



LASER CLEARINGHOUSE REPORTS HANDBOOK

Change 8
October 15, 2022

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Summary of Changes

Version	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	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.”
Change 6	Various wording and formatting changes, as well as simplification of report templates.
Change 7	Document re-format with individual IER pages and additional details.
Change 8	Major process revisions to account for the removal of the ADO position and the impact on LCH operations. Added Appendixes A, B, and C.

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SECTION 1: Introduction

1.1 Purpose

The Laser Clearinghouse (LCH) Reports Handbook contains verbal and electronic report and message templates required for information and data exchange between laser owners/operators (LO/O) and LCH. Additional data exchange formats are defined in the DECON Interface Control Document (ICD)¹. This handbook applies to any laser program receiving deconfliction support from LCH.

LCH and LO/Os must work together to provide safe and responsible laser activities, as required by Department of Defense Instruction (DoDI) 3100.11² and Chairman of the Joint Chiefs of Staff Instruction 3225.01A³. LO/Os with Category II and III lasers require Combined Force Space Component Command (CFSCC) authorization to conduct laser activities per U.S. Strategic Command (USSTRATCOM) Instruction 534-12⁴. Authorization is granted upon approval of the laser program's Deconfliction and Capability Validation plan. LO/Os must obtain deconfliction from LCH prior to conducting laser activities in accordance with individual laser deconfliction plans.

Laser owners/operators currently conducting activities under previous agreements may continue to do so, with the understanding that further implementation of the DoDI or other changes to the deconfliction process may prompt mandatory revision to applicable agreements.

1.2 Handbook Maintenance

LCH is the author and distribution authority for this Handbook. The LCH Chief can approve and implement revisions and updates as required. At a minimum, the Handbook will be reviewed every two years.

1.3 Points of Contact

Table 1 on the next page lists phone numbers and e-mail addresses for LCH.

¹ *Interface Control Document for the USSTRATCOM JFCC SPACE [LP 14-2] Space Deconfliction System*, DM-06914-A001, 20 May 2020.

² DoDI 3100.11, *Management of Laser Illumination of Objects in Space*, 14 October 2016

³ CJCSI 3225.01A, *Procedures for Management of Illumination of Objects in Space*, 27 July 2020.

⁴ SI 534-12, *Laser Deconfliction Processes*, 25 July 2007.

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Table 1 - Points of Contact

	LCH
Address	CSpOC/LCH 816 13th Street, Building 7000, Room A217A Vandenberg SFB, CA 93437
Office Hours	0800 - 1700 PST, Monday thru Friday, excluding Federal holidays and designated down days
E-mail	laserclearinghouse@us.af.mil
SIPRNet	usaf.vandenberg.afspc.mbx.jspoc-lch@mail.smil.mil
JWICS	~USAF-WCVAND_CFSCC.L@af.ic.gov
Unclassified LCH Phone	(805) 605-4763, DSN 275-4763 (805) 606-7410, DSN 276-7410 (805) 605-4736, DSN 275-4736
Secure LCH Phone	829-1001 829-1008 829 1004
CSpOC CCO Phone	805-605-3514 NOTE: The CSpOC does not generate deconfliction products. Only contact for emergency LCH notifications.

1.4 Information Exchange Requirements (IER)

Table 2 summarizes the IERs necessary to support deconfliction. In the IER # column, a “C” designation identifies IERs unique to centralized deconfliction and a “D” those unique to decentralized deconfliction. Note: ‘C’ and ‘D’ IERs are applicable to hybrid deconfliction. The Table lists whether the format is verbal or digital. See section 2.1 for detailed information on verbal and digital reports.

Reports may be Classified or Unclassified. Classification will be based on the laser system’s Security Classification Guide (SCG), the LCH SCG, and other SCGs as required. The Secure Internet Protocol Router Network (SIPRNet) is the preferred method of digital reporting of SECRET information. The Joint Worldwide Intelligence Communications System (JWICS) will be used for information at higher classifications.

During a standard work week (see Table 1), LCH generates deconfliction products Mondays, Wednesdays, and Fridays for subsequent days. Adhering to the submission timelines outlined in Table 2 is critical to the information exchange process. **Late requests may not be fulfilled due to processing requirements.** Unique requests require prior coordination with LCH.

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Table 2 - Information Exchange Requirements for Deconfliction

IER	Title	Reference	Format	From → To	Submission / Delivery
1	Master Test and Operations Schedule (MTOS)	Handbook Section Error! Reference source not found.	DIGITAL MTOS Input Form (.xlsx) ¹	LO/O - to - LCH	Submit via email NLT the 15 th of each month for the following month to: laseclearinghouse@us.af.mil
2-C	Program Request Message (PRM)	Handbook Section 2.2.2 ICD Section 4.2.1.1.	DIGITAL PRM Strict Text (.txt)	LO/O - to - LCH	<u>Execution Requests</u> : Submit via space-track.org NLT 3 days prior to the laser activity. <u>Planning Requests</u> : Submit up to 30 days in advance of the laser activity.
2-D	Decentralized Request Message (DRM)	Handbook Section Error! Reference source not found.	DIGITAL DRM Strict Text (.txt)	LO/O - to - LCH	Submit IAW signed Appendix A of the Standard Plan NLT 3 days prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.
3-C	Program Approval Message (PAM)	Handbook Section 2.2.4 ICD Section 4.2.2.2.	DIGITAL PAM Strict Text (.txt)	LCH - to - LO/O	Delivered via space-track.org NLT 1 day prior to the laser activity.
3-D1	Satellite Protect List (SPL)	Handbook Section 2.2.5 ICD Section 4.2.2.3.	DIGITAL PL Strict Text (.txt) ⁴	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products
3-D2	Two-Line Element (TLE) Set	Handbook Section 2.2.6 ICD Section 4.2.1.4.	DIGITAL TLE Strict Text (.txt) ³	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.
3-D3	Vector Covariance Message (VCM) Set	Handbook Section 2.2.7 ICD Section 4.2.1.9.	DIGITAL VCM Strict Text (.txt)	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.
3-D4	Sigma Multiplier (SMP) File	Handbook Section 2.2.8 ICD Section 4.2.2.6.	DIGITAL SMP Strict Text (.txt)	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.
3-D5	Time Constants	Handbook Section 2.2.9 ICD Section 4.2.1.6.	DIGITAL Time Strict Text (.txt) ⁵	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.

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IER	Title	Reference	Format	From → To	Submission / Delivery
3-D6	Unique Laser Susceptibility (ULS) File	Handbook Section 2.2.10 ICD Section 4.2.2.5.	DIGITAL ULS Strict Text (.txt) ²	LCH - to - LO/O	Delivered via SIPR SharePoint NLT 1 day prior to the laser activity IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products.
3-D7	Lasing Approval List (LAL)	Handbook Section 2.2.11 ICD Section 4.2.2.3.	DIGITAL LAL Strict Text (.txt) ⁵	LCH - to - LO/O	Distributed when LALs updated by LCH IAW the CSpOC SOP for Data Transfer of Laser Deconfliction Products. <u>NOTE:</u> Used for decentralized and hybrid deconfliction only.
4	Laser Status Report	Handbook Section 2.2.12	DIGITAL ¹	LO/O - to - LCH	Submit via email one hour prior to mission start. NOTE: No response from LCH is required to proceed.
5	Space Event Notification	Handbook Section 2.2.13	VERBAL ³	LCH or CCO - to - LO/O	Delivered as required via telephone.
6	Quick Look Report	Handbook Section 2.2.14	DIGITAL ¹	LO/O - to - LCH	Submit via email within 15 minutes following mission completion. NOTE: No response from LCH is required.
7	Laser Firing Outside Authorized Parameters (LOAP) Notification	Handbook Section 2.2.15	VERBAL ¹	LO/O - to - LCH	Submit via telephone within 15 minutes of suspecting or determining a laser firing outside authorized parameters (LOAP) occurred.
8	LOAP Report	Handbook Section Error! Reference source not found.	DIGITAL LOAP Format (.doc, .docx, .pdf) ¹	LO/O - to - LCH	Submit via email within 12 hours following LOAP notification.
9	Laser Activity Summary Report (LASR)	Handbook Section 2.2.17 ICD Section 4.2.1.3.	DIGITAL LASR Strict Text (.txt) ¹	LO/O - to - LCH	If linked to a LOAP: Submit via email within 24 hours following LOAP notification. <u>If responding to LCH data request:</u> Submit via email within 3 business days. <u>NOTE:</u> Firing data must be archived for one year to comply with LCH data requests.

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IER	Title	Reference	Format	From → To	Submission / Delivery
Note 1. Classified in accordance with Laser Program Security Classification Guide (SCG) per Appendix A of the Standard Plan. Note 2. Classified in accordance with the SCG for Laser Lethality, Countermeasures, and Counter-Countermeasures, AFRL/DE, November 15, 2004. Note 3. Classified in accordance with SCG for Space Surveillance Operations, USSTRATCOM, 28 July 2017. Note 4. PL may be a list of numbers if exported from DECON or contain additional information if generated via the DECON UPL report. Note 5. Unclassified files may be exchanged along with the classified file transfer.					

