Non-Lethal Directed Energy Weapons and the National Defense Strategy

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Joint Non-Lethal Weapons Directorate

27 Feb 18

http://jnlwp.defense.gov/

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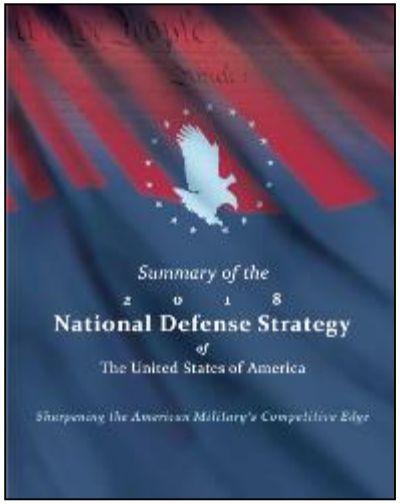
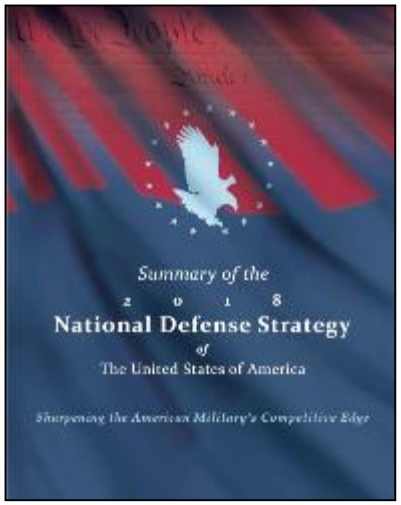
2018 National Defense Strategy



- **Strategic Environment**
- **Defense Objectives**
- **Strategic Approach**

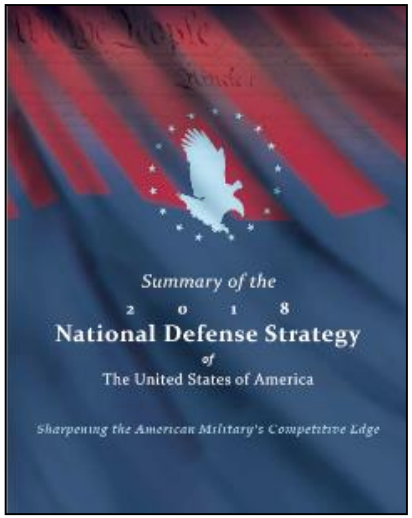
"…great power competition – not terrorism – is now the primary focus of U.S. national security." …SECDEF, Written Statement for the Record, House Armed Services Committee, February 6, 2018

