



SOUTHWEST RESEARCH INSTITUTE



# Explosion Hazards Evaluation

Accidental explosions and deliberate bombings by criminals and terrorists cause extensive structural and property damage, personal injury, and loss of life. Southwest Research Institute® (SwRI®) provides practical solutions to problems associated with blast effects, fragmentation, penetration, and protection. The SwRI Engineering Dynamics Department offers a unique blend of experimental, analytical, and numerical expertise which permits a multifaceted approach to solving safety problems.

## Capabilities

- Fundamentals of explosions
- Software development
- Loading from blast waves and fragment impact
- Structural response
- Debris dispersion
- Blast-resistant design
- Human injury prediction
- Safety and hazards analyses
- Hydrocode simulation
- Finite element analysis
- High-speed data acquisition
- High-speed photography

## Experience

- Code development for security evaluation
- Car bomb source prediction
- Short course development and instruction
- Hazards evaluation of high explosives (HE) facilities
- Shaped charge development
- Many varied experimental programs

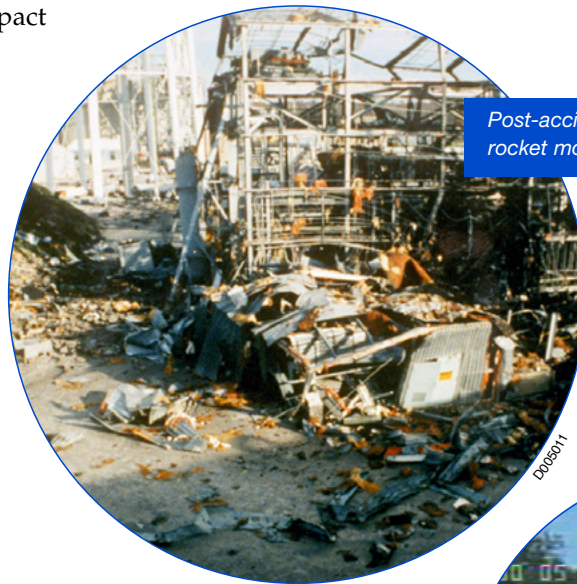
## Facilities

- Ballistics and explosives test range
- Remote test sites
- Testing up to 1000 lbs HE



Terrorist bomb damage to Alfred P. Murrah Federal Building, Oklahoma City

D004835



Post-accident debris and damage to rocket motor test facility

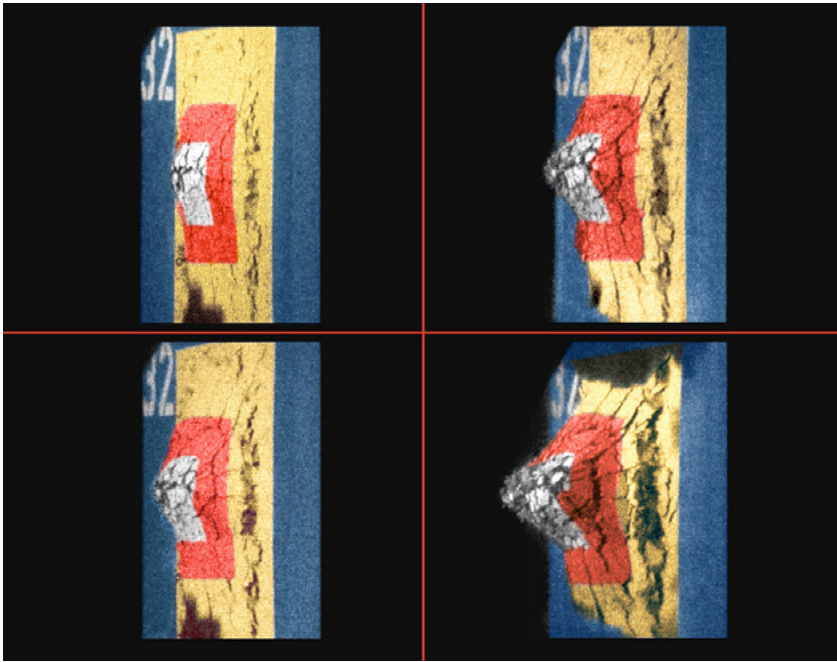
D008011



Propellant assembly line equipment undergoing ignition testing

D013814





SwRI Engineering Dynamics Department staff members analyze the explosive effects of bare and cased charges including structural breakup, debris throw, air blast, and scaling.

D004966

## We welcome your inquiries.

For more information, please contact:

**Donald J. Grosch**  
Manager  
Ballistics and Explosives  
210.522.3176  
[dgrosch@swri.org](mailto:dgrosch@swri.org)

## Engineering Dynamics Department Mechanical Engineering Division

Southwest Research Institute  
6220 Culebra Road • PO Box 28510  
San Antonio, Texas 78228-0510

[ballistics.swri.org](http://ballistics.swri.org)



## SOUTHWEST RESEARCH INSTITUTE

Southwest Research Institute is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world's most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies more than 1,500 acres, providing more than 2.3 million square feet of laboratories, test facilities, workshops, and offices for approximately 3,000 employees who perform contract work for government and industry clients.

An Equal Employment Opportunity/Affirmative Action Employer  
Race/Color/Religion/Sex/Sexual Orientation/Gender Identity/National Origin/Disabled/Veteran  
Committed to Diversity in the Workplace

Like. Share. Follow. Listen.

210.522.2122

[ask@swri.org](mailto:ask@swri.org)



[swri.org](http://swri.org)

©2020 Southwest Research Institute.

All rights reserved.

Designed & printed by SwRI MPS 18-0320 JCN 263696 bl