2018 INTERNATIONAL EXPLOSIVES SAFETY SYMPOSIUM & EXPOSITION
EXPLOSIVES SAFETY AND MUNITIONS RISK MANAGEMENT

August 6 - 9, 2018
Sheraton San Diego Hotel and Marina
San Diego, CA
NDIA.org/Intl-Explosives-Safety
WHO WE ARE

The National Defense Industrial Association is the trusted leader in defense and national security associations. As a 501(c)(3) corporate and individual membership association, NDIA engages thoughtful and innovative leaders to exchange ideas, information, and capabilities that lead to the development of the best policies, practices, products, and technologies to ensure the safety and security of our nation. NDIA's membership embodies the full spectrum of corporate, government, academic, and individual stakeholders who form a vigorous, responsive, and collaborative community in support of defense and national security. For more information, visit NDIA.org
# EVENT INFORMATION

## LOCATION
Sheraton San Diego Hotel and Marina  
1380 Harbor Island Drive  
San Diego, CA 92101

## EVENT WEBSITE
NDIA.org/Intl-Explosives-Safety

## EVENT THEME
Explosives Safety and Munitions Risk Management

## ATTIRE
Civilian: Business  
Military: Uniform of the day

## EVENT CONTACT
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<tr>
<th>Name</th>
<th>Role</th>
<th>Phone</th>
<th>Email</th>
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<tbody>
<tr>
<td>Renéé Despot</td>
<td>Meeting Manager</td>
<td>(703) 247-2599</td>
<td><a href="mailto:rdespot@ndia.org">rdespot@ndia.org</a></td>
</tr>
<tr>
<td>Daniel Lung</td>
<td>Program Coordinator</td>
<td>(703) 247-9476</td>
<td><a href="mailto:dlung@ndia.org">dlung@ndia.org</a></td>
</tr>
<tr>
<td>Sarah O’Hanley, CEM</td>
<td>Manager, Exhibits &amp; Sponsorships</td>
<td>(703) 247-9460</td>
<td><a href="mailto:sohanley@ndia.org">sohanley@ndia.org</a></td>
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## SURVEY AND PARTICIPANT LIST
You’ll receive via email a survey and list of attendees (name and organization) after the conference. Please complete the survey, which helps make our event even more successful in the future.

## SPEAKER GIFTS
In lieu of speaker gifts, a donation is being made to the Fisher House Foundation.

## HARASSMENT STATEMENT
NDIA is committed to providing a professional environment free from physical, psychological and verbal harassment. NDIA will not tolerate harassment of any kind, including but not limited to harassment based on ethnicity, religion, disability, physical appearance, gender, or sexual orientation. This policy applies to all participants and attendees at NDIA conferences, meetings and events. Harassment includes offensive gestures and verbal comments, deliberate intimidation, stalking, following, inappropriate photography and recording, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome attention. Participants requested to cease harassing behavior are expected to comply immediately, and failure will serve as grounds for revoking access to the NDIA event.
AGENDA

MONDAY, AUGUST 6

7:00 am – 5:00 pm  REGISTRATION OPEN
HARBOR ISLAND FOYER

7:00 – 8:00 am  NETWORKING CONTINENTAL BREAKFAST
HARBOR ISLAND BALLROOM 1

CONCURRENT WORKSHOPS

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<td>8:00 – 10:00 am</td>
<td>Munitions Risk Management Assessment</td>
<td>SPINNAKER&lt;br&gt;Dr. Josephine Covino&lt;br&gt;Steve Darby&lt;br&gt;John Lenox&lt;br&gt;AK Williams</td>
</tr>
<tr>
<td>8:00 – 10:00 am</td>
<td>Site Planning CONTINUED</td>
<td>SEABREEZE&lt;br&gt;Lea Ann Cotton&lt;br&gt;Facilitator</td>
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10:00 – 10:30 am  NETWORKING BREAK
HARBOR ISLAND BALLROOM 1

10:30 am – 12:00 pm  Munitions Risk Management Assessment CONTINUED
HARBOR ISLAND BALLROOM 1

12:00 – 1:00 pm  LUNCH
HARBOR ISLAND BALLROOM 1

1:00 – 3:00 pm  Munitions Risk Management Assessment CONTINUED
HARBOR ISLAND BALLROOM 1

3:00 – 3:30 pm  NETWORKING BREAK
HARBOR ISLAND BALLROOM 1

3:30 – 5:00 pm  Munitions Risk Management Assessment CONTINUED
HARBOR ISLAND BALLROOM 1

