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The OPR for this supplement is AFSPC CEF/CEO (Mr. Richard Coder). This supplement implements and extends the guidance of Air Force Instruction (AFI) 32-1065, **Grounding Systems**. The AFI is published word-for-word without editorial review. Air Force Space Command (AFSPC) supplemental material is indicated in bold face. This supplement describes AFSPC's procedures for use in conjunction with the basic AFI. It applies to AFSPC organizations that design, develop, modify, evaluate, or maintain grounding systems. Specifically, this guidance pertains to all storage and maintenance facilities to include igloos, underground and above ground structures. It applies to Air Force Reserve Units and Air National Guard Units who operate as part of AFSPC. Send a copy of NAF or unit supplements and suggested changes to this supplement to AFSPC CEF, 1520 E. Willamette Ave., Colorado Springs, CO 80909-4554 for final approval before publication. Upon receipt of this integrated supplement discard the Air Force basic publication.

SUMMARY OF REVISIONS

Revisions are as follows. Qualification and certification requirements for LPS personnel were redefined. Contractor support requirements were clarified. References to Air Force and industry standards were modernized. Provision to ensure personal and system safety was given priority over aesthetic appeal was added. New construction standards were clarified. A bar (|) indicates a revision.

1.1.5. (Added) Ensure that all personnel testing, inspecting, repairing, modifying, or maintaining lightning and grounding systems are qualified or that their work is inspected by a person who is qualified.

1.1.6. (Added) Ensure there is a minimum of one qualified lightning and grounding system certifier at all times.

1.1.6.1. (Added) Maintain a current designation letter appointing the lightning and grounding system certifier/s.

1.1.6.2. (Added) Send a copy of the designation letter referenced in 1.1.6.1. to AFSPC CEF/CEO.

1.2.1. (Added) Contract Support. When contract support is used to maintain, modify, or install lightning and grounding systems the contract shall require the contractor personnel to have standard commercial certifications (such as Underwriter's Laboratories) and to maintain the systems in accordance with industry standards, NFPA 780-Standard for Installation of Lightning Protection Systems, AFI 32-1065-Grounding Systems, and AFI32-1065_AFSPCSUP1, *Grounding Systems*. The contractor is not required to receive or maintain qualifications through the Air Force Qualification program. Contractors who attend AFSPC approved lightning protection systems course and receive the required certificate of completion still are required to maintain all standard commercial certificates. The contractor shall provide a copy of all test records to the Unit Chief of Operations (CEO) for review and trend analysis. Records will be maintained within CEO as required in AFI 32-1065. A copy of all test results shall be provided to munitions personnel per AFI 21-204_AFSPCSUP1, *Nuclear Weapons Procedures*. Facilities maintained through contract support will be subject to surveillance and compliance inspections at the discretion of the supporting installation Civil Engineer Squadron and Safety Organization. Air Force and HQ AFSPC personnel may also conduct and direct surveillance and compliance inspections.

1.2.2. (Added) Lease Agreements and Contracts. Facilities on Air Force installations leased to outside agencies or contractors are subject to the requirements of paragraph 1.2.1.

2.1. (Added) Personnel shall comply with all portions of NFPA 780, *Standard for Installation of Lightning Protection Systems*, to include the Appendices. If there is a conflict with publications listed in **attachment 1 of AFI32-1065**, the more stringent criteria will apply.

6.1. (Added) Qualification Requirements: Pass the Air Force Space Command sponsored lightning protection course and receive the required certificate of completion.

6.1.2. (Added) Demonstrate the knowledge, skills, and abilities to effectively administer the requirements of referenced codes and standards to their lightning and grounding system certifier during daily work.

6.1.3. (Added) Personnel who have not worked in lightning and grounding for at least two full consecutive years must repeat the requirements of 6.1.1. and 6.1.2. to be considered qualified.

6.1.4. (Added) Contractors maintaining lightning and grounding systems do not need to meet the requirements of 6.1.1. through 6.1.3. However, the contract and contractor must meet the provisions of section 1.2.1.

6.2. (Added) Lightning and Grounding System Certifier Qualification Requirements: Pass the Air Force Space Command approved lightning protection course and receive the required certificate of completion.

6.2.1.1. (Added) Repeat the course as a refresher at intervals no greater than six years.

6.2.2. (Added) Experience designing, testing, inspecting, repairing, modifying, and maintaining lightning and grounding systems.

7.1. (Added) Procedures shall require AFSPCCL32-13, *Explosives Safety, Hoists, Emergency Power and Lightning Protection for Weapons Areas*, to be run against each structure with Lightning protection. Each lightning protection system must be considered independently to ensure guidance is properly implemented.

9.11. (Added) Ensure safety is not degraded to enhance aesthetic appeal of LPS system.

14.1.1. (Added) New Construction. Facilities shall be designed with:

14.1.1.1. (Added) Ground wells at corner ground rods. This will provide easy access to the corner ground rods for more convenient testing.

14.1.1.2. (Added) U.L listed high compression or exothermic-weld type connectors providing they are commercially available. This will provide for a high degree of mechanical and electrical integrity for connections.

14.7. (Added) Lightning Protection For Above Ground Launch Structures. Above ground launch structures shall be provided the same protection as explosive facilities (**see paragraph 14.4.** in AFI32-1065, *Grounding Systems*) with the following additions.

14.7.1. (Added) The system will be designed in accordance with NFPA 780, AFI32-1065, and this supplement. Base the design on top 100 feet of the structure.

14.7.2. (Added) All structural metal shall be bonded.

14.7.3. (Added) When practical, structural steel members will be made electrically continuous and used as down conductors.

14.7.4. (Added) The structure will have an interconnecting ring conductor installed every 200 feet in height when the structural members do not form a ring every 200 feet. In some cases it will be necessary to attach temporary conductors between the fixed and moveable portions of the launch structure to ensure potential equalization.

14.7.5. (Added) All antennas, radomes, and dishes mounted external to the structure will have surge suppression installed where the conductor enters the launch structure.

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