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# LASER CLEARINGHOUSE REPORTS HANDBOOK

**Change 5**  
April 11, 2017

Prepared by:  
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Joint Functional Component Command for Space  
Operations and Exercises Division  
Vandenberg Air Force Base, California

A handwritten signature in black ink, appearing to read "Ernest L. Miller, III".

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Chief, Laser Clearinghouse Branch

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## Summary of Changes

<b>Version</b>	<b>Summary of Changes</b>
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	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	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	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).
Change 3	Revised the title of the Notification of Laser Firing Outside Authorized P/A Parameters and Report of Laser Firing Outside Authorized P/A Parameters. Added in Laser Activity Summary Report information.
Change 4	Revised J95 to USV and replaced JSpOC SSA Ops to Combat Operations Division (COD) Space Battle Duty Technician (SBDT). Updated LCH and COD contact information. Updated ICD to LP 14-1.
Change 5	Revised JSpOC USV to J3 and replaced JSpOC Space Battle Duty Technician with Senior Awareness Duty Technician (SADT). Updated LCH and SADT contact information. Updated Space Deconfliction System Interface Control Document (ICD) to LP 14-2. Also changed "predictive avoidance" terminology to "deconfliction." Renamed "Laser Test Master Schedule" to "Master Test and Operations Schedule." Incorporated "30 day outlook" into "Master Test and Operations Schedule.

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## 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).<sup>1</sup> This handbook applies to any laser programs receiving deconfliction support from the LCH or JSPOC.

The LCH, SADT and LO/Os must work together to provide safe and responsible laser activities, as required by Department of Defense Instruction (DODI) 3100.11.<sup>2</sup> LO/Os with non-waived lasers require Joint Functional Component Command for Space (JFCC SPACE) authorization to conduct laser activities per the U.S. Strategic Command (USSTRATCOM) Instructions.<sup>3</sup> Authorization is granted upon approval of the laser program Deconfliction 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 deconfliction plans.

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

### 1.2 Handbook Maintenance

The JFCC SPACE Laser Clearinghouse is the controlling authority for this handbook. The Laser Clearinghouse Branch Chief 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.*

	<b>LCH</b>	<b>JSPOC SADT</b>
Address	JSpOC/USV/LCH 747 Nebraska Ave, Room B209 Vandenberg AFB, CA 93437	JFCC SPACE Building 8410 Vandenberg AFB, CA 93437
E-mail	<a href="mailto:LaserClearinghouse@us.af.mil">LaserClearinghouse@us.af.mil</a>	<a href="mailto:JSpOCSSAOps@us.af.mil">JSpOCSSAOps@us.af.mil</a> (subject line include Attention: SADT)
SIPRNet	<a href="mailto:usaf.vandenberg.afspc.mbx.js poc-lch@mail.smil.mil">usaf.vandenberg.afspc.mbx.js poc-lch@mail.smil.mil</a>	<a href="mailto:JSpOCSSAOps@afspc.af.smil.mil">JSpOCSSAOps@afspc.af.smil.mil</a> (subject line include Attention: SADT)

<sup>1</sup> Interface Control Document for the USSTRATCOM JFCC SPACE [LP 14-2] Space Deconfliction System, DM-06914 Version 02, December 5, 2014.

<sup>2</sup> DOD Instruction 3100.11, *Management of Laser Illumination of Objects in Space*, October 16, 2016.

<sup>3</sup> U.S. Strategic Command Strategic Instruction 534-12, "Laser Deconfliction Process," July 25, 2007. Note: this Instruction will be revised to reflect the new DODI 3100.11. Further changes to this Handbook may result.

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	<b>LCH</b>	<b>JSpOC SADT</b>
Unclassified Phone	(805) 606-1075, DSN 276-1075 (805) 606-1282, DSN 276-1282	(805) 605-6546, DSN 275-6546
Secure Phone	(805) 606-1075, DSN 276-1075 (805) 606-1282, DSN 276-1282	(805) 606-7546, DSN 276-7546
Unclassified Fax	(805) 606-1610 ; DSN 276-1610	(805) 605-3509
Secure Fax	Contact the LCH	(805) 605-3509

## 1.4 Reports

Table 2 lists the voice and text 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. The Secure Internet Protocol Router Network (SIPRNet) is the preferred method of text message reporting of SECRET information. The Joint Worldwide Intelligence Communications System (JWICS) will be used for higher classifications.

The IERs in this table apply to all laser programs regardless of the deconfliction approach (centralized, decentralized or hybrid).