5:00 pm  WORKSHOPS ADJOURN

TUESDAY, AUGUST 7

7:00 am – 4:30 pm  REGISTRATION OPEN
HARBOR ISLAND FOYER

7:00 – 8:00 am  NETWORKING CONTINENTAL BREAKFAST
HARBOR ISLAND FOYER
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| 8:00 – 8:15 am | WELCOME REMARKS                                                        | HARBOR ISLAND BALLROOMS 2 & 3 | CAPT Frank Michael, USN (Ret) Senior Vice President, Program Development and Membership, NDIA  
Dr. Josephine Covino Science Advisor, DoD Explosives Safety Board |
| 8:15 – 9:00 am | KEYNOTE SPEAKER                                                        | HARBOR ISLAND BALLROOMS 2 & 3 | Col Lawrence Nixon, USAF Deputy Chief of Safety                               |
| 9:05 – 9:50 am | KEYNOTE SPEAKER                                                        | HARBOR ISLAND BALLROOMS 2 & 3 | Thierry Chiapello Executive Director, DoD Explosives Safety Board             |
| 9:30 am – 6:30 pm | EXHIBIT HALL OPEN                                                      | NAUTILUS          |                                                                             |
| 9:50 – 10:15 am | NETWORKING BREAK                                                       | NAUTILUS          |                                                                             |

**C O N C U R R E N T  S E S S I O N S**

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| 10:15 am – 12:00 pm | INTERNATIONAL POLICY AND PRACTICE                                        | HARBOR ISLAND BALLROOM 1 | Robert Ford  
Session Chair  

- Explosives Safety and Munitions Risk Management – Compelling  
  Past, Active Present, Uncertain Future  
  Thierry Chiapello Executive Director, DoD Explosives Safety Board

- MSIAC Workshop 2018: Improved Explosives and Munitions Risk Management  
  Martijn van der Voort Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)

- Standardization of Explosives Classification and Characterization Testing  
  Robert Ford President, Safety Management Services, Inc.

- Allied Ammunition Storage and Transport Publication Number 4 (AASTP-4) – Status and Future Updates  
  Hans Øiöm Research Lead, Norwegian Defense Materiell Agency - Ammunition
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<td>10:15 am – 12:00 pm</td>
<td><strong>RISK MANAGEMENT AND GOVERNANCE</strong></td>
<td>Harbor Island Ballroom 2</td>
<td>Robert MacNaught&lt;br&gt;Session Chair</td>
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<td></td>
<td><strong>Overview of Explosives Safety Governance in the DoD</strong></td>
<td></td>
<td>Art Kaminski&lt;br&gt;Director of Policy Development, DoD Explosives Safety Board</td>
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<td><strong>Avoiding Confusion in Risk Management</strong></td>
<td></td>
<td>John Fellows&lt;br&gt;CEO, A-P-T Research, Inc.</td>
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<td>10:15 am – 12:00 pm</td>
<td><strong>RISK MITIGATION AND DEMIL</strong></td>
<td>Harbor Island Ballroom 3</td>
<td>Stephanie Wacenske&lt;br&gt;Session Chair</td>
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<td></td>
<td>Review of A Decontamination Accident</td>
<td></td>
<td>Lyn Little&lt;br&gt;Explosives Safety Specialist, Mission Support Services</td>
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<td></td>
<td>Risk Assessment Methodology in Connection with Transfer of Former Military Training Areas to Civilian Society in Sweden</td>
<td></td>
<td>Dennis Menning&lt;br&gt;Senior Scientist, Swedish Defense Research Agency</td>
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<td></td>
<td>Decontamination and Dismantling (D&amp;D) of Explosive Contaminated Process Piping in High Explosive Load Lines</td>
<td></td>
<td>Paul Miller&lt;br&gt;Director, Advanced Technology Systems, Gradient Technology, Inc.</td>
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<td>Modeling a Robust Caisson Structure to Resist Effects from Blow-in-Place of Underwater Unexploding Ordnance, SERDP MR-2648</td>
<td></td>
<td>Joseph Trotsky&lt;br&gt;Environmental Engineer, NAVFAC Engineering and Expeditionary Warfare Center</td>
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<tr>
<td>12:00 – 1:00 pm</td>
<td><strong>LUNCH</strong></td>
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## CONCURRENT SESSIONS

### 1:00 – 2:40 pm  
**RISK MANAGEMENT AND SITING APPLICATIONS**  
HARBOR ISLAND BALLROOM 1

**Hugo Dijkers**  
*Session Chair*

**Part I/Risk-Based Siting Criteria – Current and Future Efforts in Risk Management and Siting Applications**  
Dr. Josephine Covino  
Science Advisor, DoD Explosives Safety Board

**Part II/Risk-Based Siting Criteria – Current and Future Efforts in Risk Management and Siting Applications**  
Dr. Ming Liu  
Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

**A Fast Running Engineering Model for Lethality Due to Wall Debris Thrown from Above Ground Magazines**  
Peter Kummer  
Senior Safety Expert, Bienz, Kummer & Partner Ltd.

