

APPENDIX C

MISSION-KILL OPERATIONAL DATA**MISSION-KILL CONCEPT**

Historically, mission-kill operations have been employed throughout man's war-fighting history. Contaminated or poisoned projectiles to induce angry wounds and the creation of paralyzing fear to reduce or eliminate the will to fight have been used by warring forces.

Examples of mission-kill weapons used to weaken materiel include setting of fires against stone fortress walls. The fires caused the walls to crumble and allowed heavily armored knights on horseback to attack armored knights on foot. In WWII, examples of mission-kill weapons involve Soviet use of air defense searchlights to blind German tank crews at night and the scattering of tetrapods by Allied partisans and commandos to attack German truck tires; and, during Vietnam conflict, the use of punjstake booby traps by the Vietcong.

Although mission kill has long been an integral part of military force, its military utility is sometimes not recognized. Many prefer to think primarily in terms of "hard-kill" weapons. So, the development and use of some mission-kill weapons is often passed over in favor of the hard kill. The arguments for this center on the idea that hard-kill weapons are intended to destroy the target and lead to faster, more reliable defeat of opposing hostile forces. Certainly, this is true for many types of targets, but not for all. What is often overlooked is that mission-kill capabilities offer unique effects or may be more cost effective in some cases. Increasing complexities of modern battlefield and potential to develop mission-kill capabilities are getting increased attention as more and more people recognize both their historic military applications and their applications in modern combat. Perceptions are given way to the reality that mission-kill weapons can increasingly contribute to the defeat of the hostile force and can do so with speed, economy, and reliability.

MISSION-KILL EFFECTS

A wide variety of mission-kill weapon effects have conceptual potential for the successful mission kill of military targets. Examples of some of these are described in the following paragraphs. The listing here does not imply that the concept has or does not have military utility. These effects are listed for illustrative purposes only.

Blast

Blast mission-kill is the use of rapidly increasing air pressure to cause mechanical or structural damage to materiel or to wound personnel.

Antimateriel effects. Mission-kill blast effects to materiel include but are not limited to: crushing roofs of vehicles or structures; overturning vans and light vehicles; deforming skins of missiles, aircraft, or light vehicles; deforming antennae; blowing open combat vehicle hatches; and damaging optics. The following blast effects are not considered to be mission kill: blowing down trees or rubble, sympathetic detonation of explosives, flattening tents or temporary structures, initiation of flying projectiles, or debris such as broken glass.

Antipersonnel effects. Mission-kill blast effects to personnel include damage to the lungs, eyes, and ears.

Sources of blast effects. Blast effects may occur in training or combat and may result from proximity to weapons fire, aircraft overflight, or proximity to detonating explosives. Blast effects to personnel and materiel in combat may come from a wider range of sources including nuclear weapons; aircraft overflight;

weapons firing (especially high-velocity weapons); detonations of conventional mines and explosives; detonation of enhanced explosives or fuel-air explosives; concussion grenades; or aerial bombs, missiles, and rockets.

Biological

Biological mission kill includes the use of bacteria, viruses, or toxins to disable enemy soldiers by rapid onset of disease or debilitation of functions. It does not include killing enemy soldiers and does not include any effects to domestic or military animals or to vegetation.

Legality. The deliberate use of biological agents is prohibited by the United States and international laws. Discussion is included here because of the real possibility of potential opponents to disregard international law and because of the potential for unintentional use or spread of biological agents.

Antimateriel effects. There are currently no practicable antimateriel mission-kill effects from biological agents. Future effects may include damage and loss of equipment materials including canvas, seals, gaskets, and lubricants.

Antipersonnel effects. Antipersonnel mission-kill biological effects include a wide range of incapacitation of body functions, rendering soldiers unable or unwilling to perform their intended military function or mission.

Sources of biological effects. Biological mission-kill effects such as disease may occur from accidental exposure to appropriate bacteria, virus, or toxins primarily as a result of hygienic practices. Biological mission-kill effects may also result from the deliberate introduction of bacteria, viruses, or toxins to the battle area through the use of sprays, conventional munitions, special operations forces, or other techniques.

