U.S. Department of Defense Directive on Autonomous Weapons Systems

In November 2012, the U.S. Department of Defense issued a directive regulating development and use of future autonomous weapons systems—those weapons that are potentially able to pick and engage targets without involvement by a human operator. Human rights groups and other observers have expressed concern about the potential hazards posed by future systems that can select and engage targets without human direction, and Human Rights Watch has called for them to be "preemptively ban[ned]."[1] (According to a Department of Defense official quoted by *Defense News*, "there is no development program going on right now that would create an autonomous weapons system."[2])

The new directive's stated purpose is to "minimize the probability and consequences of failures" in covered future weapons systems "that could lead to unintended engagements."[3] It requires that any such future systems undergo rigorous development, evaluation, and approval processes and be designed to ensure "appropriate levels of human judgment over the use of force."[4] An excerpt follows:

1.   *PURPOSE*. This Directive:

    a.   Establishes [Department of Defense] policy and assigns responsibilities for the development and use of autonomous and semi-autonomous functions in weapon systems, including manned and unmanned platforms.

    b.   Establishes guidelines designed to minimize the probability and consequences of failures in autonomous and semi-autonomous weapon systems that could lead to unintended engagements.

2.   *APPLICABILITY*. This Directive:

    a.   Applies to:

        (1)   [The Office of the Secretary of Defense], the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff (CJCS), the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (hereinafter referred to collectively as the "DoD Components").

        (2)   The design, development, acquisition, testing, fielding, and employment of autonomous and semi-autonomous weapon systems, including guided munitions that can independently select and discriminate targets.

        (3)   The application of lethal or non-lethal, kinetic or non-kinetic, force by autonomous or semi-autonomous weapon systems.

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[1] Human Rights Watch, Ban 'Killer Robots' Before It's Too Late (Nov. 19, 2012), *available at* http://www.hrw.org/news/2012/11/19/ban-killer-robots-it-s-too-late.

[2] Aaron Mehta, *U.S. DoD's Autonomous Weapons Directive Keeps Man in the Loop*, DEFENSE NEWS, Nov. 27, 2012, *at* http://www.defensenews.com/article/20121127/DEFREG02/311270005/U-S-DoD-8217-s-Autonomous-Weapons-Directive-Keeps-Man-Loop.

[3] U.S. Dep't of Defense Directive No. 3000.09, Autonomy in Weapon Systems, at 1 (Nov. 21, 2012), *at* http://www.dtic.mil/whs/directives/corres/pdf/300009p.pdf.

[4] *Id.* at 2.

b.   Does not apply to autonomous or semi-autonomous cyberspace systems for cyberspace operations; unarmed, unmanned platforms; unguided munitions; munitions manually guided by the operator (e.g., laser- or wire-guided munitions); mines; or unexploded explosive ordnance.

3.   *DEFINITIONS*. See Glossary.

4.   *POLICY*. It is DoD policy that:

a.   Autonomous and semi-autonomous weapon systems shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.

(1)   Systems will go through rigorous hardware and software verification and validation (V&V) and realistic system developmental and operational test and evaluation (T&E) in accordance with the guidelines in Enclosure 2. Training, doctrine, and tactics, techniques, and procedures (TTPs) will be established. These measures will ensure that autonomous and semi-autonomous weapon systems:

(a)   Function as anticipated in realistic operational environments against adaptive adversaries.

(b)   Complete engagements in a timeframe consistent with commander and operator intentions and, if unable to do so, terminate engagements or seek additional human operator input before continuing the engagement.

(c)   Are sufficiently robust to minimize failures that could lead to unintended engagements or to loss of control of the system to unauthorized parties.

(2)   Consistent with the potential consequences of an unintended engagement or loss of control of the system to unauthorized parties, physical hardware and software will be designed with appropriate:

(a)   Safeties, anti-tamper mechanisms, and information assurance in accordance with DoD Directive 8500.01E (Reference (a)).

(b)   Human-machine interfaces and controls.

(3)   In order for operators to make informed and appropriate decisions in engaging targets, the interface between people and machines for autonomous and semi-autonomous weapon systems shall:

(a)   Be readily understandable to trained operators.

(b)   Provide traceable feedback on system status.

(c)   Provide clear procedures for trained operators to activate and deactivate system functions.

b.   Persons who authorize the use of, direct the use of, or operate autonomous and semi-autonomous weapon systems must do so with appropriate care and in accordance with the law of war, applicable treaties, weapon system safety rules, and applicable rules of engagement (ROE).

c.   Autonomous and semi-autonomous weapon systems intended to be used in a manner that falls within the policies in subparagraphs 4.c.(1) through 4.c.(3) will be considered for approval in accordance with the approval procedures in DoD Directive

5000.01 (Reference (b)), DoD Instruction 5000.02 (Reference (c)), and other applicable policies and issuances.

