MEMORANDUM OF UNDERSTANDING
BETWEEN
AIR FORCE SPACE COMMAND
AND
FEDERAL AVIATION ADMINISTRATION
OFFICE OF THE ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION
FOR
RESOLVING REQUESTS FOR RELIEF FROM COMMON LAUNCH SAFETY REQUIREMENTS

I. PURPOSE

This Memorandum of Understanding (MOU) explains the roles and responsibilities of, and outlines the coordination process between, Air Force Space Command (AFSPC) and the Federal Aviation Administration Office of the Associate Administrator for Commercial Space Transportation (FAA/AST) in resolving a request from a launch operator for relief from an AFSPC and FAA common launch safety requirement. Further, this MOU demonstrates how the relief process will minimize the burden on a launch operator and reduce duplication of effort.

II. SCOPE

This MOU applies to the implementation of AFSPC and FAA common launch safety requirements governing U.S. Government and FAA-licensed launches. This MOU contains provisions for timely and efficient coordination between the two agencies as they carry out their responsibilities for overseeing the safety of space launch and reentry. This MOU is consistent with statutes and national policies that apply to the FAA and/or AFSPC.

III. AUTHORITY

This MOU is pursuant to the Memorandum of Agreement (MOA) between the Department of the Air Force and the Federal Aviation Administration on Safety for Space Transportation and Range Activities, September 13, 2007. Section VI, Paragraph C of the MOA directs the Air Force and the FAA to work together to achieve common launch safety requirements and to "develop, maintain, and implement a process for communication with respect to interpretations of the common safety requirements as they apply to government and FAA-licensed launches." The MOA directs that this process be utilized in connection with requests from any launch operator for a waiver or equivalent level of safety (ELS), or, in other words, for relief from any common launch safety requirement.

IV. OBJECTIVES

This MOU:

A. Outlines the framework for AFSPC and FAA/AST implementation of the agreements made in the September 2007 MOA regarding coordination on issues involving relief from AFSPC and FAA common launch safety requirements.

B. Minimizes the regulatory burden on the US commercial space sector by:

1. Clearly describing federal agency requirements and responsibilities with regard to interagency coordination on issues involving relief from the common launch safety requirements; and

2. Precluding unnecessary overlap and duplication.

C. Defines an interagency process for coordination on tailoring of common launch safety requirements during the development of a launch vehicle.

D. Defines an interagency process for resolving requests for relief from common launch safety requirements. This MOU:

1. Enhances current AFSPC and FAA processes for resolving relief issues;

2. Outlines procedures to share data to avoid duplication of effort and allows for joint resolution of issues for common vehicles while enforcing AF and FAA requirements;

3. Outlines a process for sharing of information and joint coordination on relief issues related to common vehicles from federal and non-federal launch sites.

4. Outlines the Relief Review Panel process between AFSPC and the FAA. This panel institutionalizes an efficient method to review common launch and reentry safety requirements and determine their continued viability.

V. DEFINITIONS

A. Equivalent level of safety (ELS) means an approximately equal level of safety as determined by qualitative or quantitative means (see Section VI for implementation). ELS determinations made by AFSPC ranges were formerly referred to as "meets intent certifications."

B. Common launch safety requirements means requirements that are shared by the FAA and AFSPC and that protect the public from hazards associated with space launch. These requirements are codified in FAA regulations, Code of Federal Regulations 14 C.F.R. Ch. III. At AFSPC ranges, the common launch safety requirements will be implemented in AFSPC range safety documents.

C. Launch operator means a person or entity who conducts or will conduct the launch of a launch vehicle and any payload. Note: AFSPC refers to a launch operator as a range user.

D. Tailoring means the process used at AFSPC ranges beginning at program introduction where AFSPC, through its range safety organizations, and a launch operator review each range safety requirement and jointly document whether or not the requirement applies to the launch operator and if it does apply, whether or not the launch operator will meet the requirement as written or achieve an ELS through an acceptable alternative. The FAA will participate in the AFSPC tailoring process as part of the licensing process. The FAA's licensing process permits similar determinations.

E. Waiver means a decision that allows a launch operator to continue with a launch, including launch processing, even though the launch operator does not satisfy a specific safety requirement and is not able to demonstrate an ELS.

