

**PHASE ZERO SPACE TECHNOLOGIES**

# **AFSPCMAN 91-710 Tailoring**

## **A Practitioner's Guide for Range Users**

*How to tailor System Safety requirements, prepare deliverables, and reach Missile System Ground Safety Approval (MSGSA) — based on the Space Launch Delta 30 implementation guidance.*

---

*This guide is an orientation aid based on publicly available U.S. Space Force guidance. It does not replace AFSPCMAN 91-710 or any Range Safety requirement. See “Sourcing & Disclaimers” on the final page.*

## Contents

|                                                         |   |
|---------------------------------------------------------|---|
| Contents.....                                           | 2 |
| 1. Why Tailoring Exists .....                           | 3 |
| The core principle.....                                 | 3 |
| 2. The Tailoring Process at a Glance.....               | 3 |
| It starts with Program Introduction (PI).....           | 3 |
| Who tailors, and how it's captured .....                | 3 |
| Where to find the rules .....                           | 4 |
| 3. Equivalent Level of Safety and Waivers .....         | 4 |
| 4. How 91-710 Relates to FAA Requirements .....         | 4 |
| 5. The Deliverables and What They're For .....          | 5 |
| 6. Timeline: Anchoring Deliverables to Milestones ..... | 6 |
| 7. Two Paths to Compliance .....                        | 6 |
| Iterative-development programs.....                     | 6 |
| Fully developed programs .....                          | 7 |
| 8. A Practical Starting Sequence .....                  | 7 |
| Where ELSSA fits.....                                   | 7 |
| Sourcing & Disclaimers.....                             | 8 |

## 1. Why Tailoring Exists

AFSPCMAN 91-710 is a detail-oriented manual built to cover every payload, vehicle, and operation that could come to the Federal Range. By design it is comprehensive — which also makes it large. Applied line-by-line to a single program, much of it will not apply, and treating every requirement as mandatory is slow, costly, and risks burying the requirements that genuinely matter to your mission.

Tailoring is the official remedy. Space Launch Delta 30 guidance states plainly that the manual “is meant to be tailored,” and that tailoring is “strongly encouraged as mutually beneficial to both the user and Range Safety.” The goal is to keep the safety objectives intact while removing, modifying, or adding requirements so the set reflects your specific system.

This guide walks through what tailoring is, who does it, how it is documented, and where it sits in the road to Missile System Ground Safety Approval (MSGSA). It is written for Range Users — launch vehicle providers, payload owners, and the safety teams who support them.

### The core principle

*Requirement verification is not the same as system safety. The point of 91-710 is not to check every box; it is to run a sound system safety process — identify hazards, assess risk, mitigate where possible, and document and accept the residual risk at the right level. Tailoring is how you focus that process on the hazards your system actually presents.*

## 2. The Tailoring Process at a Glance

### It starts with Program Introduction (PI)

Program Introduction is the formal entry point to the Range Safety process — the point at which a program is first introduced to the Federal Range and the working relationship with the Range Safety office begins. The entire ground-safety flow, from this first step through to Missile System Ground Safety Approval (MSGSA), anchors off PI, and the earliest deliverables are scheduled relative to it (for example, the draft System Safety Program Plan is typically due around PI + 45 days).

PI matters most for new commercial entrants, who may approach the Range at very different stages of development — some early, with little more than target FAA guidance in hand, and some with a fully developed program. Whatever the stage, engaging the Range Safety office at or before PI is repeatedly cited as the single biggest success factor: early, continuous coordination is what makes the tailoring and deliverable process run smoothly rather than becoming a source of rework and delay. Tailoring meetings typically begin soon after PI, once a draft System Safety Program Plan is in place.

### Who tailors, and how it's captured

Tailoring is performed by a team made up of representatives from the Range User, the Range Safety Office(s), and the FAA/AST where appropriate. It is typically captured in a three-column matrix:

**Tailoring may take any of four forms:**

- Deletion of requirements that are not applicable to the program.
- Modification of requirements to fit the unique nature of the system — provided an Equivalent Level of Safety (ELS) is achieved.
- Addition of requirements addressing safety issues the original text does not cover (for example, novel materials or manufacturing methods not yet captured in 91-710).
- Use of Range User command media — the user's own controlled documents — to show how a requirement is met.

*Rationale is required for every item. A tailored matrix without justification is incomplete.*

**Where to find the rules**

Tailoring is conducted under AFSPCMAN 91-710 Volume 1 — specifically paragraph 1.2.2, paragraph 4.4, and Attachment 2, which contains the specific detail. Note that the system safety process itself is described across Volumes 1, 3, 5, and 6.

**3. Equivalent Level of Safety and Waivers**

When you modify a requirement, you are usually asserting an Equivalent Level of Safety — an approximately equal level of safety, where any change to expected risk is not statistically or mathematically significant as determined by qualitative or quantitative analysis. (ELS replaces the former “meets intent” certification.) ELS determinations are evaluated through safety analysis or technical rationale showing the intent of the requirement is met within the general design-inhibit framework of 91-710.