(1) Semi-autonomous weapon systems . . . may be used to apply lethal or non-lethal, kinetic or non-kinetic force. Semi-autonomous weapon systems that are onboard or integrated with unmanned platforms must be designed such that, in the event of degraded or lost communications, the system does not autonomously select and engage individual targets or specific target groups that have not been previously selected by an authorized human operator.

(2) Human-supervised autonomous weapon systems may be used to select and engage targets, with the exception of selecting humans as targets, for local defense to intercept attempted time-critical or saturation attacks for:

(a) Static defense of manned installations.

(b) Onboard defense of manned platforms.

(3) Autonomous weapon systems may be used to apply non-lethal, non-kinetic force, such as some forms of electronic attack, against materiel targets in accordance with DoD Directive 3000.3 (Reference (d)).

d. Autonomous or semi-autonomous weapon systems intended to be used in a manner that falls outside the policies in subparagraphs 4.c.(1) through 4.c.(3) must be approved by the Under Secretary of Defense for Policy (USD(P)); the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)); and the [chairman of the Joint Chiefs of Staff] before formal development and again before fielding in accordance with the guidelines in Enclosure 3, References (b) and (c), and other applicable policies and issuances.

e. International sales or transfers of autonomous and semi-autonomous weapon systems will be approved in accordance with existing technology security and foreign disclosure requirements and processes, in accordance with Directive-Type Memorandum 11-053 (Reference (e)). . . .

PART II. DEFINITIONS

These terms and their definitions are for the purpose of this Directive.

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autonomous weapon system. A weapon system that, once activated, can select and engage targets without further intervention by a human operator. This includes human-supervised autonomous weapon systems that are designed to allow human operators to override operation of the weapon system, but can select and engage targets without further human input after activation.

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human-supervised autonomous weapon system. An autonomous weapon system that is designed to provide human operators with the ability to intervene and terminate engagements, including in the event of a weapon system failure, before unacceptable levels of damage occur.

. . . .

semi-autonomous weapon system. A weapon system that, once activated, is intended to only engage individual targets or specific target groups that have been selected by a human operator. . . .

. . . .

unintended engagement. The use of force resulting in damage to persons or objects that human operators did not intend to be the targets of U.S. military operations, including unacceptable levels of collateral damage beyond those consistent with the law of war, ROE, and commander's intent.[5]

SETTLEMENT OF DISPUTES

Guatemala and United States CAFTA-DR Labor Standards Arbitration Suspended

In August 2011 the United States initiated arbitration against Guatemala pursuant to Chapter 20 of the Dominican Republic–Central America–United States Free Trade Agreement due to Guatemala's alleged failure to comply with labor protections contained in the agreement.[1] In the following months, no further announcements were made regarding selection of arbitrators or other steps to launch the proceedings. The Office of the U.S. Trade Representative (USTR) and Guatemalan authorities instead conducted negotiations that led in April 2013 to an agreed enforcement plan addressing U.S. concerns. According to a USTR press release, "The labor case is suspended while the Enforcement Plan is being implemented."[2]

According to undated material on the website of the United States Trade Representative (USTR):

> The United States and Guatemala agreed on a robust enforcement plan to resolve concerns raised in a labor case brought by the United States under the Dominican Republic–Central America–United States Free Trade Agreement (CAFTA-DR). The 18-point plan includes concrete actions with specific time frames that Guatemala will implement within six months to improve labor law enforcement. This is the first labor case that the United States has brought to dispute settlement under a trade agreement. Under the Enforcement Plan, which was the result of extensive engagement and resolve by both governments, Guatemala has committed to strengthen labor inspections, expedite and streamline the process of sanctioning employers and ordering remediation of labor violations, increase labor law compliance by exporting companies, improve the monitoring and enforcement of labor court orders, publish labor law enforcement information, and establish mechanisms to ensure that workers are paid what they are owed when factories close.[3]

An April 2013 USTR fact sheet contains a substantial list of measures that Guatemala has agreed to take to improve enforcement of its labor laws. Excerpts follow:

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[5] U.S. Dep't of Defense Directive No. 3000.09, *supra* note 3.

[1] *See* John R. Crook, Contemporary Practice of the United States, 105 AJIL 775, 812 (2011).

[2] Office of the U.S. Trade Representative Press Release, United States and Guatemala Sign Groundbreaking Agreement on Labor Rights Enforcement Plan (Apr. 30, 2013), *at* http://www.ustr.gov/about-us/press-office/blog/2013/april/US-Guatemala-labor-enforcement.

[3] *At* http://www.ustr.gov/trade-topics/labor/bilateral-and-regional-trade-agreements/guatemala-submission-under-cafta-dr.