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SECTION 2: IER Reporting Guidelines and Templates

2.1 Reporting Guidelines

2.1.1 Verbal Reports

Verbal reports are used to announce space events that may impact activities, inform of a laser firing outside authorized parameters, and provide other information necessary to effectively conduct laser activities. The LO/O will initiate a LOAP Notification (IER 7) in accordance with this handbook. LCH will contact the LO/O with Space Event Notifications (IER 5) if necessary.

Verbal reports will be submitted to LCH during normal duty hours. LCH will make verbal reports to LO/O when necessary. Normal duty hours for LCH are from 0800 to 1700 Pacific Standard Time, Monday through Friday, excluding Federal holidays. LCH should only be contacted during normal duty hours unless other arrangements have been made. During non-duty hours, the CSpOC CCO can be contacted for emergency requests (e.g., a LOAP notification). The CCO will contact on-call LCH personnel if necessary. Phone numbers are provided in Table 1. The purpose, time requirements, and other pertinent details are indicated in each template.

For fully automated laser deconfliction and fire control systems, verbal reports normally provided by telephone may be replaced by system-generated electronic messages. The protocols for generating, sending, and receiving these reports will be defined in the laser system's appendix to the appropriate standard plan.

2.1.2 Digital Reports

Digital reports are digitally transmitted documents or messages used to formally document laser activity, schedules, submit deconfliction requests, receive deconfliction products, and submit reports. The LO/O will submit MTOS Input Forms (IER 1), PRMs (IER #2-C) DRMs (IER #2-D), Laser Status Reports (IER #4), Quick Look Reports (IER #6), LOAP Reports (IER #8), and LASRs (IER #9) in accordance with this handbook, unless otherwise indicated in the laser system's appendix to the appropriate standard plan.

Digital reports will generally be submitted to LCH by means of www.space-track.org, email, or by means otherwise agreed upon with LCH and detailed in the LO/O Deconfliction Plan. The preferred means of transmission for classified reports up to collateral SECRET is SIPRNet email. E-mail addresses can be found in Section 1.3 of this handbook.

2.1.3 File Naming Conventions

There are two types of digital reports: Text and Strict Text. Text reports may contain specific required information but otherwise do not need to fit an exact structure or format. Examples of Text reports include: the Master Test and Operations Schedule

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(MTOS) Input Form (IER 1) and LOAP report (IER 8). Strict Text reports, however, must adhere to very strict formatting and syntax requirements so that they can be properly parsed and imported by corresponding computer systems. Examples of Strict Text reports include: PRMs, PAMs, and LASRs. Strict Text reports will be constructed and exchanged in configuration-controlled formats consistent with the DECON ICD file naming conventions.

File naming conventions for each IER are found on the subsequent pages of this handbook. Adherence to naming convention formats for each IER (particularly Strict Text reports), is essential to ensure consistent readability and to maintain uniformity over time.

In such cases that two distinct files are submitted on the same day but have the same filename, mark the end of the filename (before the file extension) with “a”, “b”, etc. Only add a letter at the end if both files are distinct and valid. In cases where one file is replacing another, inform LCH that the file is being replaced and do not add a letter to the end of the replacement file.

Example: PRM_BestCompany_BestProgram_BestLaser_01JAN2016_
For_JDAY005_SATa.txt

PRM_BestCompany_BestProgram_BestLaser_01JAN2016_ For_JDAY005_SATb.txt

2.2 IER Descriptions and Templates

Descriptions and templates for each IER begin on the next page.

[Continued on Next Page]

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2.2.1 IER 1 - Master Test and Operations Schedule (MTOS)

Report Type: DIGITAL - Spreadsheet file

Other References: None

Summary: The MTOS Input Form is a spreadsheet submitted by the LO/O to LCH that provides a forecast of planned and tentative laser activities for at least the next 30 days, and up to the next 12 months. LO/Os will complete the form by using the codes listed at the top of the form. Make use of the comments column to provide any additional details or stipulations.

Frequency / Deadline: Submit monthly, no later than the 15th of the month.

Method of Submission:

Unclassified: Email to laserclearinghouse@us.af.mil

Classified: Email to usaf.vandenberg.afspc.mbx.jspoc-lch@mail.smil.mil or contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: MTOS_[Program/Laser Name]_[Date Submitted (YYYYMMDD)].xlsx

Example: MTOS_BestLaser_20170914.xlsx

Template Location: A blank LCH MTOS Input Form can be found on www.space-track.org
at: <https://www.space-track.org/documentation#/lch>

Template / Example:

UP TO UNCLASSIFIED//FOUO ONLY		Month	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN	JAN
Submit this form by the 15th day of each month. Providing activity forecast for the next 30 days (15th of the current month to the 15th of next month) is essential. Provide additional activity forecast for the next 12 months when available. Tentatively scheduled operations are still appreciated, so please make use of the appropriate code below. Thank you!		Day	01	02	03	04	05	06	07	08	09	10	
		J-Day	001	002	003	004	005	006	007	008	009	010	
		Non-Sat Target											
		Sat Target											
Annotate Days of Activity via the Code Below:		Comments											
X - Day of <u>Planned</u> or <u>Tentative</u> Firing													
Leave All Other Days Blank, Or Provide Comments as Required													
Email Form To: laserclearinghouse@us.af.mil with Subject Line: "MTOS - MMMYY - Program Name" Example Email Subject: "MTOS - NOV17 - Laser Program Name Goes Here"													

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2.2.2 IER 2-C - Program Request Message or (PRM)

Report Type: DIGITAL - Strict Text file

Other References: DECON ICD Section 4.2.1.1

Summary: The PRM (sometimes referred to as a Predictive Avoidance Request Message or PARM), is a Strict Text file used to request centralized deconfliction. PRMs are submitted by the LO/O to LCH and may be “For Execution” (live-fire), or “For Planning”, which can assist mission planners in developing execution PRMs.

In response to the PRM, the LCH will generate a PAM. The PAMs are usually generated with “Authorized Shoot (Open) Windows” but “Restricted No-Shoot (Closed) Windows” can also be produced. If closed windows are desired this should be noted in the PRM Remarks section and the desire highlighted to the LCH. The DECON system can report only open windows that are of a certain size or larger, e.g., windows 3 minutes or greater. This should be noted in the Remarks section and prearranged with the LCH.

Frequency / Deadline:

Execution Requests: Submit no later than 3 days prior to the laser activity.

Planning Requests: May be submitted up to 30 days in advance of the listed mission start time.

Method of Submission:

Unclassified: Post to applicable PRM folder on www.space-track.org

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Mandatory Naming Convention:

Format: PRM_[Owner/Company Name]_[Program/System Name]_[Laser Name]_[Date of Submission (DDMMYYYY)]_For_JDAY[DDD (Julian Date of Mission Start)]_[Target Type (FFOV, SAT,etc.)].txt

Example: PRM_BestCompany_BestProgram_BestLaser_01JAN2016_For_JDAY005_SAT.txt

NOTE: There must be exactly 7 underscores in the file name

Template Location: See the DECON ICD. Note there are numerous source and target methods and certain allowable source and target method combinations. For additional examples see Appendix A.

Template / Example: See Next Page. Additional example can be found on www.space-track.org at: <https://www.space-track.org/documentation#/lch> (login required)

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PRM Example:

```
Classification:          Unclassified
File Name:              PRM_Owner_Program_LaserName_01JAN2019_For
_JDAY003_TargetType.txt (1-128 char)
Message Purpose:       Request for Predictive Avoidance Support
Report Date/Time (UTC): 2019 JAN 01 12:00:00
Point of Contact:      First, Last (1-128 char)
                      (Office) (###) ###-#### (1-128 char)
                      (E-mail) example@example.com (1-128 char)
Emergency Phone # at Operations Site: ###-###-#### (0-128 char)
Remarks:              Special Instructions/Comments Go Here (0-2048
char)

MISSION INFORMATION
-----
Owner/Operator:       Organization Name (1-48 char)
Mission Name/Number:  Owner_Program_LaserName_1.064um_1W_50urad_1kHz (1-48
char)
Target Type:         Fixed Field of View
Location:            Test Site, Test Facility, State (1-128 char)
Start Date/Time (UTC): 2019 JAN 03 (003) 22:00:00
End Date/Time (UTC):  2019 JAN 04 (004) 12:00:00
Duration (HH:MM:SS):  14:00:00

LASER INFORMATION
-----
Laser:               Owner_Program_LaserName_1.064um_1W_50urad_1kHz (1-144
char)

SOURCE INFORMATION
-----
Method:              Fixed Point
Latitude:            XX.XXXX degrees N
Longitude:           YYY.YYYY degrees W
Altitude:            ZZ.ZZZ km

TARGET INFORMATION
-----
Method:              Fixed Field of View
Azimuth Range:       175.50 to 180.00 degrees
Elevation Range:     51.00 to 54.70 degrees

Method:              Fixed Field of View
Azimuth Range:       180.00 to 184.50 degrees
Elevation Range:     51.00 to 54.70 degrees
END OF FILE
```

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2.2.3 IER 2-D - Decentralized Request Message (DRM)

Report Type: DIGITAL - Strict Text file

Other References: None

Summary: The Decentralized Request Message is a Strict Text file used to request decentralized deconfliction files. DRMs are submitted by the LO/O to LCH. LO/Os will use the DRM to identify the laser point of contact (POC), contact information, start, and stop times, locations of the lasers, and the lasers to be used.