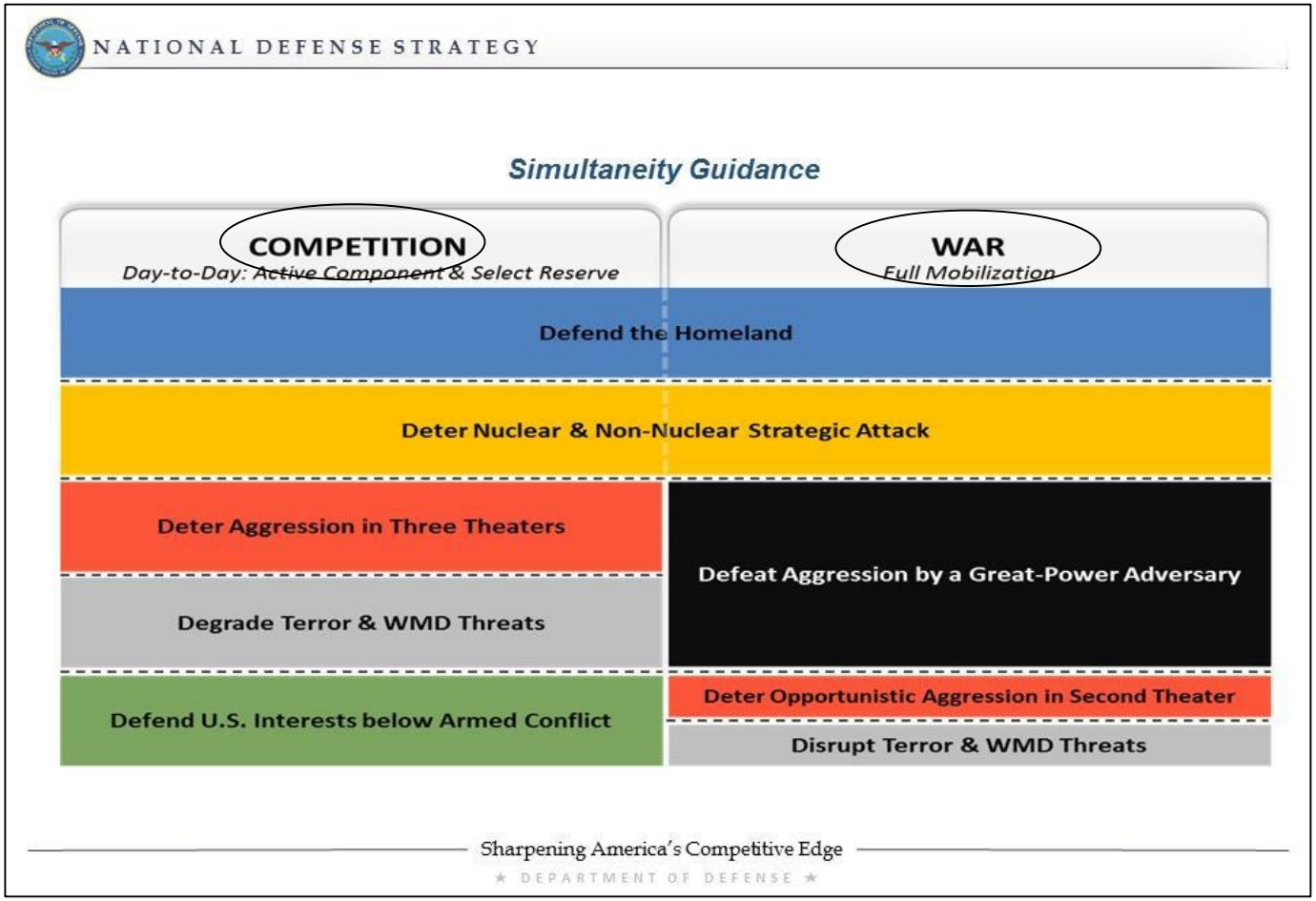
Strategic Environment



- "**China** is a strategic competitor using predatory economics to intimidate its neighbors while militarizing features in the South China Sea"
- "**Russia** has violated the borders of nearby nations …"
- "**North Korea's** outlaw actions and reckless rhetoric continue …"
- "**Iran** continues to sow violence and remains the most significant challenge to Middle East stability…"
- "…threats to stability remain as **terrorist groups** with long reach continue to murder the innocent and threaten peace more broadly"

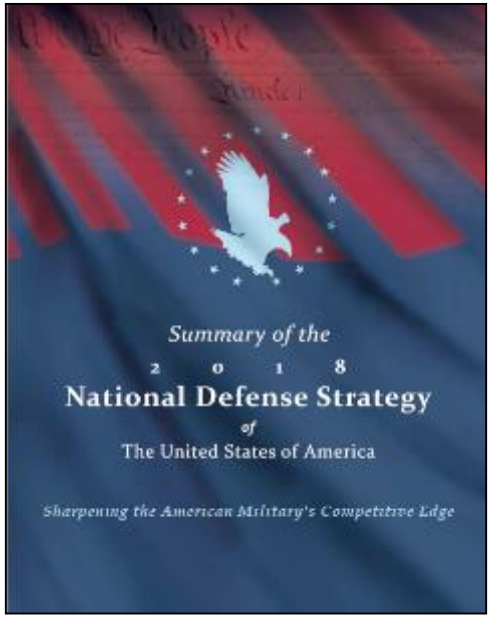
Defense Objectives





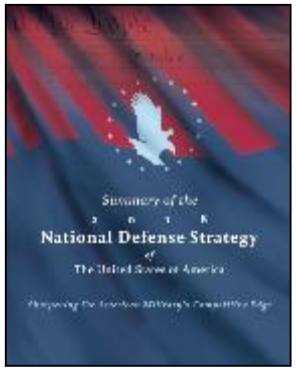
Source: SECDEF, Written Statement for the Record, House Armed Services Committee, February 6, 2018

Strategic Approach



- Build a More Lethal Force
- Strengthen Alliances and Attract New Partners
- Reform the Department for Greater Performance and Affordability

NDS Focus on Lethality



"…prioritize what is most important to field a **lethal**, resilient, and rapidly adapting Joint Force."