VI. GENERAL

A. The Air Force, National Aeronautics and Space Administration (NASA) and FAA Common Standards Working Group (CSWG) develops and ensures the consistency of common launch safety requirements contained in FAA regulations and AFSPC range safety requirement documents. The FAA launch site safety assessments of each AFSPC range cross-references the common launch safety requirements between the FAA regulations and AFSPC requirements.

B. The FAA and AFSPC may approve relief from a common launch safety requirement by finding an ELS or granting a waiver based on criteria in AFSPC range safety documents and 14 CFR Ch. III and following the coordination process outlined in this MOU. The CSWG will review the implementation of this MOU and propose any future updates to enhance AFSPC and FAA coordination on relief issues. At a minimum, this MOU will be reviewed every five years, in conjunction with review of the January 2001 and updated 13 September 2007, MOA.

C. Fulfillment of the common launch safety requirements contained in AFSPCMAN 91-710 and CFR Part 417 can be categorized by either fully compliant, ELS, or waiver. For the purposes of this MOU the ELS and waiver categories are both types of noncompliances of which relief request paperwork must be submitted to AFSPC and the FAA by the launch operator for joint review and consideration. Subsequent paragraphs in this section outline the joint implementation of these categories of noncompliances.

D. An ELS applies where a noncompliance satisfies all the following conditions:

1. The risk of hardware failure, using likelihood of occurrence and/or impact on hardware performance, is negligible with a high degree of certainty. High certainty can be obtained using well characterized inputs and modeling supported by empirical data which likely address all conditions; AND

2. The noncompliance does not result in any new single point failures in the ground or airborne safety critical hardware.

E. All waivers are intended to have limited effectivities. A life of the program ELS should be addressed through updates to the tailored requirements.

VII. AFSPC/FAA LAUNCH SAFETY COORDINATION

A. For the purposes of this MOU this interagency coordination is applicable to all launches of common vehicles from federal and non-federal launch sites. This includes components or systems relevant to these common vehicles. Common vehicles are those used for both government and FAA-licensed launch purposes.

B. The FAA recognizes that it does not have jurisdiction over non-licensed government launches (ie: launches that are conducted by or for a government agency and the government agency is so substantially involved that it effectively directs or controls the launch). Such launches may take place from federal or non-federal launch sites. AFSPC recognizes that an FAA-licensed launch operator may only operate within the scope of its license for all launches from its site (this includes government and non-government launches).

C. In accordance with the AF and FAA MOA on Safety for Space Transportation, the AF does not have the authority to grant relief from any 14 CFR requirement, and the FAA does not have the authority to grant relief from any AFSPC launch range requirements contained in applicable Air Force Instructions and AFSPCMANs 91-710 and 91-711 or equivalent.

D. Both agencies will notify each other of all requests for relief, schedule of associated review activities, and share copies of all formal and supporting documentation. Where needed, the agencies will have government-only face-to-face meetings or telephone conferences to review the information and jointly develop a position on the relevant technical issues. For a licensed launch from a federal range a review activity will not obtain final approval without the consent of both agencies.

E. The FAA and AFSPC will jointly stress to the launch operator that the launch operator's first course of action when seeking relief from a common launch safety requirement is to develop an alternative that provides an ELS. AFSPC and FAA staff will work jointly with the launch operator's staff as early as possible to identify an acceptable technical approach.

F. After the launch operator identifies the need to request relief from an AFSPC or FAA safety requirement, they will complete the "Launch Safety Requirements Relief Request" form (Attachment A). The form shall be completed in accordance with the instructions included in Attachment A. The launch operator will submit the completed form to the appropriate AFSPC wing safety office and the FAA for licensed launches along with any other supporting material. Any changes to the form contained in Attachment A shall be approved by the CSWG co-chairs.

G. For government launches of common vehicles and launches involving components or systems of common vehicles, the FAA will sign Attachment A as coordination or information respectively. This signature will occur as part of the regular range staffing process and will be completed prior to final range approval, if possible. For licensed launches, the FAA will sign Attachment A as approve/disapprove in accordance with 14 CFR requirements. IAW AFSPCMAN 91-710, the SW Commanders shall approve or disapprove all waivers, ELS determinations and tailored requirements affecting public safety, and the Chiefs of Safety or their designated representatives shall approve or disapprove all waivers, ELS determinations and tailored requirements other than those affecting public safety.