Frequency / Deadline: Submit no later than 3 days prior to the laser activity.

Method of Submission:

Unclassified: Post to applicable /DRM/ folder on www.space-track.org

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: DRM_[Owner/Company Name]_[Program/System Name]_[Laser Name]_[Date of Submission (DDMMYYYY)]_For_JDAY[DDD (Julian Date of Mission Start)].txt

Example:

DRM_BestCompany_BestProgram_BestLaser_01JAN2016_For_JDAY005.txt

Template Location: A template DRM file may be requested from LCH.

Template / Example: (See Next Page)

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DRM Example:

```
Classification:          Unclassified
File Name:
DRM_Alert_LaserNameOwner_LaserName__01Jan2019_For_JDAY003
Message Purpose:        Request for DDP Data
Report Date/Time (UTC): 2019 Jan 01 (001) 17:11:40
Point of Contact:       First, Last, ###-###-####,
example@example.com
Remarks:               Special Instructions/Comments Go Here

MISSION INFORMATION
-----
Owner/Operator:         Organization Nam
Start Date/Time (UTC):  2019 JAN 03 (003) 22:00:00
End Date/Time (UTC):    2019 JAN 04 (004) 12:00:00
Duration (HH:MM:SS):    14:00:00

LASER INFORMATION
-----
Laser:                 Owner_Laser Name_355nm_10W_3.7urad_10kHz

SOURCE INFORMATION
-----
Latitude:              XX.XXXX degrees N
Longitude:              YYY.YYYY degrees W
Altitude:              ZZ.ZZZ km

TARGET INFORMATION
-----
Method:                Fixed Field of View
Azimuth Range:         175.50 to 180.00 degrees
Elevation Range:       51.00 to 54.70 degrees

Method:                Fixed Field of View
Azimuth Range:         180.00 to 184.50 degrees
Elevation Range:       51.00 to 54.70 degrees

Method:                Fixed Field of View
Azimuth Range:         178.50 to 181.50 degrees
Elevation Range:       20.80 to 24.50 degrees
END OF FILE
```

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2.2.4 IER 3-C - Program Approval Message (PAM)

Report Type: DIGITAL - Strict Text file

Other References: DECON ICD Section 4.2.2.2

Summary: The PAM is a Strict Text file used to provide files for centralized deconfliction. The PAM is a response from LCH to a laser owner/operator's request for deconfliction support (PRM message). The PAM provides approval for the laser activity and a listing of open or closed laser firing windows.

Frequency / Deadline: Submit between 1 to 3 days prior actual laser activity. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified Requests: Post to applicable /PAM/ folder on www.space-track.org

Classified Requests: Contact LCH to determine best means. Document in the Deconfliction Plan.

Naming Convention:

Format: PAM_[Owner/Company Name]_[Program/System Name if req.]_[Laser Name]_

T-[Days Prior to Start]_[Date of PAM Generation]_For_JDAY[Julian Date of Mission Start]_[Target Mode]

[-Optional PAM Sequence Number].txt

Example: PAM_BestCompany_BestProgram_BestLaser_T-1_04JAN2016_For_JDAY005_SAT-1.txt

Template Location: N/A (report is machine-generated by DECON)

Template / Example: See Next Page. Additional examples can be found on www.space-track.org at: <https://www.space-track.org/documentation#/lch> (login required). For additional examples see Appendix B.

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PAM Example:

Classification: UNCLASSIFIED	
UNITED STATES SPACE COMMAND LASER CLEARINGHOUSE (LCH) TIME WINDOWS REPORT	
Date:	2019 JAN 02
From:	LCH
To:	Laser Program
Subject:	LCH Authorized Shoot (Open) Windows
1. The attached information contains the coordinated and approved spatial parameters	
(a) Authorized Shoot (Open) Windows	
During Authorized Shoot Windows, the laser owner-operator (O/O) is authorized to operate the approved system laser(s) in accordance with the Source/Target geometry definitions contained in this report.	
2. The laser O/O may perform Hybrid Predictive Avoidance (HPA) during Authorized Shoot Windows, if previously certified in writing by USSTRATCOM to do so.	
3. Any deviation from this authorization must be immediately reported to the Laser Clearinghouse at: Commercial 805-605-4763, 805-606 7410 (7:30 to 4:30 M-F, PST) DSN is 275/276 or contact the CSpOC CCO at Commercial 805-605-3514 (which is manned 24/7), DSN is 275.	
4. See below for comments specific to this mission.	
5. If you have any questions, please don't hesitate to contact LCH at the above listed phone numbers.	
LCH BUILDING 7000, 13TH STREET, RM A217A VSFB, CA 93437	
Mission ID: LaserNameOwner_LaserName_1.064um_1W_50urad_1kHz _06090120000_P Laser Owner/Operator: Organization Name Report Date/Time (GMT): 2019 JAN 02 10:24:36	

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Mission Name:
LaserNameOwner_LaserName_1.064um_1W_50urad_1kHz
Mission Start Date/Time (GMT): 2019 Jan 03 22:00:00
Mission Stop Date/Time (GMT): 2019 Jan 04 12:00:00
Mission Duration (HH:MM:SS): 14:00:00
Type of Windows in this report: Authorized Shoot (Open) Windows
Comment: For Execution
Number of Targets: 123

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MMMM:SS
2019 Jan 04 (004) 0755 49	2019 Jan 04 (004) 0815 49	0020:00
2019 Jan 04 (004) 0816 33	2019 Jan 04 (004) 0906 26	0049:53
2019 Jan 04 (004) 0907 14	2019 Jan 04 (004) 1002 41	0055:27
2019 Jan 04 (004) 1003 08	2019 Jan 04 (004) 1018 33	0015:25
2019 Jan 04 (004) 1018 52	2019 Jan 04 (004) 1024 51	0005:59
2019 Jan 04 (004) 1025 05	2019 Jan 04 (004) 1026 14	0001:09
2019 Jan 04 (004) 1026 43	2019 Jan 04 (004) 1042 06	0015:23
2019 Jan 04 (004) 1047 14	2019 Jan 04 (004) 1051 01	0003:47
2019 Jan 04 (004) 1051 44	2019 Jan 04 (004) 1052 15	0000:31
2019 Jan 04 (004) 1052 33	2019 Jan 04 (004) 1115 00	0022:27

Percent = 66.67%

Source Geometry: (WGS-84)

Method: Fixed Point
Latitude: XX.XXXX degrees N
Longitude: YYY.YYYY degrees W
Altitude: ZZ.ZZZZ km

Target Geometry: (WGS-84) 1

Method: Fixed Field of View
Azimuth Range: 175.50 to 180.00 degrees
Elevation Range: 51.00 to 54.70 degrees
END OF FILE

UNCLASSIFIED

2.2.5 IER 3-D1 - Satellite Protect List (SPL)

Report Type: DIGITAL - Strict Text file

Other References: DECON ICD Section 4.2.1.10

Summary: The SPL is a Strict Text file of satellite SCC numbers and is most often utilized to support decentralized deconfliction. The message is used to pass the latest list of susceptible satellites from LCH to the laser owner/operator. The message comprises an identifying header followed by a list of satellite numbers. The SPL is a classified file.

Frequency / Deadline: Submit between 1 to 3 days prior actual laser activity. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified: N/A

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: SPL_[Owner/Company Name]_[Division or Sub-Organization if req.]_
[Location if req.]_[Program/System Name if req.]_[Laser Name]_
[Laser Mode if req.]_[Date Generated as YYYYJDAY].txt

Example 1: SPL_BestCompany_BestLaser_2017005.txt

Example 2: SPL_BestCompany_AerospaceDivision_San Diego_BestProgram_
BestLaser_Mode2_2019005.txt

Template Location: N/A (report is machine generated by DECON)

Template / Example:

SPL Example: Note: Classification marking in text box below is for example purposes only.

```
SECRET SPL_LaserNameOwner_LaserName_2019005
00123
03456
12345
23456
45678
```

UNCLASSIFIED

2.2.6 IER 3-D2 - Two-Line Element Set (TLE)

Report Type: DIGITAL - Strict Text file

Other References:

DECON ICD Section 4.2.1.4

The Space-track.org documentation page at <https://www.space-track.org/documentation/#tle> provides a detailed description of the TLE format.