"A more **lethal**, resilient and rapidly innovating Joint Force…"

"… build a more **lethal** force …"

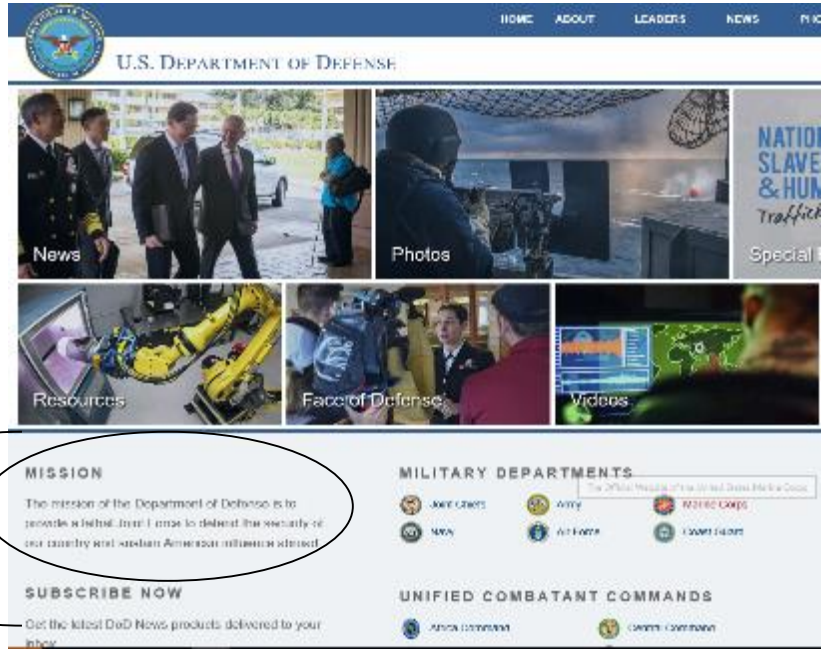
"..we must make difficult choices and prioritize what is most important to field a **lethal**, resilient, and rapidly adapting Joint Force."

"enhance close combat **lethality** in complex terrain"

DoD Home Page

https://www.defense.gov/

"The **mission** of the Department of Defense is to provide a **lethal** Joint Force to defend the security of our country and sustain American influence abroad"

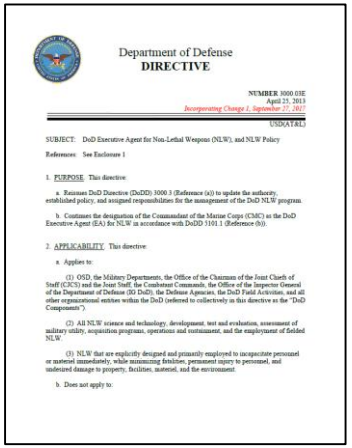


Non-Lethal Weapons?

LUCY….YOU GOT SOME ‘SPLAININ TO DO!”

DoD NLW Program Foundation

- 1993 - 1995: General Zinni's experiences in Somalia and the need for less than lethal force
- 1995: Public Law 104-106, Section 219, FY96 NDAA directing DoD to centralize non-lethal weapons development
- 1996: DoD Issues NLW Policy Directive
  - NLW reinforce deterrence and expand the range of options to commanders
  - NLW have the potential to enhance the commander's ability to, e.g.:
    - *Adapt and tailor escalation of force options to the operational environment*
    - *De-escalate situations to preclude lethal force*
    - *Enhance the effectiveness and efficiency of lethal weapons*



Department of Defense
DIRECTIVE

NUMBER 3000.03E
April 25, 2013
Incorporating Change 1, September 27, 2017
USD(AT&L)

SUBJECT: DoD Executive Agent for Non-Lethal Weapons (NLW), and NLW Policy

References: See Enclosure 1

1. PURPOSE. This directive:

a. Reissues DoD Directive (DoDD) 3000.3 (Reference (a)) to update the authority, established policy, and assigned responsibilities for the management of the DoD NLW program.

b. Continues the designation of the Commandant of the Marine Corps (CMC) as the DoD Executive Agent (EA) for NLW in accordance with DoDD 5101.1 (Reference (b)).

