

HISTORICAL DEVELOPMENT

With the advent of rocket technology in the United States after the Second World War, the United States Congress established requirements for Joint Long Range Proving Grounds for guided missiles in 1949. One sentence from the Legislative History that accompanied the establishing Act - "From a safety standpoint, they (guided missiles) will be no more dangerous than conventional airplanes flying overhead" - provided the basis for the concept of Range Safety. Both of the Eastern and Western Ranges developed and implemented several documents describing Range Safety requirements from 1949 to the present. For simplicity, the diagrams on the following pages show the evolution of the Range Safety Standards.

Eastern and Western Range Test Manuals

In 1956, Public Law 84-10 was passed to define similar safety requirements for ordnance storage and operations. With the passage of these laws, the Air Force Military Test Center and the Department of Defense issued memoranda defining the responsibility of the Commander and the Deputy Commander and holding them personally liable for safety on the proving grounds. To implement the safety policy of the Commander, the Directorate of Center Safety was established. The first document written to address those safety requirements was the *Air Force Western Test Range Manual 127-1*, published in August 1969. The Occupational Health and Safety Act, passed in 1971 defined the requirements for protecting the civilian work force; and the Air Force Occupational Safety and Health Manual, published in 1972 further refined these requirements. Shortly afterwards, the *Air Force Eastern Test Range Manual, AFETRM 127-1* was published.

Eastern and Western Space and Missile Center Regulations

In 1983 and 1984, revised editions of the manuals were issued and the names changed to reflect the change in names of the test centers. The manuals were changed to regulations that were considered more directive and binding. The responsibilities of the Center Commander were further clarified as a result of Department of Defense Directive 3200.11.

Eastern and Western Range Regulation 127-1

Shortly after the 1984 edition was published, Congress passed the Commercial Space Launch Act to accommodate private sector aerospace companies that wanted to use military facilities to launch satellites for commercial purposes. In response to this law, the Department of Defense issued Directive 3230.3 in 1986, further clarifying the Department's safety responsibilities and support requirements for commercial launch activities. Again in 1988, Congress addressed commercial launches with an update to the Commercial Space Launch Act, assigning the Department of Transportation the responsibility for licensing commercial launches. During the same period, safety, policy, and criteria for the launch of any launch vehicle from the Range were established in the 80 series of the Air Force regulations; and the goals and responsibilities

of the Commander and other personnel for the prevention of mishaps were described in the 127 series. The 1993 editions of the regulations incorporated the requirements of the public laws, the Department of Defense Directives, and the Air Force regulations. Because private sector aerospace companies are not directly bound by military regulations, standards, and specifications in the launch of launch vehicles and payloads from the Ranges, the 1993 editions were much more comprehensive, providing the minimum standards for the safe conduct of operations on the Ranges.

Eastern and Western Range 127-1

Throughout the life of these two Range documents, attempts were undertaken to make the requirements common to both Ranges; however, it was not until 1994 that a concerted effort was made to have a document common to both Ranges. In March 1995, *Eastern and Western Range 127-1, Range Safety Requirements* was signed by the Wing Commanders and published. The 1995 edition also reflected a major effort to improve the readability and clarity of the document.

Additional initiatives at this time were electronic distribution of EWR 127-1 for the convenience of the Range User community, and the issuance of a Range User Handbook in the interest of clarity and comprehension.

Developments since 1995

Subsequently, the *Range Safety Requirements* document was extensively revised and reissued as a new edition in 1997. This new edition was intended to reflect:

- 1) Existing statutes, regulations and codes
- 2) Current industry standards and practices
- 3) Technological developments
- 4) Lessons learned.

Additionally, the 1997 revised edition continued the on-going effort to provide technical standards in clear language and in a logically-organized fashion.

Further improvements were reflected in a major change package which was incorporated into the 1997 baseline edition of 127-1 in the 1999/2000 timeframe.

Simultaneously, several related developments occurred.

In 1995, the Department of Transportation delegated its licensing authority for Commercial Space Transportation to the Federal Aviation Administration (FAA). The FAA established a new office, the FAA/AST, and became proactively involved in developing rules to carry out its new responsibilities. In the late 1990s, the FAA/AST requested technical assistance from the Air Force in this rule development process. This was the beginning of a constructive partnership between these government agencies that continues to this day.

Further discussion of the FAA/AST's development and responsibilities are contained in SEAL-SSD-020, FAA/AST Background Information.

A second major development occurred when, as the result of studies, the Air Force determined to host the Range Safety Standards at the Major Command (rather than Wing) level. It was also decided that safety requirements levied on Range Users would be separated from safety requirements that pertained strictly to Air Force Space Command assets. This was accomplished with the issuance of AFSPC Manual 91-710 in mid-2004.

