LASER CLEARINGHOUSE REPORTS HANDBOOK

Change 2
(Revision A4 - November 14, 2008)

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Summary of Changes

Initial approval	Initial release, October 14, 2004; signed by Captain Patrick M. Mills, U.S. Navy, Director of Operations for Cheyenne Mountain Operations Center, U.S. Strategic Command.
Revision A	**Summary of changes.** Revision A1, dated March 15, 2005 was signed by Captain Patrick M. Mills, U.S. Navy, Director of Operations for Cheyenne Mountain Operations Center, U.S. Strategic Command. Contains editorial and administrative updates.
Change 1	**Summary of changes**. Change 1 dated August 26, 2006 was signed by MAJ Patrick Suggs, U.S. Army. The primary change was to delete the electronic message formats covered in the recently published LCH Spiral 3 *Deconfliction System Interface Control Document*. In addition, administrative updates were made to reflect the evolving organizational titles in USSTRATCOM and the Cheyenne Mountain Directorate plus a new unclassified email address for the Space Control Center.
Change 2	**Summary of changes.** Updated the Inadvertent Illumination Notification and Report to add clarification. In addition, administrative updates were made to reflect the organizational title of the Joint Space Operations Center (replacing the Space Control Center).

Distribution

U.S. Strategic Command JFCC SPACE /J95 (1)

U.S. Strategic Command Joint Space Operations Center (1)

Missile Defense Agency/ALX (1)

Laser Owners Interfacing with Laser Clearinghouse (1 each)

1 INTRODUCTION

1.1 Purpose

The Laser Clearinghouse (LCH) Reports Handbook contains voice and hardcopy report and message templates required for information and data exchange between the LCH and laser owner/operators (LO/O). Additional data exchange formats are defined in the LCH Interface Control Document (ICD).[1] Depending on the type of predictive avoidance (P/A) provided, the LCH and/or Joint Space Operations Center (JSpOC) may be involved. This handbook applies to any laser programs receiving P/A support from the LCH or JSpOC.

The LCH and LO/Os must work together to provide safe and responsible laser activities, as required by Department of Defense (DOD) Instruction (DODI) 3100.11.[2] LO/Os with non-waived lasers require Joint Functional Component Command (JFCC) - Space authorization to conduct laser activities per the U.S. Strategic Command Instructions.[3] Authorization is granted upon approval of the laser program P/A and Capability Validation plans. DOD LO/Os must obtain predictive avoidance open firing windows from the LCH or JSpOC prior to conducting laser activities, per the individual laser P/A plans.

Laser systems currently conducting laser activities under previous agreements may continue to do so, with the understanding that the DODI and the P/A process will be mandated in the future to all DOD laser systems.

1.2 Handbook Maintenance

The JFCC - SPACE, Unified Space Vault (J95) is the controlling authority for this handbook. The J95 can approve and implement revisions and updates as required to maintain the LCH mission. At a minimum, the handbook will be reviewed biennially (every two years).

1.3 Points of Contact

Table 1 contains phone numbers and e-mail addresses for the LCH and JSpOC.

Table 1 - Points of Contact

	LCH	JSpOC
Address:	JFCC - SPACE J95/LCH, 747 Nebraska Avenue, Room B209 Vandenberg AFB, CA 93437	JFCC - SPACE JSPOC SSA Ops Cell, Building 8410 Vandenberg AFB, CA 93437
e-mail:	LaserClearinghouse@vandenberg.af.mil	1spcs@vandenberg.af.mil (attn: SBM)

[1] *[LCH Spiral 3] Deconfliction System Interface Control Document*, 7 June 2006; [as supplemented by Errata Sheet #1, dated 28 February 2008].

[2] DOD Instruction 3100.11, *Illumination of Objects in Space by Lasers*, 31 March 2000.

[3] U.S. Strategic Command Strategic Instruction 534-12, "Laser Deconfliction Process," 25 July 2007.

	LCH	JSpOC
SIPRNet:	LCH personnel have individual accounts. Contact the LCH for specific SIPRNet addresses.	1SPCS.jspoc@afspc.af.smil.mil (subject line include ATTN: SBM l
Unclassified Phone:	(805) 605-6565, DSN 275-6565	(805) 605-6546, DSN 275-6546
Secure Phone:	(805) 606-1075, DSN 276-1075	(805) 605-3569, DSN 275-3569
Unclassified Fax:	(805) 606-1610 ; DSN 276-1610	(805) 605-3507
Secure Fax:	Contact the LCH	(805) 605-3509

1.4 Reports

Table 2 lists all the reports detailed in this handbook. Information includes Information Exchange Requirement (IER) number, report name, type, the report source and recipient, and the timeliness requirements or special considerations. Reports may be Classified or Unclassified. Classification will be based on the laser system's Security Classification Guide. SIPRNet is the preferred method of text message reporting of SECRET information. JWICS will be used for higher classifications.