2. APPLICABILITY. This directive:

a. Applies to:

(1) OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense (IG DoD), the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this directive as the "DoD Components").

(2) All NLW science and technology, development, test and evaluation, assessment of military utility, acquisition programs, operations and sustainment, and the employment of fielded NLW.

(3) NLW that are explicitly designed and primarily employed to incapacitate personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel, and undesired damage to property, facilities, materiel, and the environment.

b. Does not apply to:

DoD NLW Program Vision

*A fully integrated non-lethal competency within each Service **to complement lethal effects,** enhance the Joint Force's adaptability and support strategic objectives that include minimizing civilian casualties.*

NDS Excerpt

NLW Relevance

- "We must use **creative approaches**, make sustained investment, and be disciplined in execution **to field a Joint Force** for our time, one that can compete, deter, and win **in this increasingly complex security environment"**

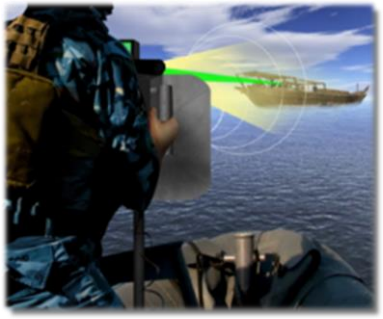
"By using nonlethal weapons to separate hostile forces from civilians**, the effectiveness of lethal fires may be enhanced** while avoiding undue civilian casualties or collateral damage**"** ***(JP 3-06, Joint Urban Operations)***

- "More than any other nation, America can expand the competitive space, seizing the initiative to challenge our competitors **where we possess advantages** and they lack strength

"Nonlethal weapons give commanders a wider array of options in developing and implementing **measured responses to a given situation"** ***(JP 3-07.3, Peace Operations)***

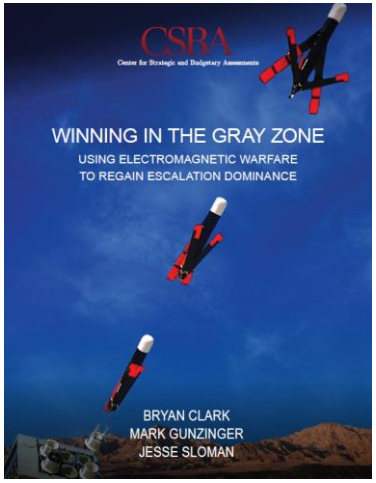
- "Be strategically predictable, **but operationally unpredictable** – our dynamic force deployment, military posture, and operations must introduce unpredictability to adversary decision-makers"

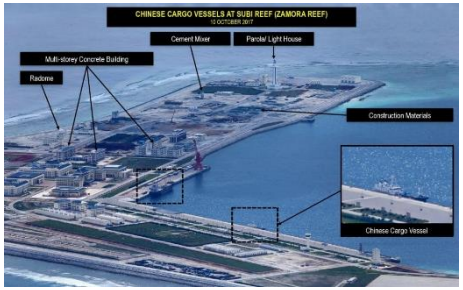
"Nonlethal capabilities provide ground forces an escalation of force **capability to determine intent"** ***(JP 3-31, Command and Control of Joint Land Operations)***



Competition: South China Sea

"The Chinese government uses a combination of civilian fishing vessels, coast guard ships, and maritime law enforcement troops to protect its island-building efforts….**Because they are unarmed, U.S. naval forces cannot respond with military force without significantly escalating the confrontation.**" *Winning in the Gray Zone*, Center for Strategic & Budgetary Assessments, 2017

