first interval, delay, is the time between a hit and incapacitation. The second is the duration of incapacitation. Annex B presents examples for these two time intervals using theoretical data.

1.3. DEFINITION OF THE TERM SUPPRESSION

Suppression is a short-lived and reversible behavioral response to an incoming threat or that which has recently occurred. It reduces a combatant's ability to carry out their assigned task without having had a direct physical effect through wounding, equipment damage or obscuration.

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CHAPTER 2 Suppression

2.1. PRINCIPLES OF SUPPRESSION

1. Suppression is driven by a combination of psychological (e.g. cognition, emotion, behavior) and physiological processes contributing to a perception that continuing with the assigned task would lead to harm. The intensity and duration of suppression is partially determined by the proximity, rate, type and weight of fire; while less quantifiable human factors (combat experience, training, leadership, group cohesion) influence the impact of suppressive fire intensity and duration on an individual or group.
2. Suppression achieved by lethal or non-lethal means can result in:
 - a. Reduction of the target's ability to return effective fire, thereby allowing opposing forces the ability to maneuver; and
 - b. Reduction of the target's ability to maneuver and/or conduct surveillance and target acquisition.

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ANNEX A Dismounted Soldier Tasks
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A.1. Dismounted soldier task to action taxonomy.

			Task Category (Sensory/Cognitive/Physical)			
Role	Task	Actions	Sensory	Cognitive	Psycho-motor	Physical Effort/Stress
Commander	Co-ordinate Section Fire and Manoeuvre	Conducts assessment of Situation	Visual/Audio	Understand & Recall	Manipulate	Support
		Informs Squad on movement and security	Visual/Audio	Understand	Communicate	Support
		Orders Squad to Deliver Effect onto Target.	Visual/Audio	Understand	Communicate	Support
		Order Squad to move tactically towards the objective	Visual/Audio	Understand	Communicate	Support
		Control squad until task is complete	Visual/Audio	Understand	Communicate	Support
Rifleman	Defeat Enemy Personnel	Acquire Target through weapon sight	Visual/Audio/Haptic	Understand	Manipulate	Support
		Inform others	N/A	Understand & Recall	Communicate	Support
		Adopt firing position	Visual/Audio/Haptic	N/A	Manipulate	Move & Support
		Deliver effect	Visual/Audio/Haptic	Understand	Manipulate	Move & Support
		Decide to replenish ammunition	N/A	Understand & Recall	Communicate	Support

Table A1 maps tasks, actions and task categories for two different dismounted roles: a commander and a rifleman. This table constitutes a simple taxonomy of key combatant actions which could be impacted by incapacitation or suppression, that could be used to provide additional context to determination of weapon systems effect.

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ANNEX B	Example of Incapacitation Data Pertinent to Weapon System Performance Measurement
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B.1. Hypothetical incapacitation timing data

Distance from Target (m)	Delay (Time between hit and Incapacitation)	Minimum Duration of Incapacitation	Probability of Incapacitation (PI)
0-100	<1s	5-10 min	0.9
100	4 s (desirable)	3 hrs	0.9
>600	8 s (essential)		0.75

Table B1 uses hypothetical data to illustrate possible delay, duration timings and target probabilities of incapacitation that a Nation may want to determine through experimentation or simulation in order to assist in understanding the ability of weapon systems to incapacitate. Values are hypothetical.

Methods to analyse human vulnerability tend to be Nation-specific, vary in complexity and examine different aspects of injury, mortality, projectile type and scenario. Commonly used incapacitation criteria tend to fall into three categories:

- Those based on the physical properties of the projectile only;
- Those that link the properties of the projectile to an index of effectiveness;
- Those that assess the effect of the interaction of the projectile property with a target.

This AEP does not define method of PI calculation.

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**ANNEX C Example of Suppression Data Pertinent to Weapon System
Performance Measurement**

C.1. Indicative suppression data.

Target Miss Distance (m)	Duration of Suppression (secs)	Probability of Suppression (PS)
1	Mean: 42 Median: 120	0.9
6		0.5

Table C1 contains data from both the US Army Combat Developments Experimentation Command (CDEC) Suppression Experiment (SUPEX)¹ and a UK MOD post operational interview study² to illustrate possible probabilities and durations of suppression based on the 'miss distance'³ of a 7.62x51 mm round from a target. The probability and miss distances are derived from the SUPEX trials whilst the timings are the mean and median values of suppression duration (range-agnostic) from the UK study. Values are only indicative.

¹ US Army Combat Developments Experimentation Command (April 1976) USACDEC Suppression Experimentation Data Analysis Report, US DoD

² Cawkill (1997) The Suppressive Effects of Infantry Direct Fire: A Survey of 71 British Army Soldiers and Royal Marines. Defence Research Agency (DERA/CHS/HS3/CR97068/1.0), UK MoD

³ Miss Distance refers to the distance in meters a projectile 'misses' a target, measured from projectile to the center of a target.

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