National Construction Safety Team Investigation

The Station Nightclub Fire

NCST Advisory Committee
June 22-23, 2004

William Grosshandler
Building and Fire Research Laboratory
National Institute of Standards and Technology
U.S. Department of Commerce
William.Grosshandler@NIST.gov

NIST

Overview

Rationale to conduct NCST investigation:

- Rapid spread of fire and smoke requires technical investigation to determine how life safety features of building failed to provide sufficient evacuation time, leading to 100 fatalities.
- Potential exists to mitigate future building failures like this with changes in building practices and/or building standards, codes, and regulations.
- Technical competencies required for successful investigation are available at NIST and its community, and no local or state investigation with equivalent analytical quality exists.
- Funds on hand are sufficient to conduct an investigation.

Overview

Elements of NIST Technical Investigation

- Establishment of initial conditions
- Simulation of thermal and tenability environment
- Testing and validation experiments to support simulation
- Examination of possible impact of sprinklers
- Documentation of evacuation process
- Documentation of emergency response
- Recommendations for specific improvements to model building standards, codes and practices

Overview

Recent activities:

- Contract reports submitted on Model Building & Fire Codes and Practices (Koffel) and on Analysis of Egress (Arup)
- NIST has received the cooperation of RI AG's Office in getting access to important information, including data obtained by ATF on the heat release rate of polyurethane foam recovered from site.
- Detailed timeline of egress from fire has been assembled, and is coming together regarding fire department response.
- Temperature, heat release and concentration data taken during real-scale fire recreations (w & w/o sprinklers) have been reduced and analyzed.
- FDS has been run and compared to measurements in real-scale fire recreation.
- NIST SP 1000-101 published: **"Fire Spread Through a Room with Polyurethane Foam Covered Walls."**

NIST

Presentation Outline

6/22/04

- Overview - W. Grosshandler

6/23/04

- Egress study, and review of model building and fire codes - W. Grosshandler
- Documentation of emergency response - K. Kuntz
- Testing and validation experiments to support simulation - N. Bryner
- Simulation of fire and smoke movement in laboratory reconstruction - D. Madrzykowski