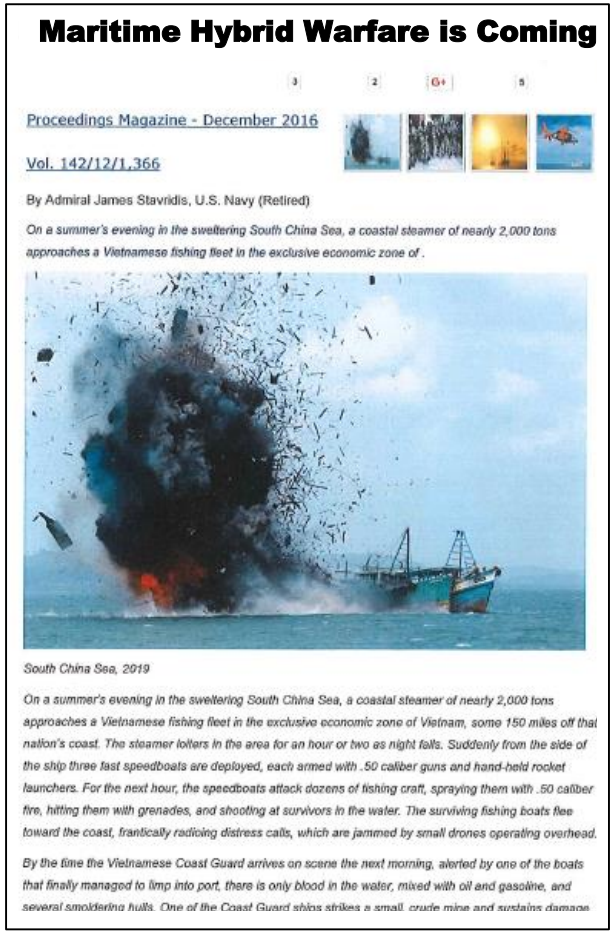




"Stunning new pictures show the scope of Chinese building in the South China Sea,"
Washington Post, Feb 7, 2018

Future non-lethal directed energy weapons may help defend U.S. interests below armed conflict in maritime environments

Competition: South China Sea (cont)



Maritime Hybrid Warfare is Coming

Proceedings Magazine - December 2016

Vol. 142/12/1,366

By Admiral James Stavridis, U.S. Navy (Retired)

On a summer's evening in the sweltering South China Sea, a coastal steamer of nearly 2,000 tons approaches a Vietnamese fishing fleet in the exclusive economic zone of .

South China Sea, 2019

On a summer's evening in the sweltering South China Sea, a coastal steamer of nearly 2,000 tons approaches a Vietnamese fishing fleet in the exclusive economic zone of Vietnam, some 150 miles off that nation's coast. The steamer loiters in the area for an hour or two as night falls. Suddenly from the side of the ship three fast speedboats are deployed, each armed with .50 caliber guns and hand-held rocket launchers. For the next hour, the speedboats attack dozens of fishing craft, spraying them with .50 caliber fire, hitting them with grenades, and shooting at survivors in the water. The surviving fishing boats flee toward the coast, frantically radioing distress calls, which are jammed by small drones operating overhead.

By the time the Vietnamese Coast Guard arrives on scene the next morning, alerted by one of the boats that finally managed to limp into port, there is only blood in the water, mixed with oil and gasoline, and several smoldering hulls. One of the Coast Guard ships strikes a small, crude mine and sustains damage

- ***Adm. James G. Stavridis (ret.),*** **Proceedings Magazine, December 2016**

"South China Sea, 2019 …"

"The vessels being used for maritime hybrid warfare will be manned by a collection of what might be termed ***"little blue sailors"…"***

"On board maritime hybrid warfare platforms, a variety of weapons will be available, from light arms to heavier caliber… ***The sailors also will have access to high-intensity laser dazzlers, sound emitters, tear gas dispensers, water cannons, and other nonlethal weapons."***

