BRIAN COHAN, PE
FIRE PROTECTION ENGINEER

CONTACT

briancohan@gmail.com
443.996.8045
3049 Hunton Cottage Lane
Glen Allen, VA 23059

https://briancohan.com
https://linkedin.com/in/briandcohan

EDUCATION

UNIVERSITY OF MARYLAND
M.S. FIRE PROTECTION ENGINEERING
AUG 2010
Thesis: Verification and Validation of a Candidate Soot Deposition Model in Fire Dynamics Simulator Version 5.5.1

UNIVERSITY OF MARYLAND
B.S. FIRE PROTECTION ENGINEERING
DEC 2008

LICENSE

PROFESSIONAL ENGINEER
VIRGINIA - 0402055056

MEMBERSHIP

SOCIETY OF FIRE PROTECTION ENGINEERING
NATIONAL: PROFESSIONAL MEMBER
CENTRAL VA: MEMBER AT LARGE

SKILLS

PERFORMANCE BASED DESIGN
Fire Dynamics Simulator (FDS), Consolidated Model of Fire and Smoke Transport (CFAST), Pyrosim, Pathfinder

GENERAL SKILLS
Python, Pandas, VBA, Linux, Bluebeam Revu, Windows, Microsoft Office

PERSONAL SUMMARY

Fire Protection Engineer who specializes in performance-based design utilizing fire and egress modeling while leveraging python to efficiently, accurately, and repeatably produce results.

GHD | RICHMOND, VA
FIRE & LIFE SAFETY
FIRE PROTECTION ENGINEER | OCT 2017 - PRESENT

National Air & Space Museum Egress Analysis | Washington, DC
The National Air & Space Museum planned a whole-building *renovation*. With thousands of visitors daily, the egress system gets challenging. A variety of *egress models* accounting for *design fires defined in NFPA 101* showed that the proposed design provided sufficient egress capacity.

Social Security National Computing Center Atrium | Woodlawn, MD
At the time of construction, the National Computing Center atrium did not require an active *smoke control system*. The *atrium* consists of *five stories* with lounges that were open to the atrium air. The basis for a new smoke exhaust system was developed using a *calculated egress time* to evacuate the lounges and the atrium floor and used *FDS* for modeling smoke exhaust.

Carvana Vending Machine Structural Analysis | Various Locations
Carvana vending machines provide sprinklers above each car in the tower; however, the tower has *exposed structural steel*. An AHJ challenged the design of the sprinkler system. *FDS models* demonstrated that failure of the structural elements was not likely due to the cooling effects of the sprinklers.

George Mason University Johnson Center Egress Study | Fairfax, VA
George Mason University wanted to *repurpose library stacks* on the upper floors of the Johnson Center *atrium*. The low-density occupancy of the library provided a challenge to upgrading the library stack to a different occupant use. *Egress models* evaluated the exit configuration to determine the maximum occupant load that could evacuate before the atrium became untenable.

LeJeune Steel Paint Spill Analysis | Minneapolis, MN
LeJeune Steel forms, constructs, and paints steel structures. A variety of paints and other *flammable liquids* are present on-site for daily use. A series of *CFAST models* evaluated pool fires in the unsprinklered paint spray area to demonstrate that *tenability* and *structural stability* would be maintained.

Destiny Mall Beam Detector Spacing Analysis | Syracuse, NY
An *atrium* within Destiny Mall provides unique challenges for placing beam detectors. Openings are not consistent between floors, and there are architectural and functional obstructions that protrude through the openings. *FDS models* were used to develop a *smoke obscuration* profile for anticipated fires. The smoke obscuration profile provided a method for validating *beam detector spacing* requirements.

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APPENDIX R SOLUTIONS | RICHMOND, VA
FIRE PROTECTION
SENIOR FIRE PROTECTION ENGINEER | APR 2011 - SEP 2017

Mixed Oxide Facility Spot Detector Analysis | Augusta, GA
The Department of Energy Mixed Oxide Facility wanted to determine *smoke detector spacing* to ensure prompt detection of a fire. Each room had a rectangular geometry but varied in height and ventilation scheme. *Over 250 FDS and CFAST models* were generated, run, and processed using *python*.

Westinghouse Electrical Cabinet Fire Propagation Analysis
In designing a new set of electrical cabinets, Westinghouse Electric wanted to ensure that a *fire originating in one cabinet* would *not damage key components* in adjacent cabinets. *FDS models* were able to demonstrate that the components were safe from the conductive and radiative heat through the walls of the cabinets.

Edwin I. Hatch Nuclear Power Plant FPRA | Baxley, GA
As part of an operational license upgrade, Hatch required a *Fire Probabilistic Risk Assessment* (FPRA). The assessment analyzed the proximity of all ignition sources to risk significant components to ensure that a safe and stable condition could be maintained. Development of *VBA macros* assisted in calculating, organizing, and processing *thousands of fire models*.

Perry Nuclear Power Plant Containment Detection | North Perry, OH
Due to the harsh conditions in the containment building, a *heat detection system degraded* to an inoperable condition. *FDS models* demonstrated that the *additional existing smoke detection systems were sufficient* to detect a fire due to the increased sensitivity of the detectors.

Enrico Fermi II Nuclear Power Plant HPCI Pump Room Fire Model | Newport, MI
A triennial inspection raised a concern about *sprinkler activation* with an open hatch directly above the high-pressure coolant injection pump. *FDS models* demonstrated that the small volume of the room above the hatch did not prevent the sprinklers from activating.

UNIVERSITY OF MARYLAND | COLLEGE PARK, MD
DEPARTMENT OF FIRE PROTECTION ENGINEERING
FACULTY RESEARCH ASSISTANT | SEP 2010 - FEB 2011

FireFOAM Wall Boundry Model
FireFOAM wanted to validate the flame-wall interaction. Working with Dr. Trouve, our team worked to modify the source code to be able to extract data during runtime for *validating the model*.

HUGHES ASSOCIATES, INC. | BALTIMORE, MD
FIRE PROTECTION
STUDENT ENGINEER | MAR 2008 - AUG 2010

World Trade Center Tower 7 Collapse Analysis | New York, NY
The events of *September 11th* destroyed the electrical substation in the basement of Tower 7 when the tower collapsed. As part of a legal case, *thousands of photos and hours of video footage* were required to develop a *timeline of fire spread* throughout Tower 7. The timeline was used to *validate the results* of fire models.

FDS Soot Deposition Model
FDS version 5.5 introduced candidate *soot deposition models*. Working with a core developer of FDS, the soot deposition models were *verified and validated* against several experiments related to *soot deposition* and *optical density*.