**An Overview of Risk-Based Explosives Safety Siting**  
Michael Oesterle  
Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

**Jon Chrostowski**  
Senior Scientist, ACTA, Inc

### 1:00 – 2:40 pm  
**EXPLOSIVES SAFETY POLICY AND PRACTICE I**  
HARBOR ISLAND BALLROOM 2

**Martin Pope**  
*Session Chair*

**Experimental and Theoretical Basis of NATO Standards for Safe Storage of Ammunitions and Explosives**  
Martijn van der Voort  
Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)

**Reducing Blast Distant Focused Overpressure Effects**  
Paul Braithwaite  
Sr. Staff Scientist, Northrop Grumman

**The Klotz Group Contribution to Explosion Safety**  
*Robert Conway*  
Research Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

**Ballistic Trajectory Modeling for the Insensitive Munitions Type IV/V Hazardous Fragment Threshold**  
Kevin Miers  
Mechanical Engineer, U.S. Army ARDEC

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*This person is presenting the paper on the author’s behalf. Please see the presentation index on page 23 for the author’s name and affiliation.*
### 1:00 – 2:40 pm

**PLANNING/REDUCING EXPLOSIVES RISK**  
HARBOR ISLAND BALLROOM 3  

**Dr. Jerry Ward**  
Session Chair

- **Navy A&E Facility Planning**  
  Gary Hogue  
  Senior Explosives Safety Expert, Naval Ordnance Safety and Security Activity

- **U.S. Navy A&EFS Program Overview/Magazine Storage Requirements Calculator (MSRC) Optimization Algorithms**  
  Tyler Ross  
  Explosives Safety Engineer, A-P-T Research, Inc.

- **Research Plan for ECM Required Earth Cover**  
  Joshua Payne  
  Research Engineer, U.S. Army Engineer Research & Development Center

- **How Not to Site Plan: Common Pitfalls and Mistakes in Hazards Analyses**  
  Tyler Ross  
  Explosives Safety Engineer, A-P-T Research, Inc.

### 2:40 – 3:10 pm

**NETWORKING BREAK**  
NAUTILUS

### C O N C U R R E N T  S E S S I O N S

### 3:10 – 4:50 pm

**RISK MANAGEMENT AND SITING APPLICATIONS II**  
HARBOR ISLAND BALLROOM 1  

**Shonn McNeill**  
Session Chair

- **KG-ET: An Engineering Tool for Debris Hazard Prediction**  
  Dr. Malte von Ramin  
  Group Manager Hazard & Risk Analysis, Fraunhofer Institute for High-Speed Dynamics

- **IMESAFR Overview**  
  John Tatom  
  Chief, Explosives Safety and Testing, A-P-T Research, Inc.

- **The IMESAFR Science Panel**  
  Shonn McNeill  
  Chief, Explosives R&D Division, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)

- **Modeling Uncertainty in Concept and in Quantitative Risk Assessment Models**  
  *John Tatom  

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*This person is presenting the paper on the author’s behalf. Please see the presentation index on page 21 for the author’s name and affiliation.*
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<td>3:10 – 4:50 pm</td>
<td><strong>EXPLOSIVE SAFETY POLICY AND PRACTICE II</strong></td>
<td>HARBOR ISLAND BALLROOM 2</td>
<td>Peter Kummer &lt;br&gt; <em>Session Chair</em></td>
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**MSIAC – Update, Activities, and Highlights**<br> Martin Pope <br> Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)<br><br>Applying Systematic Risk Management Protocol to the Design of a Modern Propellant Manufacturing Plant in Australia<br> Robert Ford <br> President, Safety Management Services, Inc.<br><br>Coupled CFD/CSD Simulations of Dust Production by Fragmenting Charges Using Stabilized Linear Tetrahedral Elements<br> Dr. Orlando Soto <br> Computational Physics Scientist, Applied Simulations, Inc.<br><br>“Intended Use” and Hazard Classification Testing<br> Erik Wrobel <br> Chemical Engineer, U.S. Army ARDEC

