Lightning Protection Standards
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Objectives

- Standards Actively Used Design and Inspection
  - NFPA 780
  - UL 96A
  - UFC 3-570-01
  - AFMAN 91-201
  - NAVSEA OP-5, Vol. 1
  - DA Pamphlet 385-64

- First Three Used for Ordinary Buildings

- Last Three Referenced for Ordnance / Explosive Facilities
Standard Used for System Design

- NFPA 780
- UFC 3-570-01
Standard Used for System Inspection

- UL 96A
Relationship Between the Standards

- **NFPA 780**
  - Base Document Used by UFC 3-570-01 & UL96A
  - UL96A Designed to Meet All the Min Requirements
  - UFC 3-570-01 Provides Guidance for Areas Not Covered in NFPA 780

- **UL96A**
  - Intended As an Inspection Standard
  - Defined Requirements
  - Less Interpretations.
Relationship Between the Standards

- **UFC 3-570-01**
  - Unified Basic Requirements Between Service Branches
  - Expansion of Requirements for Special Types of Structures
  - Guideline Requirements for Ordnance / Explosive Facilities
Major Differences Between the Standards

**UFC 3-570-01 & NFPA 780**
- Section 5-3 refers to NFPA 780 Appendix H for risk assessment to identify structures not needing coverage.
- 5-4.1 Capped air terminals are not permitted.
- 5-4.1.2 Air Terminals gives specific distances for exhausting hazardous vapors.
- Air terminals installed on “rubber” (EPDM) type roofs.
Major Differences Between the Standards

- **UFC 3-570-01 & NFPA 780**
  - 5-4.1.3 Conductors.
    - Bolted Connections Are Not Allowed on the Roof and Down Conductors.
    - Roof and Down Conductors Shall Be Exothermically Welded or Shall Use High Compression Fittings
  - There Are No Listed High Compression Fittings Listed by UL for This Application.
  - 5-4.2 **Mast System**.
    - The down conductors need to be protected from grade level to a point 3 m (10ft) above grade.
Major Differences Between the Standards

- **UFC 3-570-01 & NFPA 780**
  - 5-4.2.7 Joint Design.
    - Not covered in NFPA 780
  - 5-4.2.8 Joint Test.
    - Not covered in NFPA 780
  - 5-4.4 Faraday Shield System.
    - Not covered in NFPA 780
  - 5-5 NONCONVENTIONAL SYSTEMS.
    - Dissipation Arrays and Those Using Early Streamer Emission Air Terminals Are Not Acceptable and Are Not Be Used.
Major Differences Between the Standards

- **UFC 3-570-01 & NFPA 780**
  - 5-6.2 Bonding Installation Guidelines For Design And Construction.
    Basic Requirements for Bonding of LPS Are in AFI 32-1065 and NFPA 780.
  - 5-7.1 Ground Resistance.
    - Not Covered in NFPA 780 With a Specific Value but Techniques.
  - 5-7.2
    - Plate Electrodes Is Discouraged
Major Differences Between the Standards

UFC 3-570-01 & NFPA 780

- 5-10.2 Reinforced Concrete Buildings.
  - Reinforcement Steel May Be Used for Down Conductors, in Conformance With NFPA 780. This Is Not Allowed in NFPA 780
- 5-10.3 Steel Frame Building With Non-conducting Roof and Sides.
  - At Least One Steel Column Must Be Grounded at Each Corner of the Building.
- 5-10.4 Through 5-10.6
  - Installation Techniques Not Covered in NFPA 780
Major Differences Between the Standards

UFC 3-570-01 & NFPA 780

- 5-10.9 Post Tensioning Systems.
  - The Post Tension Rods Shall Not Be Used As a Path for Lightning to Ground.
- 5-10.10 Through 5-10.20
  - These Cover Special Types of Ordinary Structures
Questions
Thank You for Attending