Summary: The TLE is a Strict Text file used to provide data for deconfliction. The message is used to pass the latest satellite states from LCH to the laser owner/operator. A TLE comprises two 69-character lines of data that may be used with the SGP4/SDP4 orbital model to propagate the position and velocity of the associated satellite. The data set for deconfliction will comprise TLEs for the satellites on the SPL (decentralized) and targeted satellites on the Lasing Authorized List (centralized and decentralized). Individual TLEs may be classified or unclassified, but the TLE file associated with the SPL is classified.

Frequency / Deadline: As required. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified: Download from Space-Track at <https://www.space-track.org>.

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: TLE_[Owner/Company Name]_[Division or Sub-Organization if req.]_
[Location if req.]_[Program/System Name if req.]_[Laser Name]_
[Laser Mode if req.]_[Date Generated as YYYYJDAYXXX]_
[Time Generated as HHMMZ].txt

Example 1: TLE_BestCompany_BestLaser_2017JDAY005_1430Z.txt

Example 2: TLE_BestCompany_AerospaceDivision_San Diego_BestProgram_
BestLaser_Mode2_2017JDAY005_1430Z.txt

Template Location: See the Space-track.org documentation page at <https://www.space-track.org/documentation/#tle>.

Template / Example: The following is an example of a single TLE for satellite 23455.

TLE Example:

```
1 23455U 94089A 19005.90946019 -.00000140 00000-0 10191-3 0 2621
2 23455 99.0090 272.6745 0008546 223.1686 136.8816 14.11711747148495
```

UNCLASSIFIED

2.2.7 IER 3-D3 - Vector Covariance Message (VCM) for Decentralized Lasers

Report Type: DIGITAL - Strict Text file

Other References:

DECON ICD Section 4.2.1.9. and 4.2.2.4

The AFSPC Standardized Astrodynamics Algorithm Library (SAAL) documentation provides a description of the VCM. See the Astrodynamics Standard Shared Library, Vector Covariance Message (VCM DLL), Appendix: Vector Covariance Message (VCM) Data Description, 28 September 2012. Contact

<https://www.astrodynamicstandards.org/software-request/> or
<https://halfway.peterson.af.mil/SARP>.

Summary: The VCM is a Strict Text file used to provide data for decentralized deconfliction. The message is used to pass the latest satellite states from LCH to the laser owner/operator. A VCM comprises 28 or more lines of data that may be used with the SP orbital model to propagate the position and velocity of the associated satellite. The data set will comprise VCMs for the satellites on the PL and targeted satellites on the Lasing Authorized List. VCMs may be classified and will be distributed by classified means.

Frequency / Deadline: Submit between 1 to 3 days prior actual laser activity. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified: N/A

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: VCM_[Owner/Company Name]_[Division or Sub-Organization if req.]_
[Location if req.]_[Program/System Name if req.]_[Laser Name]_
[Laser Mode if req.]_[Date Generated as YYYYJDAYXXX].txt

Example: VCM_BestCompany_AerospaceDivision_San Diego_BestProgram_
BestLaser_Mode2_2017JDAY005.txt

Template Location: N/A (report is machine-generated by DECON)

Template / Example: See Other References above for template description and example.

UNCLASSIFIED

2.2.8 IER 3-D4 - Sigma Multiplier File (SMP) for Decentralized Lasers

Report Type: DIGITAL - Strict Text file

Other References: DECON ICD Section 4.2.2.6

Summary: The SMP is a Strict Text file used to provide data for decentralized deconfliction when VCMs and SP propagation is used. The SMP expands the positional error of certain satellites to account for astrodynamic errors not fully modeled in the VCM. The message is used to pass the latest satellite sigma multiplier values from LCH to the laser owner/operator. The data set will comprise SMPs for the satellites on the PL and targeted satellites on the Lasing Authorized List. SMPs may be classified and will be distributed by classified means.

Frequency / Deadline: Submit between 1 to 3 days prior actual laser activity. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified: N/A (Not provided over unclassified networks).

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: SMP_[Laser Owner/Operator]_[Date prepared as YYYYMMDD].txt

Example: SMP_BestCompany_2017005.txt

Template Location: N/A (report is machine generated by DECON)

Template / Example: See Other References above for template description and example.

UNCLASSIFIED

2.2.9 IER 3-D5 - Time Constants (TCON) File

Report Type: DIGITAL - Strict Text file

Other References:

DECON ICD Section 4.2.1.6

International Earth Rotation and Reference Systems Service (IERS),
<https://www.iers.org>

The United States Naval Observatory (USNO), <http://www.usno.navy.mil/USNO>

Summary: The TCON file is a Strict Text file used to provide time synchronization data in support of deconfliction. The TCON file provides data describing Universal Time Coordinated (UTC), UT1 and International Atomic Time (TAI) constants and offsets, which are necessary to properly time events, propagate satellites, and orient coordinate systems. The message is used to pass the latest TCON values from LCH to the laser owner/operator.

Time constants and offsets may be retrieved from the IERS or USNO. If obtained from LCH the TCON file will be in the format and units described below. The data set comprises a time tag (YY DOY DD-MMM-YY), TAI offset (seconds), UT1-UTC offset (seconds), UT1-UTC rate (milliseconds/day), polar X and polar Y motion (arcseconds).

Frequency / Deadline: Submit between 1 to 3 days prior actual laser activity. See Deconfliction Plan for more detailed schedule constraints.

Method of Submission:

Unclassified: Post to applicable folder on www.space-track.org.

Classified: File is unclassified but may be included in planned classified data transfer. Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: time_constants_[Date of creation as YYYYMMDD].txt

Example: time_constants_20170310.txt

Template Location: N/A

Template / Example: See below

TCON Example (notional):

19	191	10-Jul-19	37	0.38818	-0.297	0.1458	0.2264
19	201	20-Jul-19	37	0.41552	-0.534	0.1729	0.2537
19	213	01-Aug-19	37	0.55629	-0.516	0.1962	0.2908
19	222	10-Aug-19	37	0.53890	-0.710	0.2090	0.3175
19	232	20-Aug-19	37	0.52190	-0.900	0.2253	0.3481

UNCLASSIFIED

2.2.10 IER 3-D6 - Unique Laser Susceptibility File (ULS)

Report Type: DIGITAL - Strict Text file

Other References:

DECON ICD Section 4.2.2.5

UPL, DSS, and RTS Process and Methodology, AFRL Report, April 2006

Summary: The ULS file is a Strict Text file used to provide data for decentralized deconfliction. The ULS file provides data describing current laser parameters and the susceptibility data for some or all of the satellites on the UPL. The message is used to pass the latest ULS values from LCH to the laser owner/operator. The data set for each satellite identifies the protection type for that satellite and includes susceptibility values for each applicable payload for each wavelength. Different payloads on a satellite may have different susceptibilities to lasers at different wavelengths. The file is classified.

Frequency / Deadline: Updated on an infrequent basis. A single initial submission may be adequate for a laser test series. Document the notification and update approach in the Deconfliction Plan.

Method of Submission:

Unclassified: N/A (Not provided over unclassified networks)

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: ULS_[Owner/Company Name]_[Location if req.]_[Program/System Name if req.]_[Laser Name]_[Laser Mode if req.]_ [Date Generated as YYYYJDAYXXX].txt

Example: ULS_BestCompany _San Diego_BestProgram_
BestLaser_Mode2_2017JDAY005.txt

Template Location: N/A (report is machine-generated by DECON)

Template / Example: The ULS format is complex, an example is not provided here. Systems using decentralized deconfliction with susceptibility should consult the Other References above for specific content and formatting requirements.

UNCLASSIFIED

2.2.11 IER 3-D7 - Lasing Approval List (LAL) for Decentralized Lasers

Report Type: DIGITAL - Text file

Other References: Current version of the full LAL Memo is on www.space-track.org, at this address: <https://www.space-track.org/documentation#/lch> (must be logged in and associated with a laser program to see the file)

Summary: The LAL is a Strict Text file used to provide data for decentralized deconfliction when satellite targets are being used. The message is used to pass the latest list of satellites approved as lasing targets from LCH to the laser owner/operator. The message comprises an identifying header followed by a list of satellite numbers. A laser program may be approved for and receive multiple LALs based on number of lasers and/or laser modes within the program.

Frequency / Deadline: Updated as required. A single initial submission may be adequate for a laser test series. Document the notification and update approach in the Deconfliction Plan.

Method of Submission:

Unclassified: Transmitted in accordance with the Appendix A to the Deconfliction Plan.

Classified: Contact LCH to determine best means and document in the Deconfliction Plan.

Naming Convention:

Format: LAL_[LAL identifier if req.]_
[Owner/Company Name]_[Location if req.]_[Program/System Name if req.]_[Laser Name]_[Laser Mode if req.]_[LCH authorization memo date (YYYYMMDD)].txt

Example: LAL_RB_BestCompany_San Diego_BestProgram_
BestLaser_Mode2_20190105.txt

Template Location: N/A (report is machine-generated)

Template / Example: The following is a notional example of an LAL. The first line will correspond to the file naming convention, followed by a list of satellite numbers.