H. The FAA will identify any licensing activities that may be required with respect to a request for relief, such as changes to a license application that may be in process or request for a license modification for an existing license.

I. Requests for relief received during a launch countdown of licensed launches from AFSPC ranges will be jointly dispositioned by the Space Wing Commander or designee and the FAA lead safety inspector or designee with coordination from the launch operator.

J. Waivers dispositioned and approved during a launch countdown will be documented on the attached Relief Request Form and entered into the relief database after the launch.

K. All requests for relief will be uploaded to the FAA/AF relief database which provides a centralized repository for noncompliance requests to all common safety requirements for launch and reentry activities occurring at AFSPC ranges.

L. If a request for relief is approved, the FAA and AFSPC will jointly review the requirement post approval and determine whether a change to the associated requirement is necessary.

VIII. TAILORING

A. AFSPC ranges will invite the FAA to participate in all tailoring of the common launch safety requirements for common launch vehicles used for licensed launches from AFSPC ranges. AFSPC and the FAA will coordinate on the review of any request for ELS for a common launch safety requirement that is part of tailoring or otherwise according to section VII of this MOU.

B. The rationale for ELS determinations will be captured and approved as part of the initial tailoring process without the need for further noncompliance paperwork. The documentation will include technical justification for approval and will become part of AFSPC's record for the associated launch vehicle program and part of the FAA licensing record. Subsequent ELS determinations will require noncompliance paperwork (i.e., the "Launch Safety Requirements Relief Request" form). For waivers, separate noncompliance paperwork must be submitted in accordance with Section VII. A request for relief may result in changes to AFSPC and FAA documented requirements.

C. AFSPC will notify the FAA of any changes or updates to the tailored documents.

IX. RELIEF REVIEW PANEL

The FAA and AFSPC Relief Review Panel will review dispositioned Range Safety requests for relief and approved tailored common launch safety requirements documents at least annually. The review panel will recommend changes to the common launch safety requirements to the AF/FAA/NASA CSWG. This review institutionalizes an efficient method to review common launch and reentry safety requirements and assess their continued viability and applicability.

MICHAEL J. BASLA, Lieutenant General, USAF
Vice Commander
Air Force Space Command

GEORGE C. NIELD,
Associate Administrator
for Commercial Space Transportation

Attachment A

LAUNCH SAFETY REQUIREMENTS RELIEF REQUEST

(complete IAW with the attached instructions)

(Text must be computer-generated or typed. Signatures must include printed or typed name and organization)

ORIGINATOR PROGRAM: RELIEF REQUESTOR: POC NAME: DATE:	**ADDRESS:** CITY: STATE: ZIP: PHONE No: FAX No: E-MAIL:
TYPE : ☐ EQUIVALENT LEVEL OF SAFETY ☐ WAIVER	**EFFECTIVITY REQUESTED:** ☐ LIFE OF PROGRAM ☐ LIMITED TO:
CLASS: ☐ PUBLIC SAFETY ☐ LAUNCH AREA SAFETY ☐ LAUNCH COMPLEX SAFETY	**SHORT TITLE OF RELIEF REQUEST:**

REQUIREMENT SOURCE (DOCUMENT, VOLUME, PARAGRAPH NUMBER, AND TEXT):

RATIONALE FOR RELIEF REQUEST AND IMPACT:

HAZARD MITIGATION:

GET WELL PLAN:

RELIEF REQUESTOR SIGNATURE

GOVERNMENT USE ONLY BELOW THIS LINE

AF AND/OR FAA COMMENTS:

30 SW SIGNATURE ☐ APPROVED ☐ DISAPPROVED ☐ COORDINATION ☐ INFORMATION	**45 SW SIGNATURE** ☐ APPROVED ☐ DISAPPROVED ☐ COORDINATION ☐ INFORMATION
TRACKING INFORMATION DATE: TRACKING NO:	**FAA/AST SIGNATURE** ☐ APPROVED ☐ DISAPPROVED ☐ COORDINATION ☐ INFORMATION

INSTRUCTIONS FOR COMPLETING THE LAUNCH SAFETY REQUIREMENTS RELIEF FORM

THIS FORM WILL BE USED FOR *ALL* REQUESTS FOR RELIEF (WAIVER OR EQUIVALENT LEVEL OF SAFETY) FROM LAUNCH SAFETY REQUIREMENTS FROM AFSPC RANGES.