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<td>3:10 – 4:50 pm</td>
<td><strong>RISK MANAGEMENT – STORAGE SYSTEMS</strong></td>
<td>HARBOR ISLAND BALLROOM 3</td>
<td>James King &lt;br&gt; <em>Session Chair</em></td>
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Engineering Explosives Safety – The Development of the Pseudo Underground Storage System (PUGSS)<br> Dr. Chong Seah <br> Head Engineer, Defense Science and Technology Agency<br><br>Multi-Modal Explosives Manufacture’s Constraints<br> Dr. Joshua Hoffman <br> Director of Technical Services, Institute of Makers of Explosives<br><br>Development of Deep Earth Cover Magazines<br> Kai Oh <br> Senior Engineer, Defense Science and Technology Agency<br><br>Steel Box Earth-Covered Magazine<br> Tyler Ross <br> Explosives Safety Engineer, A-P-T Research, Inc.

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<td>5:00 – 6:30 pm</td>
<td><strong>NETWORKING RECEPTION &amp; POSTER REVIEW</strong></td>
<td>NAUTILUS</td>
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Storage Requirements Calculator (MSRC) Overview and Demo<br> Tyler Ross <br> Explosives Safety Engineer, A-P-T Research, Inc.<br><br>A Retrospective Study on the Safety of Waterjet (WJ) and Abrasive Waterjet (AWJ) Processing of High Explosive Ordnance<br> Paul Miller <br> Director, Advanced Technical Systems, Gradient Technology, Inc.
WEDNESDAY, AUGUST 8

7:00 am – 4:30 pm  REGISTRATION OPEN
HARBOR ISLAND FOYER

7:00 – 8:00 am  NETWORKING CONTINENTAL BREAKFAST
HARBOR ISLAND FOYER

8:00 – 8:05 am  ADMIN REMARKS
HARBOR ISLAND BALLROOMS 2 & 3
CAPT Frank Michael, USN (Ret)
Senior Vice President, Program Development and Membership, NDIA

8:05 – 8:50 am  KEYNOTE SPEAKER
HARBOR ISLAND BALLROOMS 2 & 3
MG Charles R. Hamilton, USA
Commanding General, 8th Theater Sustainment Command, U.S. Army

8:55 – 9:40 am  KEYNOTE SPEAKER
HARBOR ISLAND BALLROOMS 2 & 3
Captain Nigel Smith, RAN
Command Director, Land EO SPO, Capability Acquisition and Sustainment Group

9:30 am – 3:30 pm  EXHIBIT HALL OPEN
NAUTILUS

9:40 – 10:20 am  NETWORKING BREAK
NAUTILUS

C O N C U R R E N T  S E S S I O N S

10:20 am – 12:00 pm  RISK MANAGEMENT - THERMAL EFFECTS I - BURN TO VIOLENT REACTIONS
HARBOR ISLAND BALLROOM 1

Ed Walseman
Session Chair

Metrics Analysis for the Improved Evaluation Methodology of the Hazard
Severity of Fragments Projected from a Deflagrating Warhead
Daniel Pudlak
Engineer, U.S. Army ARDEC

Combustion Behavior & Quantity Distance Siting
Dr. Josephine Covino
Science Advisor, DoD Explosives Safety Board

Experimental Results of The Convective Combustion of an HD 1.3 Material
Cynthia Romo
Mechanical Engineer, NAWCWD