LAL Example:

```
LAL_LaserNameOwner_LaserName_20190105
12
125
456
3456
```

UNCLASSIFIED

2.2.12 IER 4 - Laser Status Report

Report Type: Digital - Email

Other References: None

Summary: The Laser Status Report is a digital report (email) from the LO/O to LCH that includes the contents listed below in the Template/Checklist. The purpose is to verify that a scheduled laser activity is nearing its start and to provide LCH with record of laser activity. If the Laser Status Report will include classified information, be sure to mark correctly and use an appropriate secure communications system. Use the Quick Look Report (Section 0) to report completion of laser activities.

Frequency / Deadline: One hour prior to the start of daily laser activities.

Method of Submission: E-mail (see Table 1)

Naming Convention: N/A

Template Location: This document

Template / Example: See below

Laser Status Report Template/Checklist:

#	Item/Information
1	Confirm Classification Ensure proper communication line is used
2	Name/Organization of Operator
3	Laser System Name
4	Expected Start Time (UTC)
5	Expected Stop Time (UTC)
6	Status of Laser System Note whether system is Green (on track), Yellow (mission at risk) or Red (likely cancel). Note reason, e.g., weather, equipment, etc.

UNCLASSIFIED

2.2.13 IER 5 - Space Event Notification

Report Type: Verbal

Other References: None

Summary: Space Event Notification is a verbal report from LCH or the CCO to the LO/O. The purpose is to inform the LO/O of a space event that impacts planned or currently operating laser activities.

A Space Event is an event that results in the invalidation/expiration of a previously generated deconfliction product (PAM files). For soon-to-be operating or currently operating laser activities which are impacted by the space event, the notification directs cessation of laser activity and advises the LO/O to wait for a replacement deconfliction product if possible. LO/Os using deconfliction products not impacted by the Space Event will not be contacted.

If the Space Event results in minimal (but non-zero) impact to a preexisting PAM, LCH may issue individual "Closure Windows" to be manually implemented by a LO/O in lieu of a full replacement PAM.

Frequency / Deadline: As soon as possible following the Space Event.

Method of Submission: Telephone call (see Table 1) or e-mail

Naming Convention: N/A

Template Location: This document

Template / Example: See Below

Space Event Template/Checklist:

#	Item/Information
1	Confirm Classification Ensure proper communication line is used
2	Name/Organization of Caller
3	Date/Time of Call (UTC)
4	Notification of Space Event LCH will state that a Space Event has occurred
5	Cease-Fire Notification LCH will state whether the LO/O must cease laser activities
6	Confirm Cease-Fire If required, LCH will confirm laser firing has ceased
7	Estimated Time to Generate Replacement PAMs 90 minutes or more, depending on nature of the space event and number of operating lasers
8	Discussion LCH will provide other information as required, and ask the LO/O if they have any questions at the time of the Space Event Notification

UNCLASSIFIED

2.2.14 IER 6 - Quick Look Report

Report Type: Digital - Email

Other References: None

Summary: The Quick Look Report is a digital report (email) from the LO/O that includes the contents listed below in the Template/Checklist. The purpose is to confirm the completion of laser activities. If an event is cancelled, such as a target scrub, use this report to notify LCH. If the report will include classified information, be sure to mark correctly and use a secure communications system.

Frequency / Deadline: Within 15 minutes of completing all laser activities on a given day.

Method of Submission: Email (see Table 1)

Naming Convention: N/A

Template Location: This document

Template / Example: See below

Quick Look Report Template/Checklist:

#	Item/Information
1	Confirm Classification Ensure proper communication line is used
2	Name/Organization of Sender
3	Date/Time of Call (UTC)
4	Laser System Name
5	Actual Start Time (UTC)
6	Actual Stop Time (UTC)
7	Assessment of Deconfliction Adherence State whether laser activities were nominal and executed in accordance with supplied deconfliction

UNCLASSIFIED

2.2.15 IER 7 - LOAP Notification

Report Type: Verbal

Other References: None

Summary: The LOAP Notification is a verbal report from the LO/O to LCH. The purpose is to provide initial notification that a laser has fired outside authorized deconfliction parameters. If call will include classified information, be sure to use a secure communications system. This voice report must be followed up by the hardcopy LOAP Report (Section 2.2.16) within 12 hours.

For centralized and hybrid deconfliction, firing outside authorized parameters means that (1) the laser was outside the laser location listed in the PAM, (2) the laser fired outside an authorized pointing direction in the PAM, (3) the laser was fired outside an open window time specified in the PAM, or (4) different laser parameters were used resulting in higher on-orbit irradiance (e.g. higher power, smaller divergence, smaller pulse width).

For decentralized deconfliction, firing outside authorized parameters is defined as a laser firing that may have posed a hazard to a nearby 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.

Frequency / Deadline: Within 15 minutes following the determination of laser firing outside authorized parameters.

Method of Submission: Telephone call (see Table 1)

Naming Convention: N/A

Template Location: This document

Template / Example: (See Next Page)

UNCLASSIFIED

LOAP Notification Template/Checklist:

#	Item/Information
1	Confirm Classification Ensure proper communication line is used
2	Name/Organization of Caller
3	Date/Time of Call (UTC)
4	Laser System Name
5	Nature of Incident Confirm lasing has ceased; describe the circumstances related to the firing outside authorized parameters.
6	Time of Incident (UTC) Provide start and stop times.
7	Laser System Location (latitude in decimal degrees North or South/ longitude in decimal degrees East or West/ altitude in kilometers)
8	Output Power (Watts) Provide average or equivalent-CW power (and instantaneous peak power for pulsed lasers)
9	Laser Pointing Information (azimuth in degrees relative to true North/ elevation in degrees above local horizon; if PAM used other target definition, provide information as appropriate)
10	Laser Target Note satellite number, missile, point in space, star, etc.
11	Applicable Open Windows Note applicable window times from supplied deconfliction products (PAMs) that may have been violated.
12	Pointing Limits Note applicable azimuth and elevation limits.

UNCLASSIFIED

2.2.16 IER 8 - LOAP Report

Report Type: DIGITAL - Email or memorandum attached to email

Other References: None

Summary: The LOAP Report is the LO/O's formal notification memorandum to LCH that a laser has fired outside authorized deconfliction parameters. This text report is a follow up to the LOAP Notification (IER #7, Section **Error! Reference source not found.**). If the report is classified mark appropriately and use appropriate secure communication means.

LCH will use this information to continue its assessment to determine whether a satellite hazard existed as a result of the firing. The Laser Activity Summary Report (Section 2.2.17) for the incident should be provided as an attachment, and 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.

Frequency / Deadline: Within 12 hours of the LOAP Notification (Section 2.2.15).

Method of Submission: Submit to LCH via email per Table 1.

Naming Convention:

Format: LOAP-Report_[Owner/Company Name]_[Program/System Name if req.]_[Laser Name]_[Date of Submission as YYYYMMDD].txt

Example: LOAP-Report_BestCompany_BestProgram_BestLaser_20170105.txt

Template Location: This document

Template / Example: (See Next Page)

UNCLASSIFIED

LOAP Report Template (Example):

FROM: (Laser Owner/Operator)

TO: CFSCC/LCH

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 separate correspondence or part of the corrective action report.

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

<<Signature>>

Name, Rank / Grade, Office Symbol Title

Attachment:

Laser Activity Summary Report

UNCLASSIFIED

2.2.17 IER 9 - Laser Activity Summary Report (LASR)

Report Type: DIGITAL - Strict Text file

Other References: DECON ICD Section 4.2.1.3

Summary: The LASR is a Strict Text file from the LO/O to LCH used to provide post-mission data for centralized and decentralized deconfliction. The message enables LCH analysis of a laser firing event. It is required in the event of an inadvertent illumination and otherwise is only submitted upon request. If the report is classified mark appropriately and use secure communication means. Firing data must be archived for one year in order to comply with LCH data requests.

The LASR is a summary of an emitter's firings for one event. The report contains laser and mission information, mission assessment, inadvertent illumination information, and a summary of the actual laser firing times and associated targets. Firing times and targets should be reported at 1 second intervals.

Frequency / Deadline: If associated with a LOAP Notification, submit via email within 24 hours. If in response to a LCH data request, submit via email within 3 business days.

Method of Submission: Submit to LCH via email per Table 1.

Naming Convention:

Format: LASR_[Owner/Company Name]_[Location if req.]_[Program/System Name if req.]_[Laser Name]_[Laser Mode if req.]_For_JDAY[Julian Date of Mission Start]_File [#] of [#].txt

Example: LASR_BestCompany_San Diego_BestProgram_BestLaser_Mode2_For_JDAY005_File 2 of 4.txt

Template Location: See <https://www.space-track.org>, select the HELP Menu, then select the LASER CLEARINGHOUSE dropdown. LASR samples are in the Documents for New Programs section.