Directed Energy

Directed energy mission-kill is the use of electromagnetic energy, such as visible light, infrared, millimeter waves, microwaves, or x-rays, to disable susceptible military targets by damaging or destroying a critical component of the military target.

Antimateriel effects. Mission-kill effects to materiel include inducement of mechanical damage, overheating of components, inducement of electrical currents, or inducement of other effects to cause a variety of types of damage or system malfunction.

Antipersonnel effects. Directed energy mission-kill antipersonnel effects cover a very wide range.

Sources of directed energy mission-kill effects. Directed energy mission-kill effects can occur in training or combat. Effects in training or combat can occur when susceptible personnel or equipment are accidentally exposed by getting too close to nonweapons-directed energy sources such as radio transmitters, radars, electronic warfare jamming devices, television transmitters, television or communications microwave relays, laser range finders, laser designators, laser jammers, and similar devices. Some of these mission-kill effects are also sometimes technically categorized as electromagnetic interference or electromagnetic effects. Directed energy warfare is the use of and defense against directed energy weapons and devices in combat. Mission kill is one of a very large continuum of DEW effects on targets. The large variety of DEW target effects are used to provide a very wide range of combat functions including the following: detection of targets, illumination of targets to supplement night-viewing systems, identification and classification of targets, disruption of target function or mission, damage of targets, and destruction of targets. Examples of directed energy mission-kill devices include hand-held, crew-served, or vehicular-mounted laser devices and vehicular-mounted or artillery-delivered radio frequency devices.

Chemical

Chemical mission kill is one component of chemical warfare in which personnel or materiel targets are attacked with asphyxiating, poisonous, corrosive, or debilitating gases, flames, or other media or methods. Chemical warfare effects may vary in intensity in a continuum from irritating or disrupting effects to mission kill to hard kill.

Antimateriel effects. Chemical mission-kill effects to materiel cover a very wide range. Theoretically, or in the laboratory, or on a small scale, the effects can be used to produce mission kill by any of the following applications: fuel defeat; combat vehicle, aircraft or weapon system rubber, sealants, or seals defeat; combat vehicle or aircraft engine air intake defeat or engine oxygen starvation; metal fatigue; communication, radar, or weapon electronic short circuit; surveillance, target acquisition, or fire control optics and electro-optics and canopies defeat.

Antipersonnel effects. Chemical mission-kill effects to personnel vary widely but generally cause damage or impairment of body organs.

Chemical mission-kill sources. Chemical mission kill can occur accidentally or deliberately. It may occur accidentally through such means as engine exhaust fume asphyxiation of personnel; skin burns from engine exhaust, pyrotechnics, fires, flame weapons, or other heat sources; or exposure to tear gas or other crowd control agents. Chemical mission-kill sources vary widely. The most widely known include debilitating gases, including riot control agents. While international law and other factors may limit use, debilitating chemical agents are available internationally and should be anticipated in any future conflict.

Ballistic

For the purpose of this concept, ballistic mission kill includes the use of any bullet, projectile, pellet, or shrapnel which imparts physical damage, rather than destruction, to personnel or materiel.

Antimateriel effects. Ballistic mission-kill effects to materiel may occur accidentally as a by-product of attack by hard-kill weapons or through the use of ballistic mission-kill weapons. Such effects are generally referred to as damage that renders the materiel item unusable for its intended purpose. Mission-kill damage may lead to self-destruction of the damaged materiel. Examples of accidental mission kill include artillery shrapnel damage to tank gun fire control optics and bullet damage to a helicopter which causes the engine to fail in flight. An example of deliberate ballistic mission kill is the use of a mine to blow the tread off a tank.

Antipersonnel effects. Ballistic mission-kill effects to personnel (wounding) are well known and can occur accidentally as a secondary effect of hard-kill weapons. Some ballistic weapons such as certain types of antipersonnel mines, or booby traps, may be employed deliberately to debilitate personnel.