Characterizing the Pressure Gain of Magazines Due to
Convective Combustion of M1 Gun Propellant
Dr. Brian Bojko
Aerospace Engineer, NAWCWD
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| 10:20 am – 12:00 pm | **EXPLOSIVES SAFETY SITING – TESTING** | HARBOR ISLAND BALLROOM 2 | Thomas Garcia         | An Overview of AMO-CAT: DDESB’s Explosives Safety Knowledge Improvement Program  
Robert Conway  
Research Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center  
Iron Warrior IV Debris Recovery: ATF’s Use of DDESB’s Technical Paper 21  
John Tatom  
Chief, Explosives Safety and Testing, A-P-T Research, Inc.  
Small Quantities for Research and Laboratories (SQRL) Test Program  
Dr. Michelle Crull  
Senior Structural Engineer, U.S. Army Engineering & Support Center, Huntsville  
Protective Construction for Personnel in Operations Buildings with Varying Explosives Hazards  
John Nevels  
PE, U.S. Army Engineering & Support Center, Huntsville |
| 10:20 am – 12:00 pm | **EXPLOSIVES HAZARDS – OTHER CONSIDERATIONS** | HARBOR ISLAND BALLROOM 3 | Dr. Joshua Hoffman    | How Can the Government Mitigate the Use of Common Household Products Used for Explosives?  
Robert Clowers  
Consultant, Envistacom  
Chemistry of Chemical Warfare Agents  
Dr. Kirstin Warner  
Chemist, DoD Explosives Safety Board  
Design Factor Influences on Total Determined Explosives Site Risk  
Dr. Jason Florek  
Senior Engineer, Stone Security Engineering  
An International Standard to Manage Space Launch Risks  
Tom Pfitzer  
President, A-P-T Research, Inc. |
| 12:00 – 1:00 pm | **LUNCH**                             | NAUTILUS          |                      |                                                                               |
**CONCURRENT SESSIONS**

**1:00 – 2:40 pm**

**RISK MANAGEMENT – THERMAL EFFECTS II – MODELING**

HARBOR ISLAND BALLROOM 1

Dr. Noel Hsu
Session Chair

*Modeling and Simulation of HD 1.3 Thermal Initiation Tests on a Small Reinforced Concrete Storage Structure*

Dr. Ming Liu
Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

*Numerical Modeling of Sub-Scale Convective Combustion of M1 Propellant*

Dr. Fumiya Togashi
Chief Combustion Scientist, Applied Simulations, Inc.

*Integrated Violence Model of 1.3 Events with Example Test Results*

Dr. Clint Guymon
Director of R&D, Safety Management Services, Inc.

*A General Pressure Generation Model for Granular Propellant Fires*

Dr. Frederick Paquet
Project Officer, General Dynamics OTS

**1:00 – 2:40 pm**

**EXPLOSION EFFECTS – MODELING I**

HARBOR ISLAND BALLROOM 2

Robert Conway
Session Chair

*A Fast Running Model for Accurate Time-Dependent Post-Shock Gas Flow*

Pietro Gheorghiu
Engineer, Karagozian & Case, Inc.

*Estimation of Primary Blast Injuries Inside Buildings*

Knut Holm
Senior Scientist, Norwegian Defense Research Establishment (FFI)

*Numerical Modeling Capabilities to Better Understand Internal Explosions Phenomena*

*Dr. Malte von Ramin*
Group Manager Hazard & Risk Analysis, Fraunhofer Institute for High-Speed Dynamics

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**REGISTER NOW**

23RD ANNUAL EXPEDITIONARY WARFARE CONFERENCE

October 16 – 18, 2018

Westin Annapolis

Annapolis, MD

NDIA.org/EWC18

*This person is presenting the paper on the author’s behalf. Please see the presentation index on page 23 for the author’s name and affiliation.*
**1:00 – 2:40 pm**

**EXPLOSIVES SAFETY – SOLUTIONS**

HARBOR ISLAND BALLROOM 3

Dr. Joseph Baum  
*Session Chair*

- **Explosives Safety Siting Quantity-Distance Engine & Flowcharts Criteria Merge and Software Rewrite**  
  Cameron Stewart  
  Research Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

- **Protective Construction Design Roadmap**  
  Arturo Luna  
  Research Structural Engineer, NAVFAC Naval Facilities Engineering Service Center

- **Ultra-High-Speed Optical Flame Detection and Releasing System Solutions for the Munitions Industry**  
  Michael Hosch  
  Flame Detection Product Line Manager, Det-Tronics

**2:40 – 3:10 pm**

**NETWORKING BREAK**

NAUTILUS

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**C O N C U R R E N T   S E S S I O N S**

**3:10 – 4:50 pm**

**RISK MANAGEMENT – THERMAL EFFECTS III – STRUCTURAL DESIGN & REACTIONS VIOLENCE**

HARBOR ISLAND BALLROOM 1

Dr. Lara Leininger  
*Session Chair*

- **Protective Construction Design Criteria for HD 1.3**  
  Arturo Luna  
  Research Structural Engineer, NAVFAC Naval Facilities Engineering Service Center

- **Realistic Assessment of HD 1.3 Events**  
  Maurice Muser  
  Project Manager, Audits & Regulatory Compliance, Nammo Raufoss AS

- **Explosion Effects and Consequences from Detonations and Less Violent Munitions Response**  
  Martijn van der Voort  
  Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)

- **Safety Assessments of Thermally Damaged Energetic Materials**  
  John Reynolds  
  Senior Scientist, Lawrence Livermore National Laboratory
### EXPLOSION EFFECTS – MODELING II
HARBOR ISLAND BALLROOM 2
Dr. Ming Liu
Session Chair

**Improved Method to Calculate Gas Pressure from Partially Confined Detonations**
Charles Oswald
Senior Principal, Protection Engineering Consultants

**On the Role of Modeling Dust Production by Fragmenting Warheads in Storage Facilities**
Dr. Joseph Baum
CEO, Applied Simulations, Inc.