Template / Example: LASR format will vary by source and target type. See the next page for one example. For additional examples see Appendix C.

UNCLASSIFIED

LASR Example (notional):

```
Classification:          Unclassified
Mission ID:              Owner_LaserName_01JAN2019_For_JDAY003
_TargetType.txt (1-128 char)
File Name:               LASR_Owner_LaserName_20190104.txt
Message Purpose:         Laser Activity Summary Report
Report Date/Time (UTC):  2019 Jan 04 (004) 15:00:00
Point of Contact:        First, Last (1-128 char)
                        (Office) (###) ###-#### (1-128 char)
                        (E-mail) example@example.com (1-128 char)

MISSION INFORMATION
-----
Owner/Operator:          Organization Name (1-48 char)
Mission Name/Number:     Owner_Laser Name_1.064um_1W_50urad_1kHz (1-48
char)
PAM Target Type:         Fixed Azimuth/Elevation
Location:                Test Site, Test Facility, State (1-128 char)
Start Date/Time (UTC):   2019 JAN 04 (004) 10:52:16
End Date/Time (UTC):     2019 JAN 04 (004) 10:52:25
Duration (HH:MM:SS):     00:00:09

LASER INFORMATION
-----
Laser Name:              Owner_LaserName_1.064um_1W_50urad_1kHz (1-
144 char)
CW Output Power:         1 Watts (Blank for pulsed)
Pulse Energy:            1.13E-5 J/pulse
Pulse Repetition Freq:   1000.0 Hz
Max half beam divergence: 0.00286479 degrees half-angle

LASER FIRING INFORMATION
-----
Mission Assessment:      Laser firing at target that did not have an open
fire window.
Lasing Outside of Authorized Parameters: YES
LASER SHOTS
-----
Shot Number: 1
PAM Target ID: 1
Actual Source Type:      Fixed Point
Actual Target Type:      Fixed Azimuth/Elevation

Time                Source      Source      Source      Laser      Laser
                   Latitude    Longitude   Height      Azimuth     Elevation
-----
YYYYYJDDHHMMSS.SSS XX.XXXX    YY.YYYYY   Z.ZZZZ km   nnn.nn     nn.nn
2019004105216.000  XX.XXXX    YY.YYYYY   Z.ZZZZ km   nnn.nn     nn.nn
2019004102517.000  XX.XXXX    YY.YYYYY   Z.ZZZZ km   nnn.nn     nn.nn
2019004105218.000  XX.XXXX    YY.YYYYY   Z.ZZZZ km   nnn.nn     nn.nn
END OF FILE
```

UNCLASSIFIED

APPENDIX A: PRM Samples

Note that the Header, Mission Information, and Laser Information sections remain unchanged across the different source and target combinations. Reference Section 2.2.2 for guidance on this information. Some source and target combinations are not allowed, per Table A.3. The Table shows commonly used types of sources and targets. Reference the DECON ICD for the full list of source and target types and allowable combinations.

Table A.3 - Allowable Combinations for Typical Sources and Targets

TARGET	SOURCE				
	FIXED POINT	4 SURFACE POINTS	TWO WAYPOINTS	CENTERPOINT/ CENTERLINE	SATELLITE
Fixed Azimuth/Elevation	Yes	No	No	No	Yes
Fixed Field of View (FFOV)	Yes	Yes	Yes	Yes	No
Satellite	Yes	Yes	Yes	Yes	Yes
Star	Yes	Yes	Yes	Yes	Yes
Right Ascension/Declination	Yes	Yes	Yes	Yes	Yes
Celestial Body	Yes	Yes	Yes	Yes	Yes
Sky (creates FFOV)	Yes	Yes	Yes	Yes	No

A.1 Laser Source Examples

Note that only one source designation is allowed in any given PRM.

Fixed Point source

SOURCE INFORMATION

Method: Fixed Point
Latitude: XX.XXXX degrees N
Longitude: YYY.YYYY degrees W
Altitude: ZZ.ZZZ km

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Four Surface Points source

SOURCE INFORMATION

Method: Four Surface Points
Surface Point #1
Latitude: 23.0897 degrees N
Longitude: 160.2739 degrees W
Surface Point #2
Latitude: 23.0897 degrees N
Longitude: 160.2250 degrees W
Surface Point #3
Latitude: 23.0447 degrees N
Longitude: 160.2250 degrees W
Surface Point #4
Latitude: 23.0447 degrees N
Longitude: 160.2739 degrees W
Minimum Altitude: -0.100 km
Maximum Altitude: 0.100 km

Two Waypoints source

SOURCE INFORMATION

Method: Two Waypoints
Waypoint #1
Latitude: 23.0897 degrees N
Longitude: 160.2729 degrees W
Altitude: 0.100 km
Waypoint #2
Latitude: 23.0447 degrees N
Longitude: 160.2250 degrees W
Altitude: 0.100 km
Left/Right Dimension: 2.000 km
Up/Down Dimension: 2.000 km

Centerpoint, Centerline source

SOURCE INFORMATION

Method: Centerpoint, Centerline
Centerpoint
Latitude: 23.6000 degrees N
Longitude: 160.2400 degrees W
Altitude: 1.000 km
Centerline Azimuth: 10.0 degrees
Centerline Elevation: 10.0 degrees
Left/Right Dimension: 3.000 km
Up/Down Dimension: 0.500 km
Fore/Aft Dimension: 5.000 km

UNCLASSIFIED

Satellite source

```
SOURCE INFORMATION
-----
Method:                Satellite
Satellite:             43210
Optional Name:         myNiceSat
```

A.2 Laser Target Examples

Multiple targets may be included.

Fixed Azimuth/Elevation targets

```
TARGET INFORMATION
-----
Method:                Fixed Azimuth/Elevation
Azimuth:               0.0 degrees
Elevation:             31.0 degrees

Method:                Fixed Azimuth/Elevation
Azimuth:               0.0 degrees
Elevation:             45.0 degrees
END OF FILE
```

Fixed Field of View targets

```
TARGET INFORMATION
-----
Method:                Fixed Field of View
Azimuth Range:         175.50 to 180.00 degrees
Elevation Range:       51.00 to 54.70 degrees

Method:                Fixed Field of View
Azimuth Range:         180.00 to 184.50 degrees
Elevation Range:       51.00 to 54.70 degrees
END OF FILE
```

Satellite targets

```
TARGET INFORMATION
-----
Method:                Satellite
Satellite:             12345
Optional Name:

Method:                Satellite
Satellite:             43210
Optional Name:         myNiceSat
END OF FILE
```

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Star targets

TARGET INFORMATION

```
-----  
Method:                Star  
Name:                  Sirius  
Hipparcos ID:          23756  
  
Method:                Star  
Name:                  Aldebaran  
Hipparcos ID:          21421  
END OF FILE
```

Right Ascension and Declination targets

TARGET INFORMATION

```
-----  
Method:                Right Ascension and Declination  
Catalog Date:          J2000  
Right Ascension:        209.924  
Declination:            10.116  
  
Method:                Right Ascension and Declination  
Catalog Date:          J2000  
Right Ascension:        107.777  
Declination:            50.182  
END OF FILE
```

Celestial Body targets

TARGET INFORMATION

```
-----  
Method:                Celestial Body  
Celestial Body:        JUPITER  
  
Method:                Celestial Body  
Celestial Body:        MOON  
END OF FILE
```

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Sky targets

The Sky method is a shorthand way to create same sized FFOV boxes. It instructs the LCH DECON system to craft boxes in intervals across an azimuth and elevation range. The Sky method can be stacked to create different sized boxes in different parts of the sky, but exercise care so none of the boxes overlap.

TARGET INFORMATION	

Method:	Sky
Azimuth Range:	296 to 20 degrees
Azimuth Interval:	2 degrees
Elevation Range:	5 to 51 degrees
Elevation Interval:	2 degrees
Method:	Sky
Azimuth Range:	296 to 20 degrees
Azimuth Interval:	4 degrees
Elevation Range:	51 to 90 degrees
Elevation Interval:	3 degrees
END OF FILE	

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APPENDIX B: PAM Samples

Note that the Header, Mission Information, and Laser Information sections remain unchanged across the different source and target combinations. Reference Section 2.2.4 for guidance on this information. DECON will only process allowable source and target combinations as noted in Table A.3 above. The Table shows commonly used types of sources and targets. Reference the DECON ICD for the full list of source and target types and allowable combinations.

B.1 PAM Examples - Fixed Point Source

As with the PRM, only one source designation is allowed in any given PAM. The PAM will report the start and stop time for each open window, or closed window if the LCH has been so directed. This is followed by the duration of the window and at the end by the percentage of time the windows represent vs. the mission start/stop time called out in the header. Then the Source Geometry is identified, followed by the Target Geometry and target number. Then follows the start and stop times for the next target(s), if any. There is no “END OF FILE” designation, the data simply stops. The following examples all use the Fixed Point Source Geometry, but the PAM source will follow the Source Information format in the PRM per Appendix A.