Table 2 - List of Voice/Text Reports

IER #	Name / Reference	Type	From	To	Schedule
1	Laser Test Master Schedule (details in Section 3.3)	Text	LO/O	LCH	Quarterly projection of laser firings; update for next 12 months of laser activities; submit 2 weeks prior to the end of each calendar quarter.
4	Laser Status Report (details in Section 2.2)	Voice	LO/O	LCH or JSpOC	1 hour prior to the start of daily laser activities.
5	Space Event Notification (details in Section 2.5)	Voice	LCH or JSpOC	LO/O	As soon as possible following determination of a space event.
6	Quick Look Report (details in Section 2.3)	Voice	LO/O	LCH or JSpOC	Within 15 minutes after completion of all daily laser activities.
7	Inadvertent Illumination Notification (details in Section 2.4)	Voice	LO/O	LCH or JSpOC	Within 15 minutes of determination of inadvertent laser activity.
8	Inadvertent Illumination Report (details in Section 3.2)	Text	LO/O	LCH	Within 12 hours of Inadvertent Illumination Notification.

Table 3 lists reports detailed in the LCH ICD and required for typical laser operations using Centralized P/A.[4] The P/A Request Message (IER#2) is the LO/O's support request with information about the mission, lasers, targets, activity dates and times, and points of contact. The LCH or JSpOC will respond to the P/A Request Message with the P/A Approval Message (IER#3) listing open or closed laser firing windows. Upon completion of the laser activity the LO/O submits the Laser Activity Summary Report (IER#9) to recap actual firing times and targets.

Table 3 - List of ICD Reports

IER #	Name / Reference	Type	From	To	Schedule
2	P/A Request Message (details in ICD Section 3.3.1)	Text or XML	LO/O	LCH or JSpOC	Between 30 days and 3 days prior to laser activity; see P/A Plan for more detailed schedule constraints.
3	P/A Approval Message (details in ICD Section 3.4.1)	Text or XML	LCH or JSpOC	LO/O	1 day prior to laser activity, or per P/A Plan.
9	Laser Activity Summary Report (details in ICD Section 3.3.3)	Text or XML	LO/O	LCH	Generate within 7 days of the end of a laser activity period and archive for one year. If an Inadvertent Illumination Notification (IER #7) was submitted, provide the Laser Activity Summary Report to the LCH within 24 hours of notification.

2 VOICE REPORTING TEMPLATES

2.1 Reporting Guidelines

Voice reporting is used to confirm or change scheduled activity, provide laser status, indicate start and stop times of laser activity, announce space events that may impact activities, inform of inadvertent laser illuminations, and other such information necessary to effectively conduct laser activities.

The LCH or JSpOC will contact the LO/O with the Space Event Notification (IER#5) if necessary. The LO/O will initiate the Laser Status Report (IER#4), Quick Look Report (IER#6), and Inadvertent Illumination Notification (IER#7) in accordance with the following templates. These reports will be directed to either the LCH or JSpOC depending on which organization is designated in the LO/O's P/A Plan. However, the LCH should only be contacted during normal duty hours unless other arrangements have been made. The JSpOC is a 24/7 center and may be contacted at all other times. Normal duty hours are from 8:00 AM to 5:00 p.m. Pacific Time, Monday through Friday, except holidays. Phone numbers are in Section 1.3 of this handbook. Report purpose, time requirements, and other pertinent details are indicated in each template.

[4] *Standard Centralized Predictive Avoidance and Capability Validation Plan*, Change 1, Revision A5, November 12, 2008, USSTRATCOM JFCC - SPACE.

2.2 Laser Status Report (IER#4)

Summary: This is a voice report from the LO/O to the LCH or JSpOC to verify that a scheduled laser activity is still planned, to verify communications links, and to provide status of the site's laser equipment and planned test. Use the *Quick Look Report* (Section 2.3) at the end of daily laser activities.

Time Frame: One hour prior to the start of daily laser activities.

Note: If call is classified be sure to use a secure communications system.