**Updated Blast Effects and Consequence Models in DDESB Technical Paper 14**
Robert Conway
Research Structural Engineer, NAVFAC Engineering and Expeditionary Warfare Center

**The Current State of the Vulnerability Assessment and Protection Option (VAPO) Software Program and its Applicability to the Explosives Safety Community**
Dr. James Nichols

### OPERATIONAL RISK I
HARBOR ISLAND BALLROOM 3
Dr. Michael Oesterle
Session Chair

**Operationalizing the Munitions Risk Management Assessment Process**
John Lenox
Director Military Operations, DoD Explosives Safety Board

**Explosives Safety Risk Assessments at Ports**
Brandon Fryman
Junior Engineer, A-P-T Research, Inc.

**Planning Considerations for Munitions Related Infrastructure**
Lea Ann Cotton
Safety Engineer, DoD Explosives Safety Board

**Explosion Siting Assessment for Sounding Rocket Missions**
Jon Chrostowski
Senior Scientist, ACTA, Inc.

**Quantitative Risk Analysis of Ammunition Transshipments in Harbors**
Hugo Dijkers
Researcher, TNO Defence, Safety and Security
## THURSDAY, AUGUST 9

### 7:00 am – 12:00 pm
**REGISTRATION OPEN**
HARBOR ISLAND FOYER

### 7:00 – 8:00 am
**NETWORKING CONTINENTAL BREAKFAST**
HARBOR ISLAND FOYER

### Concurrent Sessions

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| 8:00 – 9:40 am | **HAZARD CLASSIFICATIONS & INSENSITIVE MUNITIONS I – INTERNATIONAL STANDARDIZATION** | HARBOR ISLAND BALLROOM 1              | Dr. Upton Shimp  
Session Chair

- **Motivations for NATO Standardization of Hazard Classification Procedures**  
  Brent Knoblett  
  Safety Engineer, DoD Explosives Safety Board

- **NATO Working Group on Insensitive Munitions and Hazard Classification Requirements, Assessment, and Hazard Frequency**  
  Martin Pope  
  Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)

- **Hazard Classification Reduction Assessment**  
  Stephen Struck  
  Research Engineer, Air Force Research Laboratory

- **Review and Update of STANAG 4526 Shaped Charge Jet, Munitions Test Procedure**  
  Dr. Brian Fuchs  
  Experimental Evaluation Lead Technical Expert, U.S. Army ARDEC

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| 8:00 – 9:40 am | **ELECTRICAL HAZARDS AND PROTECTIVE EQUIPMENT**           | HARBOR ISLAND BALLROOM 2              | John Fellows  
Session Chair

- **Third-Party Lightning Protection System Certification Program for Explosives Facilities**  
  Mitchell Guthrie  
  Senior Engineer, Lightning Protection Institute Inspection Program

- **Identifying Lightning Protection Requirements and Deficiencies**  
  Jeffrey Denton  
  Electrical Engineer, Army Corps of Engineers

- **Lightning Risk Assessment Tailored to Applications Involving Structures Housing Explosives**  
  Alain Rousseau  
  President, SEFTIM

- **Considerations on Analysis of Lightning Protection System Adequacy When Required Documentation is Not Available**  
  Mitchell Guthrie  
  Senior Engineer, Lightning Protection Institute Inspection Program
8:00 – 9:40 am  
**PROTECTIVE CONSTRUCTION I**
HARBOR ISLAND BALLROOM 3  
Jon Chrostowski  
*Session Chair*

- **Enhancing Constructability and Reducing Construction Costs of Reinforced Concrete Blast Cells**
  William Zehrt, Jr.  
  Structural Engineer, DoD Explosives Safety Board

- **Structural Response of an Earth Covered Magazine to a Simulated Blast Loading**
  Joseph Hamilton  
  Engineer, Karagozian & Case, Inc.