Non-Lethal Directed Energy Weapon Maritime Demonstrations and Assessments

High Power Radio Frequency

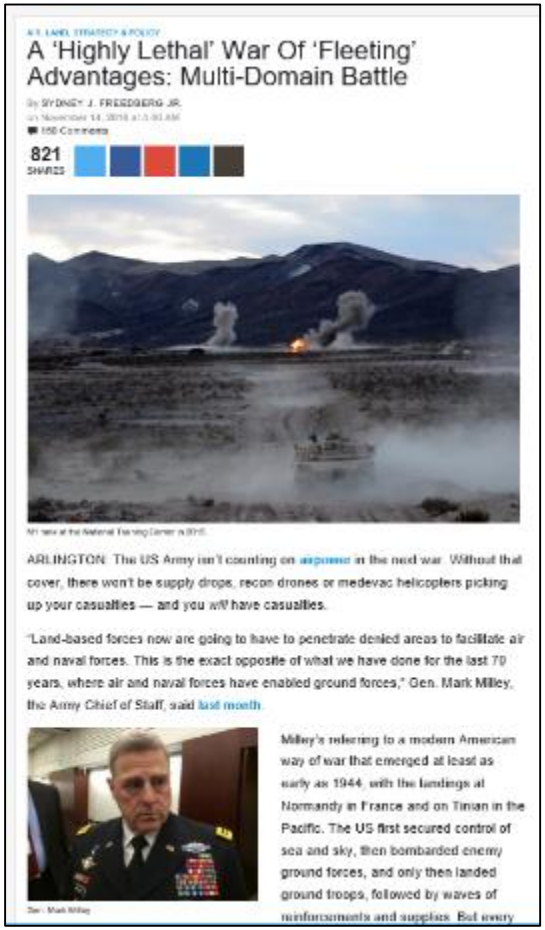
Millimeter Wave (Active Denial)

Dazzling Lasers

War: Enable Maneuver

"Urban environments will remain an **extremely challenging** location for the Joint Force to operate." ***Joint Operating Environment 2035***

"On the future battlefield, **if you stay in one place longer than two or three hours, you will be dead** … Being surrounded will become the norm." Gen Mark Milley, Army Chief of Staff



A 'Highly Lethal' War Of 'Fleeting' Advantages: Multi-Domain Battle

by SYDNEY J. FREEDBERG JR.

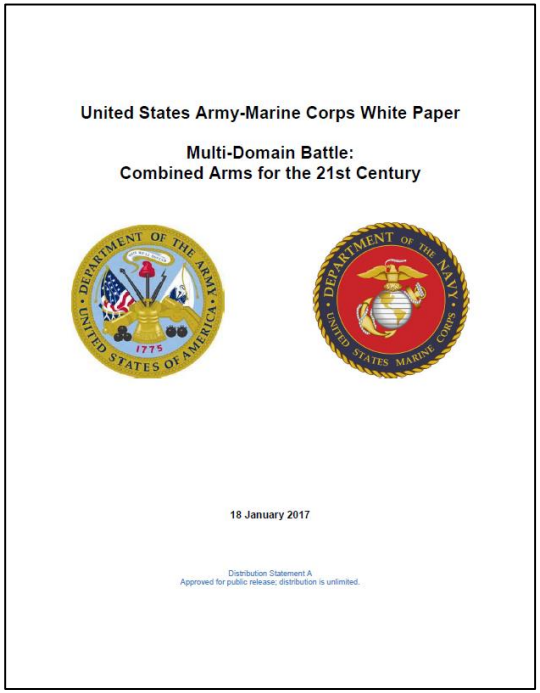
821 SHARES

ARLINGTON: The US Army isn't counting on airpower in the next war. Without that cover, there won't be supply drops, recon drones or medevac helicopters picking up your casualties — and you will have casualties.

"Land-based forces now are going to have to penetrate denied areas to facilitate air and naval forces. This is the exact opposite of what we have done for the last 70 years, where air and naval forces have enabled ground forces," Gen. Mark Milley, the Army Chief of Staff, said last month.

Milley's referring to a modern American way of war that emerged at least as early as 1944, with the landings at Normandy in France and on Tinian in the Pacific. The US first secured control of sea and sky, then bombarded enemy ground forces, and only then landed ground troops, followed by waves of reinforcements and supplies. But every

War: Enable Maneuver (cont.)


