



# CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

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J-3  
DISTRIBUTION: A, B, C, J, S

CJCSI 3225.01  
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## ILLUMINATION OF OBJECTS IN SPACE BY LASERS

### References:

- a. DOD Directive 3100.10, "Space Policy," July 9, 1999
- b. DOD Instruction 3100.11, "Illumination of Objects in Space by Lasers," March 31, 2000"
- c. DepSecDef Memorandum, December 6, 2007, "Routine Laser Illumination for Operational Space Situational Awareness (SSA) (U)"

1. Purpose. To establish CJCS policy, assign responsibility and define procedures regarding illumination of objects in space by lasers. The instruction serves to protect satellites from a reasonable expectation of harm or disruption in accordance with references a, b, and c.

2. Cancellation. Not Applicable.

3. Applicability. This instruction applies to the Joint Staff, combatant commands, the Services, and all DOD agencies and activities involved in the development, acquisition, or employment of laser systems. This includes DOD or DOD-sponsored laser research, development, developmental test, operational test, evaluation, exercise, and routine operational activity that is funded by, operated under the auspices of, or conducted by DOD, with the potential to adversely affect a satellite or humans in space.

4. Policy

a. All DOD laser research, development, or operational test, evaluation, exercise, or routine operational activities shall be conducted in a safe and responsible manner that protects space systems, their mission effectiveness, and humans in space, consistent with national security requirements in accordance with reference a.

b. All DOD laser activity shall be coordinated with the USSTRATCOM Laser Clearinghouse for predictive avoidance analysis or deconfliction with U.S., friendly, and other space operations in accordance with reference b due to the potential to affect satellites or humans in space.

c. Requests to conduct any test, series of tests, demonstration, or exercise of laser illuminating a satellite in space shall be submitted to the Secretary of Defense for approval if the laser activity meets the following criteria (also found in paragraph 4.4 of reference b):

- (1) It has the potential to disrupt, deny, degrade, or destroy the target.
- (2) Congressional notification is deemed appropriate.
- (3) It is the first such test, series of tests, demonstration, or exercise of its kind.
- (4) It is a vulnerability test illuminating a live satellite in space.
- (5) Foreign government notification is deemed appropriate.
- (6) It raises a significant issue of compliance with arms control treaty obligations.
- (7) It raises a significant issue of compliance with other international legal obligations.
- (8) It requires coordination with other U.S. government departments and agencies.

d. USSTRATCOM will consider non-DOD, civil, and international requests to review proposed laser illumination at or above the horizon or in space and perform predictive avoidance as necessary. USSTRATCOM will forward requests to Joint Staff Deputy Director for Global Operations (J-39), for information purposes.

e. The use of lasers specifically designed to cause permanent blindness in humans is prohibited.

f. Laser illumination for operational space situational awareness (SSA)

(1) Lasers may be used to illuminate satellites, other resident space objects, space launch vehicles, and missiles in boost phase that are on USSTRATCOM's approved safe list. Laser illumination for SSA includes the detection, tracking, ranging, and imaging of the object(s) of interest.

(2) Laser illumination for operational SSA may be conducted routinely, subject to the restrictions contained in this instruction and other applicable authorities, without requesting approval for each illumination. Operational SSA use of lasers is not required to be included on the 12-month Laser Test Master Schedule.

(3) Laser illumination for operational SSA that meets the criteria of paragraphs 4. c. (1) through (8) above shall require SecDef approval.

(4) SSA data will be made available to combatant commanders and other appropriate senior U.S. government personnel, as required.

(5) Laser illumination for operational SSA must not place the space object at undue risk or otherwise interfere with safe operation of the space object. Such illumination is subject to the following:

(a) Objects must be on the USSTRATCOM-approved safe list. Objects not on the safe list must be approved on a case-by-case basis by CDRUSSTRATCOM, or designated representative, after appropriate coordination has been conducted.

(b) Satellites with known optical payloads, such as electro-optical imaging, tracking, or laser communications, or have systems that may be impacted (e.g. GPS NDS) will not be subject to illumination for SSA purposes except when deemed appropriate by CDRUSSTRATCOM or designated representative.