**Two practical points often missed:**

- ELS and non-compliances can only be identified during or after tailoring — once you have compared requirements against your actual design and processing. You cannot finalize them before the tailoring pass is done.
- The Range User cannot approve waivers. The team can develop and approve ELS through the tailoring change process, but waivers and formal non-compliances follow a separate, formal documentation, review, and approval path.

The final approved, tailored edition is placed on the Range User's contract or applied through a Commercial Space Operations Support Agreement. Approval authority depends on the relationship to public safety — granted by the Delta Commander, the Chief of Safety, or the Safety section chief as appropriate.

**4. How 91-710 Relates to FAA Requirements**

If your program has existing FAA documentation, much of it can be arranged to meet 91-710 without duplication. The Federal Range ground-safety requirements and the FAA ground-safety requirements are deliberately similar. (What 91-710 calls “System Safety,” the FAA regulations call “Ground Safety.”)

**The key regulatory relationship, as described in the SLD30/SEAL guidance:**

- Under 14 CFR Part 417 (Subpart E), one path to compliance is to contract with the Federal Range for the ground-safety process; the FAA then accepts that process without further demonstration, provided the FAA has assessed the range. Implementing 91-710 at the Western or Eastern Range meets the intent of the Part 417 ground-safety requirements.
- Under 14 CFR Part 431, the user must enter an agreement with the Federal Range for services and employ a system safety process — which means adhering to 91-710 for Western/Eastern Range launches.
- Under 14 CFR Part 450, ground-safety requirements (§§ 450.181–189) are delegated to the Federal Range where the launch is conducted from a Federal site, there is a written agreement for ground-safety services, and the Administrator has determined the site's processes are not inconsistent with the Secretary's authority.

*Verify the current regulatory transition before relying on these specifics: the source guidance (October 2021) notes Part 417/431 programs migrating to Part 450, and that command designations (AFSPCMAN, and potentially SPFCMAN/USSFMAN) may change. Confirm against the current published rule and manual version.*

## 5. The Deliverables and What They're For

Tailoring determines which requirements apply; the system safety process then produces a set of data-product deliverables that lead to MSGSA. To new Range Users these can look like bureaucratic paperwork. They are not — they are the structured basis for Range Safety's third-party oversight and for “well-informed consent,” and they become the configuration-controlled record of the program (and the first documents reviewed in any incident investigation).

**The principal deliverables on the path to MSGSA:**

| Deliverable                                              | Purpose                                                                                                            | 91-710 Source                               |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| <b>PI – Program Introduction</b>                         | The formal entry point to the Range Safety process                                                                 | Vol 1, Ch 4                                 |
| <b>SSPP — System Safety Program Plan</b>                 | Defines the program's system safety effort and process; aligned with MIL-STD-882.                                  | Vol 1, Attch 3                              |
| <b>Hazard Analyses (PHA, SSHA, SHA, O&amp;SHA, FSHA)</b> | Identify and assess hazards at system, subsystem, operational, and facility levels. The PHA also guides tailoring. | Vol 1, Attch 3; Vol 3, Ch 4; Vol 6, Attch 1 |
| <b>MSPSP — Missile System Pre-Launch Safety Package</b>  | Consolidated flight-hardware and ground-system safety package for the mission.                                     | Vol 3, Attch 1                              |
| <b>FSDP — Facility Safety Data Package</b>               | Facility-specific safety data and hazard analyses for processing/launch facilities.                                | Vol 5, Attch 1                              |
| <b>GOP — Ground Operations Plan</b>                      | Operations content, training plan, and accident-notification plan for ground processing.                           | Vol 6, Attch 2                              |
| <b>OSP — Operations Safety Plan</b>                      | Complex/operations safety plan governing hazardous operations.                                                     | Vol 6, Para 4.3.1                           |

| Deliverable                           | Purpose                                                                    | 91-710 Source          |
|---------------------------------------|----------------------------------------------------------------------------|------------------------|
| <b>DRP — Debris Recovery Plan</b>     | Plan for debris recovery; submitted prior to launch operations.            | Vol 6, Para 4.7        |
| <b>SAR — Safety Assessment Report</b> | Summarizes the safety case; the approval-version SAR supports final MSGSA. | Vol 1, Attch 3, Task 5 |

*Acronyms appear in full on first use; this is a representative list, not the complete set. Refer to 91-710 and the SLD30/SEAL deliverables matrix for the authoritative requirements and content.*

## 6. Timeline: Anchoring Deliverables to Milestones

Deliverables are anchored to program milestones — Program Introduction (PI), System Requirements Review (SRR), Preliminary Design Review (PDR), and Critical Design Review (CDR) — with draft and final versions due relative to those points. Critically, the specific schedule is not fixed by 91-710: it varies by program and is typically driven by the launch vehicle provider, in coordination with Range Safety. A payload provider does not set these dates independently — it coordinates to the schedule established by its launch vehicle provider (LVP), who customarily serves as the Range liaison as part of standard launch services. The example below illustrates the milestone-relative pattern only; the authoritative, program-specific dates come from your LVP and Range Safety, with reference to the SLD30/SEAL status table and 91-710.