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  Hariharasankaran Vaidyanathan  
  Senior Structural Engineer, Department of National Defense, Canada

- **Earth Covered Magazines Vertical Seismic Ground Motion Effects**
  Harold Sprague  
  Subject Matter Expert, Parsons Corp.

9:30 am – 1:30 pm  
**EXHIBIT HALL OPEN**
NAUTILUS

9:40 – 10:20 am  
**NETWORKING BREAK**
NAUTILUS

**C O N C U R R E N T S E S S I O N S**

10:20 am – 12:00 pm  
**HAZARD CLASSIFICATION & INSENSITIVE MUNITIONS II – METHODOLOGIES**
HARBOR ISLAND BALLROOM 1  
Hans Øiöm  
*Session Chair*

- **DOE/NNSA Insensitive High Explosive (IHE) Qualification and Testing**
  Dr. Lara Leininger  
  Director, Energetic Materials Center, Lawrence Livermore National Laboratory

- **Introducing the U.S. Navy Insensitive Munitions Handbook**
  Dr. Jerry Ward  
  Senior Lead Engineer, Booz Allen Hamilton

- **Comparison of Shock Stimuli from Current Hazard Classification Testing and Potential Threats**
  Paul Braithwaite  
  Sr. Staff Scientist, Northrop Grumman
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<td>10:20 am – 12:00 pm</td>
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<td>Ammonium Nitrate Modeling in the AN Module of IMESA FR&lt;br&gt;Michael Swisdak, Jr.&lt;br&gt;Senior Scientist, A-P-T Research, Inc.</td>
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<td>Quantitative Risk Analyses in the Commercial Explosives Industry&lt;br&gt;William Evans&lt;br&gt;Senior Industry Explosives Risk Analyst, A-P-T Research, Inc.</td>
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<td>10:20 am – 12:00 pm</td>
<td><strong>PROTECTIVE CONSTRUCTION II – STANDARDS</strong>&lt;br&gt;HARBOR ISLAND BALLROOM 3&lt;br&gt;Gary Hogue&lt;br&gt;Session Chair</td>
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<td>12:00 – 1:00 pm</td>
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October 23 – 25, 2018

The Johns Hopkins University Applied Physics Laboratory

Laurel, MD

NDIA.org/PSTS18
## Concurrent Sessions

### 1:00 – 2:40 pm

**HAZARD CLASSIFICATION & INSENSITIVE MUNITIONS III – APPLICATIONS AND CHALLENGES**

**HARBOR ISLAND BALLROOM 1**

**Dr. Brian Fuchs**
Session Chair

- **Tying Hazard Classification and Inensitive Munitions Testing to Explosives Quantitative Risk Assessment Modeling**
  
  *Michael Swisdak, Jr.*
  Senior Scientist, A-P-T Research, Inc.

- **Weapons System Hazardous Fragment Characterization**
  
  Gary Hogue
  Senior Explosives Safety Expert, Naval Ordnance Safety and Security Activity

- **An Investigation into a Proper Heating Rate for the Slow Heating Test**
  
  Dr. David Hubble
  Mechanical Engineer, NSWC Dahlgren Division

- **Insensitive Munitions Explosive Ordnance Disposal Challenges**
  
  Martin Pope
  Technical Specialist Officer, Munitions Safety Information Analysis Center (MSIAC)

### 1:00 – 2:40 pm

**U.S. DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD (DDESB) TOOLS AND PRACTICES**

**HARBOR ISLAND BALLROOM 2**

**James O’Kane**
Session Chair

- **DDESB Software & Tools – Planning for the Future**
  
  Lea Ann Cotton
  Safety Engineer, DoD Explosives Safety Board

- **Explosives Safety Siting (ESS) Software – Overview and Status**
  
  David Bianchi
  Geographer, NAVFAC Naval Facilities Engineering Service Center

- **Explosives Safety Siting (ESS) Software Migration to Web Based Technologies**
  
  Shea Broussard
  Geographer GIS, NAVFAC Engineering and Expeditionary Warfare Center

- **Primary Fragment Characterization Tools: A DDESB Technical Paper 16 Update**
  
  Susan Hamilton
  Civil Engineer, U.S. Army Engineering and Support Center, Huntsville