(6) The “reasonable expectation” standard will be applied by the Laser Clearinghouse when determining whether SSA laser operations have the potential to disrupt, deny, degrade, or destroy an illuminated space object (see glossary).

5. Definitions. See Glossary and reference b.

6. Responsibilities. See Enclosure A.

7. Summary of Changes. Not Applicable.

8. Releasability. This instruction is approved for public release; distribution is unlimited. DOD components (to include the combatant commands), other federal agencies, and the public may obtain copies of this instruction through the Internet from the CJCS Directives Home Page--  
[http://www.dtic.mil/cjcs\\_directives](http://www.dtic.mil/cjcs_directives).

9. Effective Date. This manual is effective upon release.



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Enclosures:

A - Responsibilities  
GL - Glossary

DISTRIBUTION

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## ENCLOSURE A

### RESPONSIBILITIES

1. OSD. All laser requests requiring SecDef approval will be coordinated between USD(P), ASD(NII)/DOD CIO, USD(AT&L), the General Counsel of the Department of Defense, and, as determined necessary, the Assistant Secretary of Defense for Legislative Affairs (ASD(LA)) and the Assistant Secretary of Defense for Public Affairs (ASD(PA)). USD(P) will lead coordination within OSD. Responsibilities are further delineated in reference b and c.

#### 2. Joint Staff

a. The Deputy Director for Global Operations (J-39) shall perform the following functions:

(1) Receive and staff all requests for laser illumination tests, series of tests, demonstrations, exercises, and uses of operational and developmental lasers that require SecDef approval. The interagency staffing will include elements of the Joint Staff, Military Services, combatant commands, defense agencies, and OSD where appropriate.

(2) Forward the interagency-staffed request and Joint Staff recommendation through the Chairman to the Secretary of Defense for approval/disapproval.

(3) Notify the requesting organization of SecDef approval/disapproval.

(4) When notified, forward reports of laser activities inadvertently conducted outside authorized parameters to the Deputy Secretary of Defense, USD(P), ASD(NII)/DOD CIO, USD(AT&L), other elements of the Joint Staff, the National Reconnaissance Office (NRO), and any affected combatant commands, where applicable. The report will summarize the laser activity and assess the effects.

(5) Coordinate the 12-month Laser Test Master Schedule with other elements of the Joint Staff and OSD and submit the schedule to the Deputy Secretary of Defense for information purposes on a quarterly basis.

b. J-5 Strategic Deterrence and Strike Policy (SDSP)/Space Policy will review all laser illumination and testing issues for policy compliance and will coordinate with the appropriate Joint Staff, interagency, and OSD offices (where applicable) on policy issues.

### 3. USSTRATCOM

a. Shall establish processes and procedures to implement all responsibilities assigned to Commander in Chief of U.S. Space Command in reference b, to include operating and maintaining the Laser Clearinghouse through Joint Functional Component Command SPACE (JFCC SPACE). Forward the certified process for predictive avoidance analysis to Joint Staff Deputy Director for Global Operations (J-39) for information purposes. The Laser Clearinghouse shall fulfill all appropriate responsibilities described in reference b as directed by CDRUSSTRATCOM.

b. Shall provide Joint Staff Deputy Director for Global Operations (J-39) a Predictive Avoidance Plan for all operational laser activities that require SecDef approval.

c. Shall publish procedures to notify laser owners and operators of the process and technical content needed to submit a request for predictive avoidance analysis.

d. Shall establish a process to allow satellite owners with satellite components particularly vulnerable to laser activity to request, on a case-by-case basis, more stringent procedures that will protect their satellite from any potential harm that could be caused by illumination. Provide details of the process to Joint Staff Deputy Director for Global Operations (J-39) for information.

e. Shall develop implementation plans in coordination with the appropriate Military Departments and other U.S. government organizations before employing research, development, test, and evaluation assets for operational purposes.

