Department Of Energy's

Fire Protection Program History

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Office of Nuclear Safety Basis & Facility Design (EHSS-31)

November 2022

Agenda

- Fire Protection Program History Spanning:
  - Manhattan Project
  - AEC/ERDA
  - DOE
- The information presented taken from a few sources including: The History.doc document from Walt Maybee, and a Power Point Presentation given by Justin Zamirowski at previous DOE/EFCOG Fire Safety Workshop. Plus, my own recollection of things since coming to the DOE.

Manhattan Project

- Fire Protection at the DOE is 80 years old this year starting with the Manhattan Project.
- It was named Manhattan Project because the initial assignment came from the Army Corps of Engineer's office in New York City. Leslie Groves was assigned to lead the project.
- The first fire protection engineer was R.E. Johannesson who worked at Factory Mutual and was commissioned by the Army in 1942 to work on the Manhattan Project

Manhattan Project

- Mr. R. E. Johannesson (Associated with Factory Mutual), was with the Bureau of Industrial Protection in 1941 and 1942 and accepted a commission as Captain in the Plant Protection section of the Army Air Forces in May 1942, and later served as Major with the Manhattan Engineering Project.

- The Bureau of Industrial Protection was a group of insurance engineers who inspected wartime production plants for the federal government.

Manhattan Project

- The Project was constructed by civilian companies known today as Management and Operations (M&O) contractors.

- The Army directed the M&O's during construction applying insurance industry practices (improved risk), and conformance with the National Bureau of Standards "Manual of Loss Prevention For The federal Government"

Manhattan Project

U.S. DEPARTMENT OF COMMERCE
DANIEL C. ROPER, Secretary
NATIONAL BUREAU OF STANDARDS
LYMAN J. BRIGGS, Director

NATIONAL BUREAU OF STANDARDS HANDBOOK No. 19

MANUAL OF FIRE-LOSS PREVENTION
OF THE
FEDERAL FIRE COUNCIL

(Issued November 5, 1934)

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1934

For sale by the Superintendent of Documents, Washington, D.C. - Price 20 cents

U. S. DEPARTMENT OF COMMERCE
DANIEL C. ROPER, Secretary
NATIONAL BUREAU OF STANDARDS
LYMAN J. BRIGGS, Director

NATIONAL BUREAU OF STANDARDS MISCELLANEOUS PUBLICATION M151

DESIGN AND CONSTRUCTION OF BUILDING EXITS

Issued October 10, 1935

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1935

For sale by the Superintendent of Documents, Washington, D. C. - - Price 10 cents (paper cover)

Manhattan Project

- Volunteer fire brigades were established at first but later on, municipal fire protection needs developed for the top-secret employee towns that supported this work. Fire brigades became fire departments.

- After the war there was government concern on what to do with the nuclear assets for various reasons.

Manhattan Project

- On August 1, 1946, the Atomic Energy Act was signed into law transferring ownership of the nuclear research and weapons complex from military to non-military ownership under the Atomic Energy Commission (AEC). All assets of the Project were transferred by December 31, 1946

- Within 4 years, we see a major portion the AEC's infrastructure in place, operational and growing with nuclear advances

AEC/ERDA

- AEC-HQ's first Fire Protection Engineers included: Dick Smith 1947 and Frank Branniganin 1949 - Frank moved AEC-HQ in 1954. During this period, AEC fire protection referred to the Manual of Fire Loss prevention from the Federal Fire Council.
- Dick Smith served as the Chairman of Federal Fire Council's Fire Prevention Committee in the 1960's but towards the end of the 1960's the Fire Council was eliminated due to congressional pressure.
- The first issuance of an AEC document for fire protection occurred on 12/14/49. This was a draft of what was then called "General Managers Bulletins" that eventually into the AEC Manual. Fire protection was addressed in the following Chapters
    - 0550 Operational Safety Standards
    - 0551 Municipal Fire Protection
    - 0552 Industrial Fire Protection
    - Chapter 6301 General Design Criteria
- Walt Maybee joined the AEC at the SAN, CA office in 1962 and was recruited to HQ after the 1969 Rocky Flatts Fire.
- The AEC Manual and its chapters were in place until the transition of the AEC to Energy Research and Development Administration (ERDA) in 1975

AEC/ERDA

Case file
ASTC 8-9-68

Form AEC-489
(6-67)

U. S. ATOMIC ENERGY COMMISSION
AEC MANUAL

TRANSMITTAL NOTICE

HQ Chapter 0550 STANDARDS FOR HEALTH, SAFETY AND FIRE PROTECTION

SUPERSEDED:		TRANSMITTED:	
Number	**Date**	**Number**	**Date**
		TN HQ 0500-8	
Chapter HQ 0550	8/7/67	Chapter HQ 0550	8/7/68
Page		Page	
Appendix HQ 0550	8/7/67	Appendix HQ 0550	8/7/68

REMARKS:

This revision reflects changes in "Responsibilities and Authorities" and procedures as a result of current expansion of Headquarters offices in Bethesda, and the additional responsibility of employees related to use of seat belts.