**Table 2 - List of Voice and Text Reports.**

<b>IER #</b>	<b>Name/Reference</b>	<b>Type</b>	<b>From</b>	<b>To</b>	<b>Schedule</b>
1	Master Test and Operations Schedule (details in Section 3.3)	Spreadsheet	LO/O	LCH	Monthly projection of laser firings; update by 15 <sup>th</sup> of preceding month.
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	Laser firing Outside Authorized Parameters (LOAP) Notification (details in Section 2.4)	Voice	LO/O	LCH or JSpOC	Within 15 minutes of determination of laser firing outside authorized deconfliction parameters.
8	LOAP Report (details in Section 3.2)	Text	LO/O	LCH	Within 12 hours of Notification of Laser firing Outside Authorized Parameters (IER #7).

Table 3 lists formatted messages used in centralized, decentralized and hybrid deconfliction for

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satellite safety<sup>4</sup> The Predictive Avoidance Request Message (PRM - 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 PRM with the Predictive Avoidance Approval Message (PAM - IER #3) listing open laser firing windows and other pertinent details.

**Table 3 - List of ICD Reports.**

IER #	Name/Reference	Type	From	To	Schedule
2	Predictive Avoidance Request Message (PRM) (details in ICD Section 4.2.1.1)	Text or XML	LO/O	LCH or JSPOC	Note: used for centralized and hybrid deconfliction only. Between 30 days and 3 days prior to laser activity; see Deconfliction Plan for more detailed schedule constraints.
3	Predictive Avoidance Approval Message (details in ICD Section 4.2.2.2)	Text or XML	LCH or JSPOC	LO/O	Note: used for centralized and hybrid deconfliction only. 1 day prior to laser activity, or per Deconfliction Plan.
9	Laser Activity Summary Report (details in ICD Section 4.2.1.3)	Text	LO/O	LCH	Archive the data necessary to complete the report for one year and generate upon request from LCH. If a LOAP Notification (IER #7) was submitted, provide the LASR to the LCH within 24 hours of notification.

Guidance for (PRM) Naming Convention:

PRM\_LaserOwner\_A\_B\_##Mon####\_For\_JDAY###\_TargetType.txt

To clarify, this naming convention is case sensitive and all fields are required, including a total of 7 underscores. No spaces are allowed, use only the 7 underscores.

Fields A & B should be unique to your program, laser, mission, etc. Any characters in between the underscores for A & B will be returned to the laser owner/operator in the PAM file (as shown below). The intent was to provide space for Laser Name and unique ID in these spaces but there is no specific requirement.

Example: PRM\_LCH\_Vandenberg\_AFB\_01Feb2017\_For\_JDAY032\_FFOV.txt

All characters after A & B must match exactly. "##Mon####" = date submitted and "For\_JDAY###" = date activity.

<sup>4</sup> *Standard Centralized Predictive Avoidance and Capability Validation Plan, Change 2, November 1, 2014, U.S. Strategic Command Joint Functional Component Command for Space and Standard Decentralized Deconfliction Plan.*

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## 2 VOICE REPORTING TEMPLATES

### 2.1 Reporting Guidelines

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

The LCH or JSpOC SADT 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 LOAP Notification (IER #7) in accordance with the following templates.

These reports will be directed to either the LCH or JSpOC SADT depending on which organization is designated in the LO/O's Deconfliction Plan. However, the LCH should only be contacted during normal duty hours unless other arrangements have been made. The JSpOC SADT is a 24/7 position and may be contacted at all other times. Normal duty hours for the LCH are from 0730 to 1630 Pacific Time, Monday through Friday, except holidays. Phone numbers are in Section 1.3 of this handbook. The purpose, time requirements, and other pertinent details are indicated in each template.

NOTE: for fully automated laser deconfliction and fire control systems, these human "voice" messages may be replaced by system-generated e-mails. Templates will be provided by the Laser Clearinghouse. The protocols for generating, sending and receiving these reports will be defined in the laser system's appendix to the *Standard Centralized Deconfliction Plan* or *Standard Decentralized Deconfliction Plan*.

### 2.2 Laser Status Report (IER #4)

Summary: This is a voice report from the LO/O to the LCH or COD SADT 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	<b>Classification</b> Note whether call is Unclassified or Secret.	
2	<b>Laser System Name</b>	
3	<b>Name/Rank of Caller</b>	
4	<b>Organization</b> Note your organization or company.	
5	<b>Confirm Communications</b> Note whether call is clear, has some static, etc.	

