



Integrating DOE Fire Protection and Explosive Safety Requirements



Tomas M. Sanchez, PE CFEI

Highlights

Background

Flow Down of Requirements

Results of Code Implementation

***Side Bar – DOE Explosive Safety Committee Interactions

Background

New Explosive Operation

- 1.1 Explosives

1950's Butler Building

Storage Occupancy – Fire Protection

Existing explosive site plan

- 1.3 Explosives

Fire Protection/Building Official Function
What has to happen to allow operation?

Flow Down of Requirements

10 CFR 851 - Worker Safety Health Program



Functional Areas (851.24)

- Fire Protection
- Explosive safety

Flow Down of Requirements

10 CFR 851 - Worker Safety Health Program



Materials Incorporated by Reference
(851.27)

- Prior to December 2017 - DOE Explosive Safety Manual (440.1-1A)
- As of May, 2018 - No mention of Explosive Safety Manual/Standard/Handbook
- Never mentioned fire protection with exception of NFPA 70 & 70E

Flow Down of Requirements

10 CFR 851 - Worker Safety Health Program



DOE Order 420.1C Chg 1

International Existing Building Code

New operation - higher risk

Must meet current building codes for:

- Structural
- Fire Protection
- Means of Egress

NFPA 101-2018, *Life Safety Code*®

Higher hazard occupancy change

Latest requirements apply

NFPA 495, *Explosive Material Code*

- Federal agencies and military installations

Flow Down of Requirements

10 CFR 851 - Worker Safety Health Program



DOE-STD-1212-2012, Explosive Safety



Specific provisions exempting compliance with NFPA 101

- Occupancy limits
- Exit travel distance
- Number/location of exits

Requirements for Existing Facilities

- Deviation from NFPA 101
 - Code of Record - questionable change of occupancy

DOE Order 420.1C Chg 1

DOE Field Element must follow provisions for relief if specified in DOE technical standards and industry codes and standards

Results of the Code Implementation

Structural – good

- Required modeling

Electrical – good

Fire Protection

- Replaced sprinkler system
- Means of egress – good
- Emergency lighting – good
- Separation Distance – relied on explosive safety
 - NFPA 495
 - Hand calcs – Cooper's Explosive Engineering Textbook

DOE Explosive Safety Committee Interactions

- Had the opportunity to attend two DOE ESC Meetings
- How the DOE ESC works
- Future Explosive Safety Standard
 - Streamlined with high level requirements
 - Exemptions/Equivalencies to standard - Fed Approval
- New Explosive Safety Handbook
 - Bulk of the old standard in handbook
 - Exemptions/Equivalencies to handbook - Contractor Approval
- DOE ESC made effort to streamline documents
 - Removed things that belonged to other disciplines