PAMs may be checked for correctness in several ways: The mission start/stop times should be as requested in the PRM. The windows should fall within the start/stop times. The duration should be correct for the windows specified. The source and target geometries should be as requested in the PRM. For firing the laser location should fall within the source geometry, laser pointing should fall within a target geometry on the PAM, and time should fall within an open firing window.

[Continued on Next Page]

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Fixed Point source to FFOV target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
-----	-----	-----
2017 Jun 03 (154) 0016 58	2017 Jun 03 (154) 0017 46	0000:48
2017 Jun 03 (154) 0023 58	2017 Jun 03 (154) 0024 34	0000:36
...		
...		
2017 Jun 03 (154) 2325 04	2017 Jun 03 (154) 2326 02	0000:58
2017 Jun 03 (154) 2330 52	2017 Jun 03 (154) 2333 57	0003:05

Percent = 5.75%

Source Geometry: (WGS-84)

Method: Fixed Point
Latitude: 30.00000000 degrees N
Longitude: 115.00000000 degrees W
Altitude: 1.23456 km

Target Geometry: (WGS-84) 1

Method: Fixed Field of View
Azimuth Range: 0.0 to 7.2 degrees
Elevation Range: 0.0 to 7.2 degrees

Fixed Point source to Fixed Azimuth/Elevation target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
-----	-----	-----
2017 Oct 13 (286) 1200 00	2017 Oct 13 (286) 1459 52	0179:52
2017 Oct 13 (286) 1459 56	2017 Oct 13 (286) 1601 46	0061:50
...		
...		
2017 Oct 14 (287) 0745 12	2017 Oct 14 (287) 1150 12	0245:00
2017 Oct 14 (287) 1151 36	2017 Oct 14 (287) 1200 00	0008:24

Percent = 99.79%

Source Geometry: (WGS-84)

Method: Fixed Point
Latitude: 30.000000 degrees N
Longitude: 115.000000 degrees W
Altitude: 1.23456 km

Target Geometry: (WGS-84) 1

Method: Fixed Azimuth/Elevation
Azimuth: 270.0 degrees
Elevation: 90.0 degrees

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Fixed Point source to Satellite target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
-----	-----	-----
2017 Oct 25 (298) 2152 27	2017 Oct 25 (298) 2210 28	0018:01
2017 Oct 25 (298) 2346 51	2017 Oct 25 (298) 2347 09	0000:18
...		
...		
2017 Oct 26 (299) 0335 07	2017 Oct 26 (299) 0346 17	0011:10
2017 Oct 26 (299) 0346 36	2017 Oct 26 (299) 0353 09	0006:33

Percent = 16.75%

Source Geometry: (WGS-84)

Method: Fixed Point
Latitude: 30.0000 degrees N
Longitude: 100.0000 degrees W
Altitude: 1.2345 km

Target Geometry: (WGS-84) 2

Method: Satellite
Satellite: 1328
Optional Name: BEACON-C

Fixed Point source to Celestial Body target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
-----	-----	-----
2017 Oct 13 (286) 1133 00	2017 Oct 13 (286) 1313 00	0100:00

Percent = 100.00%

Source Geometry: (WGS-84)

Method: Fixed Point
Latitude: 32.7803 degrees N
Longitude: 105.8203 degrees W
Altitude: 2.788 km

Target Geometry: (WGS-84) 1

Method: Celestial Body
Celestial Body: MOON

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Fixed Point source to Right Ascension and Declination target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
2017 Oct 26 (299) 2301 02	2017 Oct 27 (300) 0036 11	0095:09
2017 Oct 27 (300) 0036 19	2017 Oct 27 (300) 0102 17	0025:58
...		
2017 Oct 27 (300) 0323 04	2017 Oct 27 (300) 0336 02	0012:58
2017 Oct 27 (300) 0336 06	2017 Oct 27 (300) 0447 08	0071:02

Percent = 53.02%

Source Geometry: (WGS-84)

Method: Fixed Point

Latitude: 30.2408 degrees S

Longitude: 70.7367 degrees W

Altitude: 2.722 km

Target Geometry: (WGS-84) 69

Method: Right Ascension And Declination

Catalog Date: J2000

Right Ascension: 291.812 degrees

Declination: -23.573 degrees

[Continued on Next Page]

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B.2 PAM Example - Four Surface Point Source

Four Surface Point source to FFOV target

YYYY MMM dd (DDD) HHMM SS	YYYY MMM dd (DDD) HHMM SS	MM:SS
-----	-----	-----
2022 Jan 07 (007) 0415 05	2022 Jan 07 (007) 0424 23	0009:18
2022 Jan 07 (007) 0550 33	2022 Jan 07 (007) 0601 47	0011:14
...		
...		
2022 Jan 07 (007) 1716 40	2022 Jan 07 (007) 1727 07	0010:27
2022 Jan 07 (007) 1855 29	2022 Jan 07 (007) 1900 29	0005:00

Percent = 7.32%

Source Geometry: (WGS-84)

Method: Four Surface Points

Surface Point #1

Latitude: 32.886 degrees N

Longitude: 106.445 degrees W

Surface Point #2

Latitude: 32.974 degrees N

Longitude: 106.457 degrees W

Surface Point #3

Latitude: 33.032 degrees N

Longitude: 106.35 degrees W

Surface Point #4

Latitude: 32.918 degrees N

Longitude: 106.353 degrees W

Minimum Altitude: 1.188 km

Maximum Altitude: 1.204 km

Target Geometry: (WGS-84) 1

Method: Fixed Field of View

Azimuth Range: 0.0 to 360.0 degrees

Elevation Range: 0.0 to 90.0 degrees

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APPENDIX C: LASR Samples

The Header, Mission Information, Laser Information, and Laser Firing Information sections remain unchanged across the different source and target combinations. Reference Section 2.2.17 for guidance on this information. Under Mission Information the “PAM Target Type” should reflect what is being reported in the Laser Shots vs. the actual PAM that may have been in use at the time. E.g., systems may report out time tagged azimuth and elevation even if it’s a Celestial Body that was being tracked at the time. In this case the LASR should indicate Fixed Point or Fixed Azimuth/Elevation for the PAM Target Type.

C.1 Laser Information Examples

Divergence is always reported in degrees, vs. the usual microradians in other LCH reports.

CW Laser

```
LASER INFORMATION
-----
Laser Name:                Owner_LaserName_1.064um_23.1W_50urad
CW Output Power:           23.1 Watts
Pulse Energy:
Pulse Repetition Freq:
Max half beam divergence:  0.00286 degrees half angle
```

Pulsed Laser

```
LASER INFORMATION
-----
Laser Name:                Owner_LaserName_532nm_7W_24.4urad_100Hz
CW Output Power:
Pulse Energy:              0.070 J/pulse
Pulse Repetition Freq:     100 Hz
Max half beam divergence:  0.0014 degrees half-angle
```

C.2 Laser Shot Examples

Up to three shots may be included in one LASR, and for each shot there is a maximum of three hundred records allowed. The PAM Target ID field is required but reporting a value for this field is optional. Usual entries for Actual Source Types will be Fixed Point or Satellite, with DECON interpolating between different sequential time tagged fixed points. Usual entries for Actual Target Types will be Fixed Point, Star, Right Ascension and Declination, Celestial Body, Fixed Azimuth/Elevation, or Satellite. Fixed Point targeting references engaging some latitude, longitude, and altitude (LLA) location vs. pointing in some azimuth/elevation direction. DECON will interpolate between different sequential time tagged fixed LLAs or fixed azimuth/elevations. For a truly fixed source location or target pointing simply repeat the same LLA or azimuth/elevation values for each time tag.

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Fixed Point source, Fixed Azimuth/Elevation target

LASER SHOTS					

Shot Number: 1					
PAM Target ID: 1					
Actual Source Type: Fixed Point					
Actual Target Type: Fixed Azimuth/Elevation					
Time	Source Latitude	Source Longitude	Source Height	Laser Azimuth	Laser Elevation
-----	-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	190.00	0.000
2020216170021.000	35.8727	253.6708	2.2870 km	190.00	0.000
...					
...					
2020216170026.000	35.8727	253.6708	2.2870 km	190.00	0.000
2020216170026.785	35.8727	253.6708	2.2870 km	190.00	0.000
END OF FILE					

Fixed Point source, Fixed Point target

LASER SHOTS						

Shot Number: 1						
PAM Target ID: 1						
Actual Source Type: Fixed Point						
Actual Target Type: Fixed Point						
Time	Source Latitude	Source Longitude	Source Height	Target Latitude	Target Longitude	Target Height
-----	-----	-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	35.3944	174.6570	2.3001 km
2020216170021.000	35.8727	253.6708	2.2870 km	35.3944	174.6570	2.3024 km
...						
...						
2020216170026.000	35.8727	253.6708	2.2870 km	35.3944	174.6570	2.4126 km
2020216170026.785	35.8727	253.6708	2.2870 km	35.3944	174.6570	2.4121 km
END OF FILE						

Fixed Point source, Satellite target

LASER SHOTS				

Shot Number: 1				
PAM Target ID: 1				
Actual Source Type: Fixed Point				
Actual Target Type: Satellite				
Time	Source Latitude	Source Longitude	Source Height	Target SCC
-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	25897
2020216170021.000	35.8727	253.6708	2.2870 km	25897
...				
...				
2020216170026.000	35.8727	253.6708	2.2870 km	25897
2020216170026.785	35.8727	253.6708	2.2870 km	25897
END OF FILE				

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Fixed Point source, Celestial Body target

Valid Celestial Body targets include SUN, MOON, MERCURY, VENUS, MARS, JUPITER, SATURN, URANUS, NEPTUNE, and PLUTO.