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	Exchange phone numbers for mission use.	
6	<b>Start Time (UTC)</b> Note time of scheduled laser activity.	
7	<b>Stop Time (UTC)</b> Note anticipated stop time.	
8	<b>Status of Laser System</b> Note whether system is Green (on track), Yellow (mission at risk) or Red (likely cancel). Note reason, e.g. weather, equipment, etc.	
9	<b>Status of LCH</b> Note status of underway or expected Space Event.	
10	Record <b>Date/Time of Call (UTC)</b>	

## Sample script:

- a) "Hello Sir or Ma'am. This is an \_\_\_\_\_ Laser Status Report for the  
\_\_\_\_\_ laser program. My name is \_\_\_\_\_ and I work for  
\_\_\_\_\_."
- b) "How do you read me?" "What phone number should I use for this mission?"
- c) "Our anticipated UTC start time is \_\_\_\_\_ with a UTC stop time of  
\_\_\_\_\_."
- d) "Our laser system status is \_\_\_\_\_."
- e) "Is a Space Event underway or expected?"



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## 2.3 Quick Look Report (IER #6)

Summary: This is a voice report from the LO/O to the LCH or COD SADT 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	<b>Classification</b> Note whether call is Unclassified or Secret.	
2	<b>Laser System Name</b>	
3	<b>Name/Rank of Caller</b>	
4	<b>Organization</b> Note your organization or company.	
5	<b>Stop Time (UTC)</b> Stop time of last laser activity.	
6	<b>Assessment of Parameters</b> Brief Assessment of whether laser activity was within authorized parameters.	
7	<b>Assessment of Success</b> Brief assessment of laser activity success. If for the last action of a laser activity period also assess the entire period.	
8	<b>Record Date/Time of Call (UTC)</b>	

Sample script:

- a) "Hello Sir or Ma'am. This is an \_\_\_\_\_ Quick Look Report for the \_\_\_\_\_ laser program. My name is \_\_\_\_\_ and I work for \_\_\_\_\_."
- b) " The Stop Time of our laser activity occurred at a UTC time of \_\_\_\_\_."
- c) "Our laser activity parameters assessment is that [we fired within authorized parameters]."
- d) " Our laser activity success assessment is \_\_\_\_\_."

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## 2.4 Notification of Laser firing Outside Authorized Parameters (IER #7)

Summary: This is a voice report from the LO/O to the LCH or COD SADT to provide initial notification that a laser has fired outside authorized predictive avoidance parameters. For centralized predictive avoidance, this means that (1) the laser was outside the laser location listed in the Predictive Avoidance Approval Message, (b) the laser fired outside an authorized pointing direction in the PAM when the Keep-Out Cone is taken into account, or (3) the laser was fired outside an open window time specified in the PAM. For decentralized predictive avoidance, firing outside authorized parameters is defined as a laser firing that may have posed a hazard to a satellite due to the close proximity to the satellite that exceeds the uncertainties of the Keep-Out Cone. A decentralized LOAP may be related to a procedural deviation, software issue or equipment malfunction. This voice report must be followed up by the hardcopy LOAP Report (Section 3.2) within 12 hours.

Time Frame: Within 15 minutes following the determination of firing outside parameters.

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

Template:

#	Item/Information	Fill In
1	<b>Classification</b> Note whether call is Unclassified or Secret.	
2	<b>Laser System Name</b>	
3	<b>Name/Rank of Caller</b>	
4	<b>Organization</b> Note your organization or company.	
5	<b>Nature of Incident</b> Describe the circumstances related to the firing outside authorized parameters.	
6	<b>Time of Incident (UTC)</b>	Start Time: Stop Time:
7	<b>Laser System Location</b> (latitude in decimal degrees North or South/ longitude in decimal degrees East or West/ altitude in kilometers)	Latitude: Longitude: Altitude:
8	<b>Output Power</b> (Watts - average or equivalent power and instantaneous peak power for pulsed lasers)	
9	<b>Laser Pointing Information</b> (azimuth in degrees relative to true North/ elevation in degrees above local horizon; if PAM used other target definition, provide information as appropriate)	Azimuth: Elevation:
10	<b>Laser Target</b> Note satellite number, missile, point in space, star, etc.	