Template:

#	Item / Information	Fill In
1	**Date / Time of Call** (UTC)	
2	**Classification** Note whether call is Unclassified or Secret.	
3	**Name/Rank of Caller**	
4	**Organization** Note your organization or company.	
5	**Confirm Communications** Note whether call is clear, has some static, etc.	
6	**Laser System**	
7	**Start Time** (UTC) Note time of scheduled laser activity.	
8	**Stop Time** (UTC) Note anticipated stop time.	
9	**Status of System** Note whether system is Green (on track), Yellow (mission at risk) or Red (likely cancel). Note reason, e.g. weather, equipment, etc.	

2.3 Quick Look Report (IER#6)

Summary: This is a voice report from the LO/O to the LCH or JSpOC to confirm the completion of daily laser activities. If an event is cancelled, such as a target scrub, use this report to notify the LCH of the cancellation and provide an estimated time for the next operational window, if available.

Time Frame: Within 15 minutes after completion of all daily laser activities.

Note: If call is classified be sure to use a secure communications system.

Template:

#	Item / Information	Fill In
1	**Date / Time of Call** (UTC)	
2	**Classification** Note whether call is Unclassified or Secret.	
3	**Name/Rank of Caller**	
4	**Organization** Note your organization or company.	
5	**Laser System**	
6	**Stop Time** (UTC) Stop time of last laser activity.	
7	**Assessment of Parameters** Brief Assessment of whether laser activity was within authorized parameters.	
8	**Assessment of Success** Brief assessment of laser activity success. If for the last action of a laser activity period also assess the entire period.	

2.4 Inadvertent Illumination Notification / Laser Firing Outside Authorized P/A Measures (IER#7)

Summary: This is a voice report from the LO/O to the LCH or JSpOC to provide initial notification that a laser has fired outside authorized predictive avoidance parameters (outside of time windows or specified azimuth / elevation corridor). This voice report must be followed up by the hardcopy Inadvertent Illumination Report (Section 3.2) within 12 hours.

Time Frame: Within 15 minutes following the determination of inadvertent laser activity.

Note: If call is classified be sure to use a secure communications system.

Template:

#	Item / Information	Fill In
1	**Date / Time of Call** (UTC)	
2	**Classification** Note whether call is Unclassified or Secret.	
3	**Name/Rank of Caller**	
4	**Organization** Note your organization or company.	
5	**Nature of Incident** Note whether inadvertent firing or firing outside authorized parameters.	
6	**Laser System**	
7	**Laser System Location** (latitude in decimal degrees N or S / longitude in decimal degrees E or W / altitude in kilometers)	Latitude: Longitude: Altitude:
8	**Time of Incident** (UTC)	Start Time: Stop Time:
9	**Output Power** (Watts - average or equivalent power for continuous wave lasers / instantaneous peak power for pulsed lasers)	

#	Item / Information	Fill In
10	**Laser Pointing Information** (azimuth in degrees relative to true North / elevation in degrees above local horizon)	Azimuth:* Elevation:*
11	**Laser Target** Note satellite number, missile, point in space, star, etc.*	
12	**P/A Open Windows** Note applicable open window times (UTC).	
13	**P/A Pointing Limits** Note applicable azimuth and elevation limits.	
14	**Assessment of Incident** Test Director's Assessment of circumstances related to inadvertent illumination.	
* If the LO/O exclusively uses Right Ascension and Declination, submit positional information as R.A and Dec.		

2.5 Space Event Notification (IER#5)

Summary: This is a voice report from the LCH or JSpOC to inform the LO/O of a space event that impacts planned laser activities. If the LCH is providing the P/A information for the specific laser activity in question, they will notify the LO/O of the space event during normal duty hours. The JSpOC will provide the notification in all other situations.

The event may be a maneuver of a satellite or a foreign or domestic launch. Usually this notification will be used if the event occurs within 24 hours of the scheduled activity. However, if the LCH has sufficient time to determine new ephemerides and evaluate the effect of the maneuver on the scheduled activity, and no change to approved scheduled activities is required, it is not necessary for the LCH to notify the LO/O. If there is insufficient time to analyze the impact, the LCH will notify the LO/O of the event as soon as possible and delay the laser activity. The JSpOC will not perform this analyses, and will directly call the LO/O with notification of the delay. The LCH will determine new predictive avoidance windows and provide those times to the LO/O as soon as practical.

Time Frame: As soon as possible following the determination of a space event.

Note: If call is classified be sure to use a secure communications system.