| Item                                      | Draft                                | Final                              |
|-------------------------------------------|--------------------------------------|------------------------------------|
| <b>PI</b>                                 | Launch Contract Signature (typical)  |                                    |
| <b>SSPP</b>                               | PI + 45 days                         | SRR – 45 days                      |
| <b>91-710 Tailoring (Vols 1, 3, 5, 6)</b> | PDR – 30 days                        | CDR + 30 days                      |
| <b>MSPSP</b>                              | Draft at SRR / PDR / CDR (– 45 days) | Hardware shipment – 45 days        |
| <b>GOP</b>                                | Draft at SRR / PDR / CDR (– 45 days) | 45 days prior to hardware delivery |
| <b>SAR</b>                                | CDR – 30 days                        | Pre-Ship Review (PSR)              |
| <b>DRP</b>                                | —                                    | 60 days prior to launch            |

*If your program does not follow the DoD standard acquisition milestones, you must summarize your development process in the SSPP and agree anchor-point milestones with Range Safety. The intent is mutual understanding of your process — not the imposition of a specific one. Payload providers should confirm all dates with their launch vehicle provider, who owns the integrated schedule in coordination with Range Safety.*

## 7. Two Paths to Compliance

### Iterative-development programs

Commercial programs that test early and often — design, test, learn, re-design, analyze — don't follow a linear acquisition flow. For these, understanding the Range's requirements early is what lets you fold 91-710 compliance into an iterative process without rework. Identify your program requirements, compare them against 91-710 through the safety-analysis process, and use that

analysis to mark requirements non-applicable, assert ELS, or — importantly — identify new requirements the manual doesn't yet cover.

### **Fully developed programs**

Programs already built or flown elsewhere can streamline compliance through the overlap between FAA and 91-710 data products. Review existing FAA documentation against the requirements, evaluate gaps, identify any additional requirements not captured in 91-710, and submit using the 91-710 data-product guidance. Safety analysis is still the core: design standards alone do not assure safety.

## **8. A Practical Starting Sequence**

A workable order of operations for a Range User approaching 91-710 tailoring:

1. Engage early. Establish contact with the Range Safety office at or before Program Introduction; early, continuous coordination is repeatedly cited as the key success factor.
2. Draft the SSPP. Define your system safety program and, if you don't use DoD milestones, document your development process and proposed anchor points.
3. Run the Preliminary Hazard Analysis. The PHA is explicitly used to guide tailoring — do it before finalizing the tailored requirement set.
4. Tailor with the Range Safety Office. Work the tailoring matrix (Original / Status / New Text / Rationale) with Range Safety and, where relevant, FAA/AST. Delete, modify, add, or map to your command media — with rationale for each.
5. Resolve ELS and non-compliances. Identify these during/after tailoring; handle ELS through the tailoring change process and waivers/non-compliances through the formal path.
6. Map existing FAA documentation. If you have it, arrange it to meet 91-710 without duplication rather than regenerating it.
7. Produce and schedule deliverables. Build the MSPSP, FSDP, GOP, hazard analyses, SAR, and others against the milestone-anchored timeline.
8. Maintain configuration control. Treat the deliverable set as the living, controlled record of the program through to MSGSA and launch.

### **Where ELSSA fits**

This is the manual, document-intensive process ELSSA was built to streamline. ELSSA's intelligent questionnaire tailors the 91-710 requirement set to your specific system, a database-driven engine generates the compliant deliverables (e.g. SSPP, MSPSP, GOP, etc.) from a single source of data rather than re-keying it across documents, and real-time validation checks the set as you build it. The aim is the same one SLD30/SEAL describes — a focused, well-documented safety case — reached without the manual overhead.

## Sourcing & Disclaimers

This guide is an orientation aid prepared by Phase Zero Space Technologies. Its substance is drawn from publicly available U.S. Government guidance — principally:

- AFSPCMAN 91-710 System Safety Requirements Implementation Guide, SEAL-SSD-001, Release 1.0, Space Launch Delta 30 / SEAL, October 2021.
- AFSPCMAN 91-710, Range Safety User Requirements Manual, Volumes 1–7 (the authoritative source).

### Important limitations:

- This guide does not replace AFSPCMAN 91-710 or any Range Safety requirement. In any conflict, the tailored, approved edition of 91-710 governs. Use of this guide does not relieve a Range User of its obligations under the manual.
- Regulatory and command details change. The source is dated October 2021 (Release 1.0) and references an in-progress transition to 14 CFR Part 450 and possible changes to the manual's command designation. Verify the current rule and manual version before relying on any specific citation, timeline, or paragraph reference herein.
- Citing this guidance does not imply that the U.S. Space Force, Space Launch Delta 30, the FAA, or any government body endorses Phase Zero Space Technologies or ELSSA.

© Phase Zero Space Technologies. Prepared for informational purposes.