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#	Item/Information	Fill In
11	<b>Centralized/Hybrid Deconfliction Open Windows</b> Note applicable open window times (UTC).	
12	<b>Centralized/Hybrid Deconfliction Pointing Limits</b> Note applicable azimuth and elevation limits.	
13	Record <b>Date/Time of Call</b> (UTC)	

## Sample script:

a) "Hello Sir or Ma'am. This is an \_\_\_\_\_ Notification of Laser Firing Outside Authorized Parameters for the \_\_\_\_\_ laser program. My name is \_\_\_\_\_ and I work for \_\_\_\_\_."

b) " The circumstances of the LOAP are as follows: \_\_\_\_\_."

c) "The Laser System Location was \_\_\_\_\_ N Latitude, \_\_\_\_\_ W Longitude, with an Altitude of \_\_\_\_\_ km."

d) "The LOAP had a Start Time of \_\_\_\_\_ and a Stop Time of \_\_\_\_\_."

e) "The laser Output Power was \_\_\_\_\_ Watts (and \_\_\_\_\_ Watts for the \_\_\_\_\_ laser and \_\_\_\_\_ Watts for the \_\_\_\_\_ laser if multiple lasers were fired)."

f) "The Laser was pointed at \_\_\_\_\_ degrees azimuth, \_\_\_\_\_ degrees elevation."

g) "The laser target was \_\_\_\_\_."

h) "The Deconfliction Open Window Times were \_\_\_\_\_ to \_\_\_\_\_ (UTC)." OR "The Deconfliction Open Window Times are not known at this time and will be provided in the LOAP Report."

i) "The Deconfliction Pointing Limits were \_\_\_\_\_ to \_\_\_\_\_ degrees azimuth and \_\_\_\_\_ to \_\_\_\_\_ degrees elevation." OR "The Deconfliction Pointing Limits are not known at this time and will be provided in the LOAP Report."

j) "Did you copy?" "Are there any questions?"

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## 2.5 Space Event Notification (IER #5)

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

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

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## 3 TEXT REPORT TEMPLATES

### 3.1 Reporting Guidelines

Text reporting is used to formally document laser firings outside of authorized predictive avoidance parameters and long-term laser schedules. The LO/O will initiate the Laser firing Outside of Authorized Parameters Report (IER #8) and Master Test and Operations Schedule (IER #1) in accordance with the following templates. The LO/O will forward these documents to the LCH by means of 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 Report of Laser firing Outside Authorized Parameters (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. For centralized predictive avoidance, this means that (1) the laser was outside the laser location listed in the PAM, (b) the laser fired outside an authorized pointing direction in the PAM when the Keep-Out Cone is taken into account, or (3) the laser was fired outside an open window time specified in the PAM when the Keep-Out Cone is taken into account. For decentralized predictive avoidance, firing outside authorized parameters is defined as a laser firing that may have posed a hazard to a satellite due to the close proximity to the satellite that exceeds the uncertainties of the Keep-Out Cone. A decentralized LOAP may be related to a procedural deviation, software issue or equipment malfunction. 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 Notification of the LOAP (Section 2.4).

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

Template:

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FROM: (Laser Owner/Operator)

TO: JFCC SPACE (Laser Clearinghouse)

SUBJECT: Laser firing Outside Authorized Parameters (LOAP) 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 pointing direction (azimuth relative to true north and elevation above the local horizon; preferred units: degrees).
  - f. Assessment of incident, including how far outside authorized parameters were the firings.
  - g. Laser system or test conditions that may have contributed to the laser incident, including actions to mitigate future incidents.
  - h. Identify whether LOAP related to centralized or decentralized deconfliction.
2. Point of contact/phone/fax numbers.
3. 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.
4. Contact information, e.g. phone numbers, other POCs, etc.)

<<Signature>>

Name, Rank / Grade, Office Symbol Title

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### 3.3 Master Test and Operations Schedule (MTOS) (IER #1)

**Summary:** The MTOS 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 will utilize the LCH MTOS Input Form to indicate days on which “live fire” operations will occur, and additionally any “live fire” events that will target resident space objects (RSOs). Make use of the comments column to provide any pertinent details.

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

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

**Template (Example):**

UP TO UNCLASSIFIED//FOUO ONLY					
Annotate Days of Activity and Space Targets with an "x"					
Please refrain from copying/pasting values.					
ENTER POC (Name/Phone):			(Enter POC Name & Telephone # Here)		
ENTER PROGRAM NAME:			(Enter Program Name Here)		
<b>2017</b>			Day of Operation		
			Space Target? (Satellite, Rocket Body, Debris)		
J-Day	Day	Month			Notes
001	01	JAN			
002	02	JAN			
003	03	JAN			
004	04	JAN			
005	05	JAN			
006	06	JAN			
007	07	JAN			
008	08	JAN			