THE AF (MAJCOM AND WINGS) AND FAA WILL FOLLOW THE PROCESSES AND PROCEDURES OUTLINED IN THE FOLLOWING REFERENCES:

a. *MOU BETWEEN AFSPC AND FAA/AST FOR RESOLVING REQUESTS FOR RELIEF FROM COMMON LAUNCH SAFETY REQUIREMENTS*

b. *AFSPC/SE AND FAA/AST CHARTER FOR THE COMMON STANDARDS WORKING GROUP (CSWG) RELIEF REVIEW PANEL.*

The *Relief Requestor* will complete sections 1-11 as described below.
If additional space is needed, continuation sheets may be attached. Supporting data may also be attached to the form.

1. ORIGINATOR.

a. Program: Identify the program by system name (Delta IV/Atlas V/MM II, etc.)
b. Relief Requestor: official company/organization/office name
c. POC Name: Full name of individual requesting/submitting the relief request
c. Date: Use the following format (dd/mm/yyyy)

2. ADDRESS.

a. Address: complete mailing address (street, city, state, and zip code)
b. Phone No: include area code and telephone number
c. Fax No: include area code and telephone number
d. E-mail: complete business contact email address

3. TYPE. Mark either the "equivalent level of safety" or "waiver" box, as appropriate, as defined in AFSPCMAN 91-710, EWR 127-1, or 14 CFR. Programs using RCC 319 at AFSPC ranges should mark the "equivalent level of safety" box for RCC 319 "conditional compliance requests".

4. EFFECTIVITY REQUESTED. Mark either "life of program" or "limited to" box. If the "limited to" box is marked, specify the length of the relief (either using a time frame or specify the last mission requiring relief). The Relief Requestor shall justify the length of the effectivity in the RATIONALE FOR RELIEF REQUEST AND IMPACT section (Section 8) on this form.

5. CLASS. Mark one of the following boxes, "public safety", "launch area safety", or "launch complex safety" (pad safety), as appropriate, as defined in AFSPCMAN 91-710, EWR 127-1, or 14 CFR. Programs using RCC 319 should mark the "launch complex safety" box for "personnel safety" related requests and mark the most appropriate box based on where the potentially affected resources are located for "resource protection" requests.

6. SHORT TITLE OF RELIEF REQUEST. Provide a brief title that describes the relief request. The short title will be used in conjunction with the "tracking no." in Section 16 to help track, monitor, and reference the relief request.

7. REQUIREMENT SOURCE (DOCUMENT, VOLUME, PARAGRAPH NUMBER, AND TEXT). Identify only one requirement per form. Identify the source(s) of the requirement (AFSPCMAN 91-7XX, 14 CFR, specific version of EWR 127-1, etc.). Identify the exact text from the source document. For example, "AFSPCMAN 91-710, Volume 3, Chapter 5, Paragraph 5.5.1. The OSC shall be capable of recording and playback of hazardous operations."

8. RATIONALE FOR RELIEF REQUEST AND IMPACT. The Relief Requestor's first course of action when seeking relief from a launch safety requirement should be to develop an alternative that provides an equivalent level of safety (ELS). If an ELS cannot be identified, the Relief Requestor shall provide a complete and detailed description of the rationale (reason) for requesting relief from a specific launch safety requirement. State why compliance with the requirement is impractical and how the Range User proposes to meet the intent of the original requirement. Address the underlying reason for requesting relief. Also, include the rationale for the effectivity requested in Section 4. Identify the worst case scenario if the exact letter of the requirement is not met. Also, identify the "impact" if the waiver/ELS is not approved, this should include the worst case scenario if the waiver/ELS is not approved? State the consequences if the requirement is not met. For example, "Impact: Recording and playback of hazardous operations is readily available, but not from the OSC. The cost to modify the OSC to record and playback hazardous operations is excessive, $1.5M, and provides no additional benefit to the government."