Template:

#	Item / Information	Fill In
1	**Date / Time of Call** (UTC)	
2	**Classification** Unclassified or Secret.	
3	**Name/Rank of Caller**	
4	**Organization** Note whether call is from LCH or JSpOC.	
5	**Nature of space event** Note whether event is a maneuver or launch (if classification of call permits).	
6	**Time of event** (UTC)	
7	**Impact** Note impact on scheduled laser activities.	
8	**Time to New Windows** Note estimated time until new predictive avoidance windows are calculated and provided to LO/O.	
9	**Options** Discuss options or alternative plans, if available.	

3 TEXT REPORTING TEMPLATES

3.1 Reporting Guidelines

Text reporting is used to formally document inadvertent illuminations and long-term laser schedules. The LO/O will initiate the Inadvertent Illumination Report (IER#8) and Laser Test Master Schedule (IER#1) in accordance with the following templates. The LO/O will forward these documents to the LCH by means and portable document formats agreed upon with the LCH. Report purpose, time requirements, and other pertinent details are indicated in each template.

Acceptable transmission means include secure and unclassified e-mail and fax. The preferred means of transmission for classified reports up to collateral SECRET is SIPRNet. The preferred means of transmission for unclassified reports is e-mail. Other means may be used as agreed upon with the LCH. E-mail and fax numbers for the LCH are in Section 1.3 of this handbook.

3.2 Inadvertent Illumination Report / Laser Firing Outside Authorized P/A Measures (IER#8)

Summary: This is a text report that formalizes notification from the LO/O to the LCH that a laser has fired outside authorized predictive avoidance parameters (outside of time windows or specified azimuth / elevation corridor). The LCH will use this information to further its assessment to determine whether a satellite hazard existed as a result of the firing. Attachments with additional detail may be included as appropriate. The document should be signed at the O-6, GS-15, or Director level and transmitted in a way that preserves the written signature. This may include fax or e-mail of the scanned original.

Time Frame: Within 12 hours of Inadvertent Illumination Notification (Section 2.4).

Note: If report is classified be sure to mark appropriately and use secure communications.

Template:

FROM: (Laser Owner/Operator)

TO: JFCC - SPACE / J95 (Laser Clearinghouse)

SUBJECT: Inadvertent Illumination Report

1. This is to notify the Laser Clearinghouse of a laser incident. To assist in further analysis, the following information describes the incident:

a. Laser system name and configuration (for pulsed lasers - pulse width, pulse repetition frequency, pulse energy, divergence half-angle, and wavelength; for continuous wave lasers - power, wavelength, divergence half-angle).

b. Laser location (latitude, longitude, and elevation).

c. Time of laser firings during incident (date, hh:mm:ss (UTC)).

d. Laser target (satellite number, missile, point in space, star, etc.).

e. Laser aim position (azimuth relative to true north and elevation above the local horizon; preferred units: degrees).

f. Assessment of incident, including how far outside authorized parameters firings were.

g. Laser system or test conditions that may have contributed to the laser incident, including actions to mitigate future incidents.

h. Point of contact/phone/fax numbers.

2. If additional information and detailed data (e.g. system data logs, etc.) become available to clarify or provide more detail about the incident, we will forward it as part of the next Laser Activity Summary Report, or within 7 calendar days, whichever is sooner.

3. (Contact information, e.g. phone numbers, other POCs, etc.)

<<Signature>>
Name, Rank / Grade, Office Symbol
Title

3.3 Laser Test Master Schedule (IER#1)

Summary: The LTMS is a text report from the LO/O to the LCH that provides a forecast of laser activities. This input lists projected activities for the next 12 months, including updates and new activities. The LO/O should provide as much detail as possible, with the understanding that schedules are subject to change. Dates that are tentative should be listed but so marked.

Time Frame: At least two weeks before the start of each calendar quarter.

Note: If report is classified be sure to mark appropriately and use a secure communications system.

Template (Example):

Laser Owner	Sponsoring Agency	Description of Laser Activity	20xx Laser Activity Schedule
XXX	System SPO (e.g.)	Testing of airborne sensor laser for ranging information on ballistic targets.	6 firings per month – April through September.
YYY	MDA (e.g.)	Block 10 testing of missile defense capability.	No above-the-horizon firings in next 12 months.
ZZZ	AFRL (e.g.)	Verification and demonstration of the ZZZ High Energy Laser.	Periodic weekly firings in June through December.
XYZ	Keck (e.g.)	Satellite precision ranging, missile defense research, and atmospheric research.	Daily firings throughout 2008 and 2009.