f. Shall determine the disposition of events where an activity desires to illuminate a satellite with known optical payloads for SSA purposes. Case-by-case approval may be based on either coordination with the owner/operator or a waiver describing the risks and mitigation measures. The USD(P) and the Joint Staff Deputy Director for Global Operations (J-39) will be notified when any such waiver is granted, at least 7 days before illumination.

g. Shall ensure the Laser Clearinghouse establishes general safety criteria for operational SSA laser illumination to prevent undue risk or interference with the space object as per reference b and c. The criteria shall be provided to the Chairman and the USD(P) at least 14 days before authorizing laser SSA operations.

h. Shall develop a list of satellites, other resident space objects, missiles, and launch vehicles approved for SSA laser illumination using the safety

criteria. Ensure the list excludes known optical payloads or other excluded objects. The list shall be coordinated with the satellite owners/operators, as required.

i. Shall use the established criteria to approve the use of specific laser systems for SSA operations.

j. Shall ensure the Laser Clearinghouse deconfliction and predictive avoidance procedures are followed during SSA laser operations.

k. Shall establish standardized operational procedures to ensure the safe and reliable employment of operational and research, development, test, and evaluation lasers used for operational SSA and to preclude the inadvertent illumination of an unapproved satellite.

#### 4. DOD Components

a. Shall implement requirements in reference b. Note: Commander in Chief, U.S. Space Command responsibilities listed in reference b are assigned to CDRUSSTRATCOM.

b. Shall submit requests to the Chairman through Joint Staff Deputy Director for Global Operations (J-39) for any test, series of tests, demonstration, or exercise of an operational or developmental laser that requires SecDef approval.

c. Shall coordinate with USSTRATCOM to develop procedures to implement this instruction, to include providing information required for determining laser system performance and space object vulnerability.

#### 5. DOD Laser Owners/Operators

a. Shall conduct laser activities in accordance with procedures in reference b. Note: Commander in Chief, U.S. Space Command responsibilities listed in reference b are assigned to CDRUSSTRATCOM.

b. Shall coordinate with USSTRATCOM J3 to develop procedures to implement this instruction, to include providing information required for determining laser system performance and space object vulnerability.

c. Shall immediately report any deviation from approved parameters to the Joint Space Operations Center at USSTRATCOM's JFCC SPACE (J-39) for determination of the laser illumination's potential to inadvertently and adversely affect satellites or humans in space.

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## GLOSSARY

Operational laser - Laser capabilities that are declared to have operational capability or have been approved for planning or employment.

Developmental laser - Laser capabilities that have not been declared to have operational capability.

Developmental test – Tests that involve capabilities that are not operational or have not been apportioned for planning or employment by the Joint Staff.

Illumination – The emission of energy from a laser directed at a target.

Laser activities – any DOD or DOD sponsored laser research, development, or developmental or operational test, evaluation, or exercise, funded by, operated under the auspices of, or conducted by DOD. For purposes of this issuance, laser activities include those activities that may be conducted to, in, through, or from space, or aimed above the horizon with the potential to inadvertently or adversely affect satellites or humans in space.

Object – Any target or satellite in space which is intentionally or inadvertently illuminated.

Operational Test and Exercise – Tests that involve capabilities that are operational or have been apportioned for planning or employment by the CJCS.

Predictive Avoidance – A process that may be conducted in either a centralized, decentralized, or other approved method certified by USSTRATCOM that involves the analytical and geometrical method used to:

(a) Ensure the laser illuminations do not impact upon the safe and effective operation of a satellite;

(b) Determine if a specific satellite may be inadvertently illuminated; and

(c) Make informed decisions on the safety of laser activities to, in, through, or from space, or aimed above the horizon.

Reasonable expectation standard – The expectation that an illumination will do no harm in cases where it is technically possible, but highly unlikely, for SSA laser operations to disrupt, deny, degrade, or destroy an illuminated

space object, such as situations requiring improbable chains of events or extraordinary circumstances.

Safe and responsible operations - Procedures undertaken to protect satellites from any potential harm that could be caused by illumination.

Satellite – Any human-made Earth orbiting object.

Target – any satellite, star, point in space, aircraft, or missile that is the object of intentional laser illumination.