United States Army-Marine Corps White Paper

Multi-Domain Battle:
Combined Arms for the 21st Century

18 January 2017

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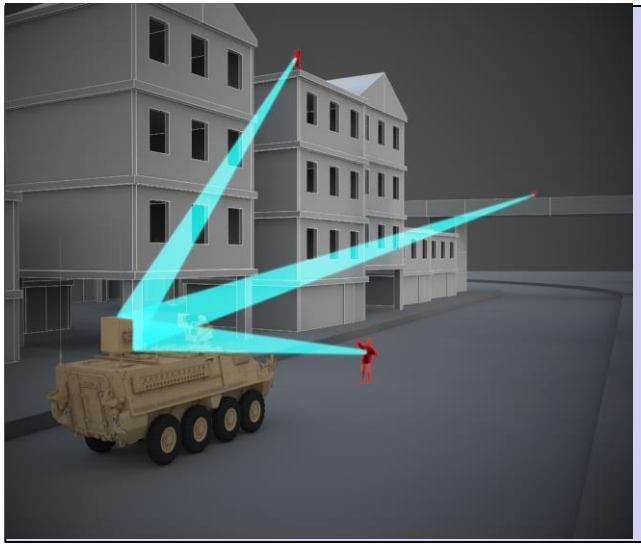
"Fire and maneuver forces coordinate, plan, and execute fire support tasks to defend the force from attack and surveillance, and **create exploitable lethal and nonlethal effects in support of a scheme of maneuver"**

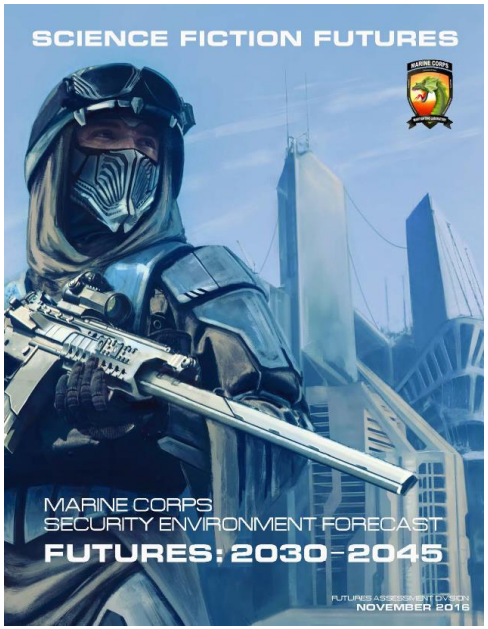
"Conceptually, maneuver formations will capitalize on the increased capability of multi-domain fires systems. **Army formations and MAGTFs** will have an expanded spectrum of organic and **attached lethal and nonlethal fires, some with extended range systems** as the mission dictates."



Future non-lethal directed energy weapons may enable maneuver in urban environments allowing separation of hostile forces from civilians, enhancing the effectiveness of lethal fires while avoiding undue civilian casualties or collateral damage

Marine Corps Science Fiction Futures

http://www.mcwl.marines.mil/Divisions/Futures-Assessment/



- **Collection of short stories written by active duty personnel**
- **First page of first story, "***Water is a Fightin' Word***"**, by Lt Molly Waters, USCG:

  "Gunny Hitada took off down the ramp, ***heat gun trained ahead****. The team arrayed behind her, covering every sector.* ***Set to stun, the millimeter-wave weapons instantly heated the water in an adversary's skin, producing a momentary burning sensation with no lasting damage….****They cleared the littered beach in less than a minute, and crossed into the city proper"*

Science fiction to science fact…

Solid-State Active Denial System

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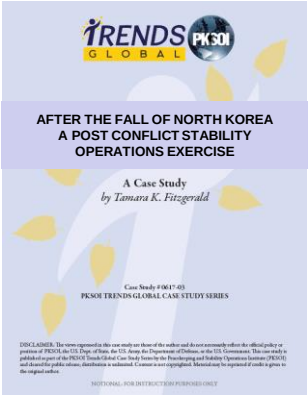
War: Post Conflict