Sonic

Sonic mission-kill weapons use audible or inaudible sound waves to induce debilitating effects in personnel targets. Sound waves may be used to debilitate personnel by interfering with hearing, balance, or other organ functions. Such debilitation may occur accidentally or deliberately in combat through personnel proximity to aircraft overflight noise, weapons firing, munitions explosions, or similar sources. Sonic mission kill may be deliberately induced through the use of special sonic weapons.

Psychological

Psychological mission kill includes a variety of techniques which may induce debilitating fear in personnel, thereby, rendering them incapable or unwilling to perform the intended military action. Mission-kill effects may occur accidentally or deliberately. One of the principal psychological effects is the surprise effect of mission kill itself. Mission-kill effects, whether accidental or deliberate, can be expected to surprise opponents who are not trained to expect and react to these effects. Surprise may cause soldiers or units to hesitate, to abort or alter missions, to change plans, to reallocate resources, or to take or not take other military actions. Such effects or surprise must be taken into account in both offensive and defensive mission-kill operations.

Nuclear

Nuclear weapons produce a wide variety of mission-kill effects including thermal, blast, and electromagnetic. These effects have been discussed previously, or are well known, and are listed here only for completeness.

Other

Other mission-kill weapons may exist which do not fall conveniently into the above categories. One such example is the electric stun gun which is used to incapacitate persons at close range. Another example is the flame weapon.

Excluded Effects

The line between temporary debilitating effects and mission kill is a thin one, and the result in combat may often be the same. For the purposes of this concept, however, the following temporary effects on electronic, optical, or electrooptical equipment are excluded:

- Accidental electromagnetic interference.
- Deliberate electronic jamming.
- Accidental or deliberate flash binding.
- Deliberate electronic or optical deception.

JOINT MISSION-KILL DOCTRINE

There is no standard definition for mission kill between the services. There is no US Air Force definition. The US Navy uses soft kill as a component of anti-air warfare and means systems which provide defense by attempting to disrupt enemy conduct of warfare by use of decoys, chaff, and electronic countermeasures and by exploiting enemy radiations such as electronic support measures. This definition includes jamming, flash blinding, and deception.

OPERATIONAL CONCEPT

Mission-kill requirements must be highly planned and executed. Subordinate units and personnel are briefed on all operational measures to be taken to eliminate any possible risks and confusion of intent.

Uses of Mission-Kill Weapons

Mission-kill weapons and protection measures are used to protect friendly forces from attack during offensive and defensive operations. Mission-kill weapons disrupt hostile combat operations throughout the depth of the battlefield in any intensity of conflict. This requirement is translated into the following missions:

- Degrade the enemy's ability to see.
- Degrade the enemy's ability to communicate.
- Degrade the enemy's mobility.
- Degrade the enemy soldier's ability to fight.
- Degrade the enemy weapons systems.
- Enhance friendly weapons system effectiveness.
- Deceive the enemy force.

Planning

Mission-kill weapons planning is part of the overall tactical plan. Consider the following when developing your tactical plan:

- Mission kill of specific hostile targets may or may not be the ultimate objective of the military operation, depending on military, political, and other operant factors. Normally mission kill will be used to enhance hard kill by employing these capabilities in supporting roles.
- Mission-kill weapons require coordinated use.
- Protection measures against hostile mission-kill capabilities normally impose operational penalties.
- Mission-kill weapons may have a large footprint.
- Use or protection of mission-kill systems may allow economy of force.
- Time intervals required to get or protect from effects may constrain courses of action.
- Mission kill is often a natural consequence of hard kill or other military action.
- Mission-kill capabilities may affect large numbers of targets, including those outside the immediate battle area.
- Energy required and complexity may exceed military value.
- Target characteristics vary widely according to a number of parameters including vulnerability, function, and frequency of encounter.
- The mission-kill capability of an item of equipment, friendly or threat, may or may not be covert and may or may not be commonly known. For example, a laser range finder may be deliberately designed with extra power to enable its use as a blinding weapon while still calling it a "range finder."