AEC/ERDA

TN-0000-144

U. S. ATOMIC ENERGY COMMISSION
AEC MANUAL

TRANSMITTAL NOTICE

Revision: Chapter 0555 MUTUAL AID FIREFIGHTING AGREEMENTS

1. Attached is a revision of Chapter 0555 which supersedes Chapter 0555 dated May 15, 1956.
2. Section 0555-03 has been revised to clarify that Managers of Operations have the delegated authority to enter into mutual aid firefighting agreements.
3. Please file this Chapter to replace the superseded one in Part 0500 of your AEC Manual.

R. W. Cook
Deputy General Manager

September 25, 1956

AEC/ERDA

U. S. ATOMIC ENERGY COMMISSION
AEC MANUAL

Volume: 0000 General Administration
Part: 0500 Health and Safety

AEC 0552-01
OS

Chapter 0552 INDUSTRIAL FIRE PROTECTION

0552-01 POLICY

It is the policy of the Atomic Energy Commission to establish and maintain on all AEC facilities a standard of fire protection equivalent to the standard for facilities enjoying a so-called "improved risk" classification in the fire insurance trade. A higher standard of fire protection is justified at those AEC facilities where national security, AEC program continuity or protection of the public constitute important responsibilities.

0552-02 OBJECTIVES

To obtain and maintain a level of fire protection commensurate with AEC responsibility for protection of the lives and health of AEC and contractor employees, protection of AEC monetary investment in property, safeguard of the national security, insure the AEC program continuity and protection of the public and private property from fire, explosion, and related hazards on AEC-owned or operated property.

0552-03 RESPONSIBILITIES AND AUTHORITIES

031 The Director, Division of Operational Safety, Headquarters evaluates adequacy of fire protection of field offices and provides assistance to all Divisions and Offices, Headquarters, and Field Offices on all aspects of fire protection.

032 Managers of Field Offices and the Director, Division of Headquarters Services:

a. provide and maintain an improved risk level of fire protection for all physical property or material which represents a monetary investment by the AEC.

b. provide and maintain, when justified, a higher standard of fire protection at those AEC facilities where national security, AEC program continuity or protection of the public constitute important AEC responsibilities.

c. review for compliance to AEC fire protection standards, plans and specifications for all new facilities and for major modifications of existing facilities.

d. furnish, where deemed in the best interest of AEC, fire protection engineering counsel and advice to AEC contractors who are:

1. developing plans for AEC-owned facilities.

2. engaged in activities in which interruption by fire or explosion could seriously jeopardize the program of the AEC.

3. users of radioactive materials or by-products.

e. establish and maintain lists of AEC-owned and/or used facilities for which they have fire protection survey responsibility and designate for each the minimum frequency at which AEC fire protection surveys will be made. This list shall include:

1. facilities at which AEC-owned property is valued at $100,000 or more.

2. facilities at which property valued at less than $100,000 is located and at which he deems AEC fire protection surveys justified.

f. conduct fire protection surveys of facilities for which they have responsibility, at a frequency not less than that specified in subsection 053.

g. submit to the Director, Division of Operational Safety, an annual summary as set forth in subsection 053 covering the industrial fire program and experience of the previous year.

0552-04 DEFINITIONS

041 "Improved Risk" as used herein, has the same meaning and intent as is commonly understood when this term is used in

Approved: October 30, 1961

AEC/ERDA

TN-6000-29

U. S. ATOMIC ENERGY COMMISSION
AEC MANUAL

Transmittal Notice

Part 6300 DESIGN CRITERIA

1. Attached are revisions to several chapters of the Design Criteria necessitated by the publication of the 3rd Edition of the Illuminating Engineering Society Handbook. The affected chapters are as follows:

   a. Chapter 6308, "Interior Electrical Systems," section 6308-08.

   b. Chapter 6310, "Administration and Office Buildings," section 6310-16.

   c. Chapter 6311, "Laboratory Buildings," section 6311-17.

   d. Chapter 6312, "Warehouse and Storage Buildings," section 6312-14.

   e. Chapter 6313, "Maintenance and Repair Shops," section 6313-0218.

   f. Chapter 6314, "Cafeteria Facilities," sections 6314-04 and 07.