The Air Force and FAA/AST have formed a Common Standards Working Group to assure coordination and communication between the two agencies, and to minimize the burden of essential safety regulation on the Range User/ Space Launch community.

In 2016 the Air Force once again undertook the task to revise the AFSPCMAN 91-710 to address commonality in standards, inclusion of reusable launch vehicles and reentry vehicles, and expanding the use of commercial Codes and standards. Though the interval of the AFSPCMAN 91-710 from first release to the last revision was long, the next set of revisions are estimated to occur within a couple years of each other with the aim in simplifying requirements.

The evolution of the Range Safety Requirements are also shown in graphical format in Figures 1 and 2 below.

Figure 1. Evolution of Range Safety Requirements: 1949 to 1995

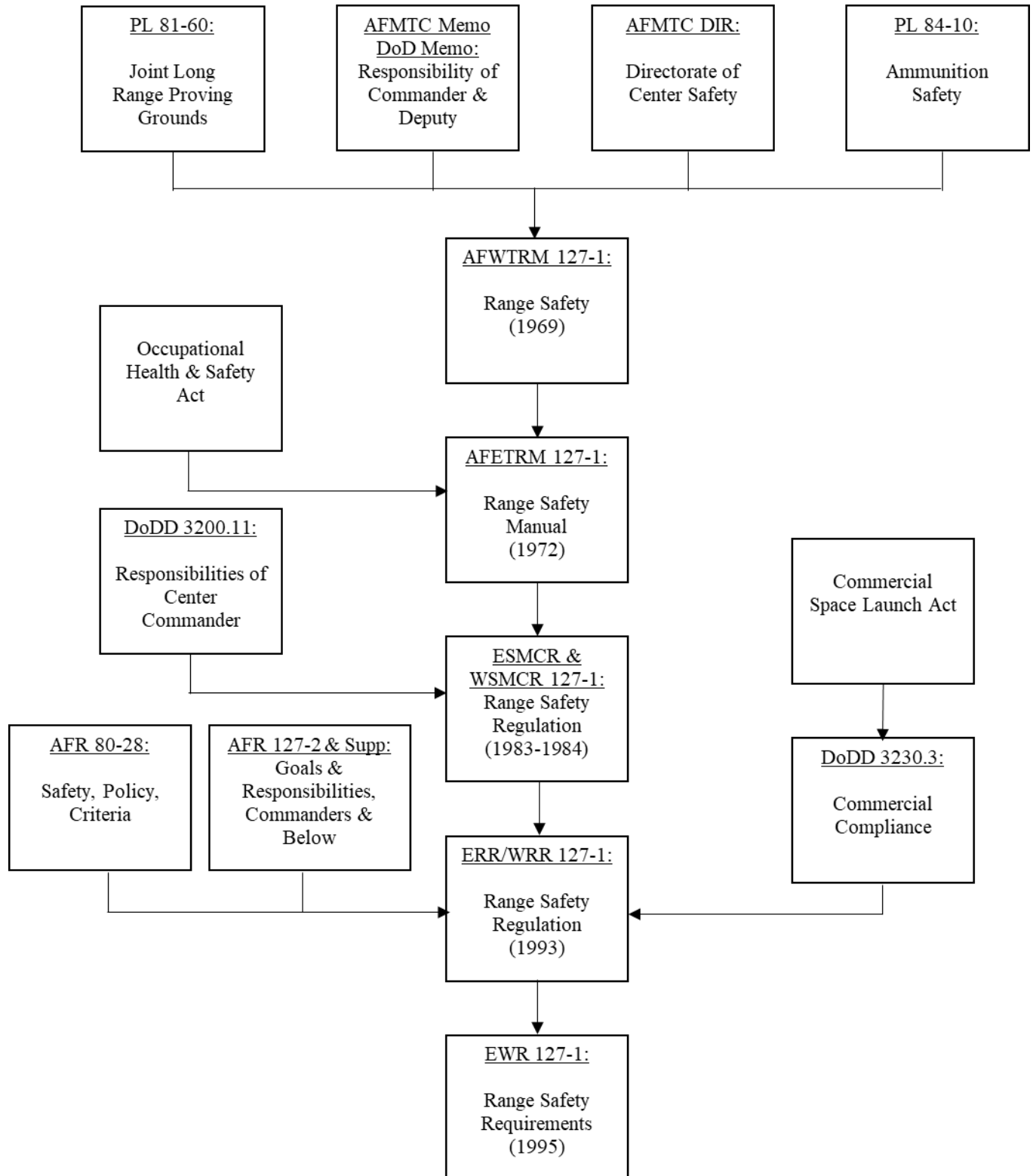


Figure 2. Evolution of Range Safety Requirements: 1995 to 2020