Training

Training the conditions upon friendly forces to use and defend against the use of mission-kill weapons in combat must meet the principal, training tenets are as follows:

- The soldier must be well informed about the use of and defense against mission-kill capabilities.
- The soldier must be provided with protection materiel designed to be soldier-selectable (usable when needed; not used when not needed) and must not be "transparent" to user (hidden within the equipment design and not controllable by the user).
- Training tactics, techniques, and procedures must be integrated at all levels, in all training media, and in all training exercises and tests.

Execution

The potential impact of some mission-kill weapons on tactical operations means units must fully plan, coordinate, and rehearse for possible contingencies.

Control

Several special factors require that mission-kill weapons be employed under positive control. These factors include:

- Mission-kill weapons may interfere with or be otherwise incompatible with personnel and equipment.
- Some mission-kill capabilities have very long ranges and can be used in very short periods of time.
- Some mission-kill effects may persist for very short periods of time.

Mission-Kill Weapons at the Operational Level of War

Operational objectives within a theater of war include the marshalling and sustainment of forces and materiel to conduct successful campaigns. Mission-kill operations at this level will be conducted primarily to--

- Deceive the enemy as to friendly force location, status, movement, intent, mission, or other factor.
- Degrade enemy air reconnaissance systems.
- Reduce the effectiveness of enemy air weapons systems.
- Degrade enemy ground forces surveillance, reconnaissance, target acquisition, and fire-control systems.
- Degrade enemy communications equipment.
- Degrade enemy electronic warfare equipment.
- Degrade or defeat mines and dud ordnance.
- Degrade rear area facilities and equipment.
- Degrade use of combat vehicles and aircraft.
- Degrade willingness or ability of soldiers to perform their missions.

Operational Advantages of Mission Kill

Mission-kill capabilities offer a number of operational advantages including, but not limited to, the following:

- Can create military surprise.
- Can create feelings of uncertainty in opponent.
- Can create feelings of lack of confidence in opponent.
- Can be covert.
- Can be used in day and night operations.
- Forces penalties on opponent.
- May defeat targets beyond the ranges of conventional weapons.

Operational Disadvantages of Mission Kill

Operational disadvantages of mission kill include, but are not limited to, the following:

- May require stringent command and control.
- May require unique self-protection measures.
- May create unique equipment or force signatures.
- May interfere with some conventional systems.
- Will require increased training and doctrine.
- May not be useful in all weather.

MISSION-KILL SPECIAL CONSIDERATIONS

Mission-kill usage or operations must be sensitive to its intent. These performances depend on purpose, practice, or procedure. Mission-kill applications should be taken under advisement of the following concerns:

- Mission kill is not a panacea, and reliability will vary with the varying conditions of combat.
- Some proposed mission-kill weapons may be scientifically interesting or possible without having any military utility.
- Some operationally conceived mission-kill applications may not be scientifically possible, practicable, or militarily useful.
- Some mission-kill weapons may be effective against specific targets within a class of targets; others may be effective against a whole class of targets; and, few, if any, will be effective against all classes of targets.
- Survivability of the mission-kill weapon or the weapon effect is a major consideration.
- Some mission-kill effects may be most synergistic when used with conventional weapons, tactics, techniques, or procedures.
- Some mission-kill weapons and effects will be incompatible with or interfere with surrounding weapons, equipment, or personnel.
- Some mission-kill weapons and effects will pose an adverse impact on the environment.
- Some mission-kill weapons and effects may pose unacceptable safety hazards to civilians and/or troops.
- Some mission-kill weapons effects, training, or doctrine may have been studied or may be under development by other US Army agencies, other services, other government organizations, industry, or allies.
- Some mission-kill weapons or protection measures may be feasible, or militarily useful, but may not be cost effective.
- Legal or treaty considerations or restrictions may impact the development or use of some mission-kill systems.
- Mission-kill weapons depend on means of delivery to the target and on appropriate response times.