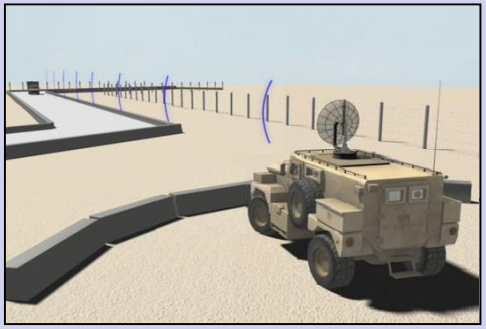
"After the Fall": The U.S. and South Korea have prevailed in a kinetic battle with North Korea… **Now What?**

http://pksoi.armywarcollege.edu

- How does the UN Transitional Authority provide for the immediate security needs of the population….**that is at best deeply suspicious of foreigners and at worst deeply terrified of them**?

- As some desperate North Koreans turn to crime (such as attacking World Food Program convoys), **how does the UN Transitional Authority respond?**

- How does the UN Transitional Authority handle strategic communications with a frightened population and **reassure that its immediate needs will be met and that it should not fear the foreign government personnel and forces?**



Non-lethal directed energy weapons, integrated with lethal systems, can provide security forces a full escalation of force capability, providing unambiguous warning to both vehicle operators and personnel, the ability to stop vehicles, and the capability to deter or isolate personnel

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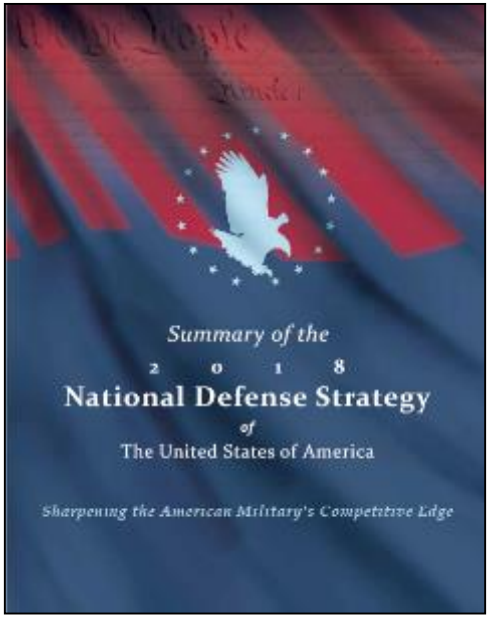
Strategic Approach



- Build a More Lethal Force
- Strengthen Alliances and Attract New Partners
- Reform the Department for Greater Performance and Affordability

Strengthen Alliances and Attract New Partners

- **Non-Lethal Weapons to include NL DEW** are routinely included in **NATO** analysis, assessments, demonstrations and exercises
- **NATO SAS-094: Non-Lethal Capabilities in NATO and National Concepts**
- **NATO SAS-133: Obstacles to Overcome NLW Employment**
- **NATO Defense Against Terrorism – Non-Lethal Capabilities**
- **NATO Joint Non-Lethal Weapons Capability Group**
- **NATO Millimeter Wave (Active Denial Technology) Team of Experts**

SAS-094: NATO Scientific Achievement Award

SAS:094 Video
https://youtu.be/yHdBqEv0ncA

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Non-Lethal Directed Energy Weapons: Final Thoughts

- The 2018 National Defense Strategy changes things
- Non-lethal directed energy weapons have significant innovative potential to address challenges associated with NDS Defense Objectives in the current and future operating environment
- <u>However</u>, in addition to NL DEW S&T, concerted effort must be given to "<u>The Thinking Piece</u>" to include increased emphasis on:
  - Concept development to include plausible scenarios and vignettes
  - Validation of concepts via modeling & simulation, wargames and experimentation
  - Development of the "business case"

JNLWD welcomes your ideas and points of contact for advancing "<u>The Thinking Piece</u>"

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Questions?

“There is no military force in the world that has proven more sensitive to civilian casualties. We go out of our way to always do everything humanly possible to reduce the loss of life or injury among innocent people.”

- Secretary of Defense James Mattis, March 2017