2. Please file these pages to replace the superseded ones dated April 29, 1955, July 21, 1954 and April 25, 1956 in the chapters listed above of your AEC Manual.

John A. Derry

John A. Derry, Director
Division of Construction and Supply

Revised: December 31, 1959

ADVANCE COPY

AEC/ERDA

- In 1974, the AEC was getting congressional pressure and the Energy Reorganization Act split the AEC into two groups
  - The Nuclear Regulatory Commission
  - Energy Research and Development Agency (ERDA)
- ERDA took on all non-NRC functions of the AEC and was expanded to include other energy aspects beyond a nuclear focus
- World energy issues in the mid 1970's prompted Congress to consolidate energy infrastructure from ERDA and other agencies into Cabinet Level status

DOE

- The Department of Energy (DOE) Organization Act of 1977 combined ERDA with the Federal Energy Administration and the Federal Power Commission, which was the organization managing the Power Marketing Administrations
- AEC policies served as the prevailing safety regulations in fire protection guidance. When the DOE was established (quoting Walt's History.doc)
  - "This placed a greater variety of facilities, run by a greater assortment of operators, from all-government to multiple contractors, and performing widely disparate activities under one roof. Inevitably, the fight to maintain the superior fire protection program as a one-size-fits-all activity was to take some lumps. The results were incorporated in the now-infamous "Order" system adopted by DOE."
- In December 1980, fire protection became Chapter 7 of Order 5480, which evolved into 5480.7 . Walt continued to manage the DOE-HQ fire protection program until his retirement in 1989
- Dennis Kubicki became the fire protection program lead at HQ in 1989, with myself joining in 1991 - replacing Jim Scott who took a job at SLA
- In 1993 DOE O 5480.7 was updated and published as DOE O 5480.7A

DOE

- In October,1995, DOE Order 420.1, *Facility Safety* was published incorporating Fire Protection, Natural Phenomena Hazards Mitigation & Criticality Safety and other programs into a single document. Order 420.1 also canceled DOE O 6430.1A, *General Design Criteria,* referencing instead compliance to the IBC.
- Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees* was also published
- Along with the Order 420 series came implementation Guides:
  - DOE G 420.1-3, *Implementation Guide for DOE Fire Protection and Emergency Services Programs for Use with DOE O 420.1B, Facility Safety*
  - DOE G 450.1-4, *Implementation Guide, Wildland Fire Management Program for Use with DOE O 450.1, Environmental Protection Program*
- And Technical Standards
  - DOE-STD-1066, *Fire Protection Design Criteria*
  - *DOE-STD-1088, Fire Protection for Relocatable Structures*
- The Facility Safety Order was revised 7 times between 1995 and 2005

DOE

- In 2006, 10CFR 851, *Worker Safety and Health,* replaced most parts of DOE O 440.1A
- In 2009 a Secretarial Initiative condensed Fire Protection Program requirements into the following 2 directives published in 2012:
  - DOE O 420.1 C, Facility Safety's Attachment 2, Chapter II, Fire Protection; and
  - DOE-STD-1066-2012, Fire Protection
- Canceling:
  - DOE G 420.1-3, *Implementation Guide for DOE Fire Protection and Emergency Services Program*
  - DOE G 450.1-4, *Implementation Guide, Wildland Fire Management Program for Use with DOE O 450.1, Environmental Protection Program*
  - DOE-STD-1088-95, Fire Protection for Re-locatable Structures
- Since 2012 DOE O 420.1C has seen three change revisions with the most current being DOE O 420.1 C Chg. 3, *Facility Safety* dated Nov. 2019
- Since 2012 DOE-STD-1066 has been revised once with the current version being DOE-STD-1066-2016

DOE

- Currently DOE-STD-1066 *Fire Protection* is being updated and is on track for a revised publication in the early months of 2023.
  - Proposed revisions entered TSP RevCom in May 2022
  - Comment period ended in September 2022 - more then 261 comments were recieved.
  - In November 2022, the response to comments and a document revision will head back into RevCom for the comment review and negotiation phase.
  - From December to publication comment responses will be vetted, with any final changes made.

Questions

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