LASER SHOTS				

Shot Number: 1				
PAM Target ID: 1				
Actual Source Type: Fixed Point				
Actual Target Type: Celestial Body				
Time	Source Latitude	Source Longitude	Source Height	Target Celestial Body
-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	MOON
2020216170021.000	35.8727	253.6708	2.2870 km	MOON
...				
...				
2020216170026.000	35.8727	253.6708	2.2870 km	MOON
2020216170026.785	35.8727	253.6708	2.2870 km	MOON
END OF FILE				

Fixed Point source, Right Ascension and Declination target

Catalog Date may be B1950, J2000, or catalog date designated as YYYY.ffffffff fractional year format.

LASER SHOTS						

Shot Number: 1						
PAM Target ID: 1						
Actual Source Type: Fixed Point						
Actual Target Type: Right Ascension and Declination						
Time	Source Latitude	Source Longitude	Source Height	Target Catalog Date	Target Right Ascension	Target Declination
-----	-----	-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	B1950	145.0	-45.0
2020216170021.000	35.8727	253.6708	2.2870 km	B1950	145.0	-45.0
...						
...						
2020216170026.000	35.8727	253.6708	2.2870 km	B1950	145.0	-45.0
2020216170026.785	35.8727	253.6708	2.2870 km	B1950	145.0	-45.0
END OF FILE						

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Fixed Point source, Star target using Hipparcos ID

Star targets will be designated by Hipparcos ID or common name, but not both.

LASER SHOTS					

Shot Number: 1					
PAM Target ID: 1					
Actual Source Type: Fixed Point					
Actual Target Type: Star					
Time	Source Latitude	Source Longitude	Source Height	Target Hipparcos ID	Target Name
-----	-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	21421	N/A
2020216170021.000	35.8727	253.6708	2.2870 km	21421	N/A
...					
...					
2020216170026.000	35.8727	253.6708	2.2870 km	21421	N/A
2020216170026.785	35.8727	253.6708	2.2870 km	21421	N/A
END OF FILE					

Fixed Point source, Star target using Name

Star targets will be designated by Hipparcos ID or common name, but not both.

LASER SHOTS					

Shot Number: 1					
PAM Target ID: 1					
Actual Source Type: Fixed Point					
Actual Target Type: Star					
Time	Source Latitude	Source Longitude	Source Height	Target Hipparcos ID	Target Name
-----	-----	-----	-----	-----	-----
2020216170020.000	35.8727	253.6708	2.2870 km	N/A	Aldebaran
2020216170021.000	35.8727	253.6708	2.2870 km	N/A	Aldebaran
...					
...					
2020216170026.000	35.8727	253.6708	2.2870 km	N/A	Aldebaran
2020216170026.785	35.8727	253.6708	2.2870 km	N/A	Aldebaran
END OF FILE					

Satellite source, Satellite target

LASER SHOTS		

Shot Number: 1		
PAM Target ID: 1		
Actual Source Type: Satellite		
Actual Target Type: Satellite		
Time	Source SCC	Target SCC
-----	-----	-----
2020216170020.000	12345	25897
2020216170021.000	12345	25897
...		
...		
2020216170026.000	12345	25897
2020216170026.785	12345	25897
END OF FILE		

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Satellite source, Celestial Body target

Valid Celestial Body targets include SUN, MOON, MERCURY, VENUS, MARS, JUPITER, SATURN, URANUS, NEPTUNE, and PLUTO.

LASER SHOTS		

Shot Number: 1		
PAM Target ID: 1		
Actual Source Type: Satellite		
Actual Target Type: Celestial Body		
Time	Source SCC	Target Celestial Body
-----	-----	-----
2020216170020.000	25897	JUPITER
2020216170021.000	25897	JUPITER
...		
...		
2020216170026.000	25897	JUPITER
2020216170026.785	25897	JUPITER
END OF FILE		

Satellite source, Right Ascension and Declination target

Catalog Date may be B1950, J2000, or catalog date designated as YYYY.fffffffff fractional year format.

LASER SHOTS				

Shot Number: 1				
PAM Target ID: 1				
Actual Source Type: Satellite				
Actual Target Type: Right Ascension and Declination				
Time	Source SCC	Target Catalog Date	Target Right Ascension	Target Declination
-----	-----	-----	-----	-----
2020216170020.000	12345	B1950	145.0	-45.0
2020216170021.000	12345	B1950	145.0	-45.0
...				
...				
2020216170026.000	12345	B1950	145.0	-45.0
2020216170026.785	12345	B1950	145.0	-45.0
END OF FILE				

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Satellite source, Star target using Hipparcos ID

Star targets will be designated by Hipparcos ID or common name, but not both.

LASER SHOTS			

Shot Number: 1			
PAM Target ID: 1			
Actual Source Type: Satellite			
Actual Target Type: Star			
Time	Source	Target	Target
	SCC	Hipparcos ID	Name
-----	-----	-----	-----
2020216170020.000	25897	21421	N/A
2020216170021.000	25897	21421	N/A
...			
...			
2020216170026.000	25897	21421	N/A
2020216170026.785	25897	21421	N/A
END OF FILE			

Satellite source, Star target using Name

Star targets will be designated by Hipparcos ID or common name, but not both.

LASER SHOTS			

Shot Number: 1			
PAM Target ID: 1			
Actual Source Type: Satellite			
Actual Target Type: Star			
Time	Source	Target	Target
	SCC	Hipparcos ID	Name
-----	-----	-----	-----
2020216170020.000	25897	N/A	Aldebaran
2020216170021.000	25897	N/A	Aldebaran
...			
...			
2020216170026.000	25897	N/A	Aldebaran
2020216170026.785	25897	N/A	Aldebaran
END OF FILE			

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ATTACHMENT 1: Glossary of References and Supporting Information

References

CJCSI 3225.01A, *Procedures for Management of Illumination of Objects in Space*, 27 July 2020.

CSpOC SOP for *Data Transfer of Laser Deconfliction Products*, 5 August 2022

DoDI 3100.11, *Management of Laser Illumination of Objects in Space*, 24 October 2016

DM-06914-A001, *Interface Control Document for the USSTRATCOM JFCC SPACE [LP 14-2] Space Deconfliction System*, 20 May 2020

SCG for *Laser Lethality, Countermeasures, and Counter-Countermeasures*, AFRL/DE, 15 November 2004

SCG for Space Surveillance Operations, USSTRATCOM, 28 July 2017

Abbreviations and Acronyms

ADO - Awareness Duty Operator

AFRL - Air Force Research Laboratory

CFSCC - Combined Force Space Component Command

COD - Combat Operations Division

CSpOC - Combined Space Operations Center

CW - Continuous Wave

DECON - Deconfliction

DRM - Decentralized Request Message

FFOV - Fixed Field of View

IAW - In Accordance With

ICD - Interface Control Document

IER - Information Exchange Requirements

IERS - International Earth Rotation and Reference Systems Service

JDAY - Julian Day

JSpOC - Joint Space Operations Center

JWICS - Joint Worldwide Intelligence Communications System

LAL - Lasing Approval List

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LASR - Laser Activity Summary Report
LCH - Laser Clearinghouse
LLA - Latitude, Longitude, and Altitude
LO/O - Laser Owner/Operator
LOAP - Laser Firing Outside Authorized Parameters
MTOS - Master Test and Operations Schedule
NLT - No Later Than
PAM - Program Approval Message
PARM - Predictive Avoidance Request Message
POC - Point of Contact
PRM - Program Request Message
SAAL - Standardized Astrodynamic Algorithm Library
SADT - Senior Awareness Duty Technician
SAT - Satellite
SCG - Security Classification Guide
SIPRNet - Secure Internet Protocol Router Network
SMP - Sigma Multiplier
SPL - Satellite Protect List
SSA - Space Situational Awareness
TCON - Time Constants
TLE - Two-Line Element Set
ULS - Unique Laser Susceptibility
UPL - Unique Protect List
USSPACECOM - United States Space Command
USSTRATCOM - United States Strategic Command
UTC - Coordinated Universal Time
VCM - Vector Covariance Message