9. HAZARD MITIGATION. If this relief request affects a hazard mitigation requirement, identify the alternative mitigations the Relief Requestor will implement to eliminate, contain, or reduce the hazard. If this relief request does not affect a hazard mitigation requirement, so state along with an explanation.

If an additional hazard or an existing hazard is increased from the proposed relief, identify the mitigations the Relief Requestor will implement to eliminate, contain, or reduce the hazard. If no hazard is generated as a result of the requested relief, so state.

10. GET WELL PLAN. Identify the steps, procedures, processes, actions, and schedule for meeting the launch safety requirement.

11. REQUESTOR SIGNATURE AND TITLE. The appropriate level official from the relief requesting organization shall sign their complete name and title (Range User, Launch Operator, Government Organization, etc.).

The *Government* will complete sections 12-15 as described below:

12. AF AND/OR FAA COMMENTS. Range Safety, AF, and/or FAA assessment of the Relief Requestor's request for relief from a launch safety requirement. State the government's position on the resolution of the request for relief and any related issues including all technical justification. This section must be completed if the relief request is disapproved as indicated in Sections 13/14/15. The government will explain their rationale for disapproval and any actions required to obtain approval (if appropriate).

13. 30 SW SIGNATURE. The appropriate 30 SW level official will sign their complete name and title signifying the disposition marked in the box (APPROVED, DISAPPROVED, or COORDINATION). If the waiver affects public safety, the form will be signed by the SW/CC (IAW AFSPCMAN 91-710 and EWR 127-1). If the waiver does not affect public safety, the form will be signed by the Chief of Safety (IAW AFSPCMAN 91-710 and EWR 127-1). Mark the appropriate box (APPROVED, DISAPPROVED, or COORDINATION). The AFSPC range which received the request will mark either the APPROVED or DISAPPROVED box; the other AFSPC range will mark the COORDINATION or INFORMATION box. The

COORDINATION box is marked to indicate they concur with the disposition. The INFORMATION box is marked when the waiver is unique to the issuing range. The INFORMATION box will only be used when there is no possibility that the waiver could be used on the other range. If the vehicle is unique to the range, but the component being addressed by the waiver may be used at the other range, the INFORMATION box will not be used. AFSPC does not have the authority to grant relief from any FAA launch safety requirement.

14. 45 SW SIGNATURE. The appropriate 45 SW level official will sign their complete name and title signifying the disposition indicated in the box (APPROVED, DISAPPROVED, or COORDINATION). If the waiver affects public safety, the form shall be signed by the SW/CC (IAW AFSPCMAN 91-710 and EWR 127-1). If the waiver does not affect public safety, the form will be signed by the Chief of Safety (IAW AFSPCMAN 91-710 and EWR 127-1). Mark the appropriate box (APPROVED, DISAPPROVED, or COORDINATION). The AFSPC range which received the request will mark either the APPROVED or DISAPPROVED box; the other AFSPC range will mark the COORDINATION or INFORMATION box. The COORDINATION box is marked to indicate they concur with the disposition. The INFORMATION box is marked when the waiver is unique to the issuing range. The INFORMATION box will only be used when there is no possibility that the waiver could be used on the other range. If the vehicle is unique to the range, but the component being addressed by the waiver may be used at the other range, the INFORMATION box will not be used. AFSPC does not have the authority to grant relief from any FAA launch safety requirement.

15. TRACKING INFORMATION. The tracking number will be in the following format: 4 digit year – vehicle – consecutive number. An example of this tracking number: 2010-Atlas-01. This means the non-compliance was initiated in calendar year 2010 for the Atlas vehicle program and was the first non-compliance for all vehicles within that calendar year. The consecutive number portion of the tracking number is not unique to each vehicle but rather represents a running tally of all vehicle program non-compliances utilized by the 30SW, 45SW, and FAA.

16. FAA/AST SIGNATURE.
FAA signature is required for all FAA-licensed launches (APPROVED/DISAPPROVED) as well as launches involving "dual use" launch vehicles (COORDINATION). A "dual use" launch vehicle is one that is used to launch both government and commercial payloads (examples include Delta II/IV, Atlas V, etc.) IAW the AFSPC/FAA Relief MOU. The INFORMATION box will be marked for all other launches (not FAA-licensed nor "dual use").