*This person is presenting the paper on the author’s behalf. Please see the presentation index on page 21 for the author’s name and affiliation.*
| Time          | Session Title                                                                 | Speaker(s)                                                                 | Institution/Position                                      |
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| 1:00 – 2:40 pm | **STRUCTURAL EFFECTS I – APPROACHES**                                         | Stephen Struck                                                            | Session Chair                                             |
|              | **Risk-Based Explosion Assessment - Internal Explosion of Exploration Upper Stage in Vehicle Assembly Building** | Jon Chrostowski                                                           | Senior Scientist, ACTA, Inc.                              |
|              | **Modeling Reinforced Concrete Protective Construction for Impact Scenarios**  | Brad Durant                                                                | Research Structural Engineer, NAVFAC Naval Facilities Engineering Service Center |
|              | **IME Derailed Debris Collection**                                            | Dr. Joshua Hoffman                                                         | Director of Technical Services, Institute of Makers of Explosives |
|              | **Identifying Optimal Concrete Strength for Varying Levels of Blast Loading** | Dr. Tarek Kewaisy                                                          | Principal Associate, Louis Berger Group                   |
| 2:40 – 3:10 pm | **NETWORKING BREAK**                                                           |                                                                           |                                                           |
| 3:10 – 4:50 pm | **HAZARD CLASSIFICATION AND INSENSITIVE MUNITIONS IV – MEASUREMENTS & ESTIMATES** | Paul Braithwaite                                                          | Session Chair                                             |
|              | **The ARDEC Gap Test for Small Grain Gun Propellants**                        | Erik Wrobel                                                                | Chemical Engineer, U.S. Army ARDEC                       |
|              | **Airblast Equivalent Weight and Yield Determinations Based on Measurements of Energy and Other Blast Wave Parameters** | Michael Swisdek, Jr.                                                      | Senior Scientist, A-P-T Research, Inc.                   |
|              | **Results from Gaseous Methane/Oxygen Mixture Testing**                       | Mike Bangham                                                               | President, Bangham Engineering, Inc.                     |
|              | **Use of TNT Equivalency Estimation**                                         | Dr. Brian Fuchs                                                            | Experimental Evaluation Lead Technical Expert, U.S. Army ARDEC |

**C O N C U R R E N T  S E S S I O N S**

| Time          | Session Title                                                                 | Speaker(s)                                                                 | Institution/Position                                      |
|--------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 3:10 – 4:50 pm | **HAZARD CLASSIFICATION AND INSENSITIVE MUNITIONS IV – MEASUREMENTS & ESTIMATES** | Paul Braithwaite                                                          | Session Chair                                             |
|              | **The ARDEC Gap Test for Small Grain Gun Propellants**                        | Erik Wrobel                                                                | Chemical Engineer, U.S. Army ARDEC                       |
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|              | **Results from Gaseous Methane/Oxygen Mixture Testing**                       | Mike Bangham                                                               | President, Bangham Engineering, Inc.                     |
|              | **Use of TNT Equivalency Estimation**                                         | Dr. Brian Fuchs                                                            | Experimental Evaluation Lead Technical Expert, U.S. Army ARDEC |
### 3:10 – 4:50 pm  
**STRUCTURAL EFFECTS II – METHODS & APPLICATIONS**  
**HARBOR ISLAND BALLROOM 2**

**Paul Cummins**  
*Session Chair*

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**John Tatom**  
*Session Chair*

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The NDIA has a policy of strict compliance with federal and state antitrust laws. The antitrust laws prohibit competitors from engaging in actions that could result in an unreasonable restraint of trade. Consequently, NDIA members must avoid discussing certain topics when they are together at formal association membership, board, committee, and other meetings and in informal contacts with other industry members: prices, fees, rates, profit margins, or other terms or conditions of sale (including allowances, credit terms, and warranties); allocation of markets or customers or division of territories; or refusals to deal with or boycotts of suppliers, customers or other third parties, or topics that may lead participants not to deal with a particular supplier, customer or third party.
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BIOGRAPHIES

THIERRY CHIAPELLO

Executive Director
DoD Explosives Safety Board

Thierry Chiapello has served 29 years in the Marine Corps. He has held positions in logistics, military munitions management, environmental management and explosives safety.

As executive director and chairman of the Explosives Safety Board, Chiapello has led development of a strategy to integrate explosives safety and munitions risk management. His responsibilities include maintaining and overseeing the Explosives Safety Program; integrating explosives safety tenets and requirements throughout the enterprise with a special focus on acquisition, real property and the environment; providing combatant commanders and the services with tools to identify and reduce munitions risks in operations; support the informed risk decisions of key leaders; and representing the United States on explosives safety topics.

Chiapello led development of the risk management policy for the United States and NATO that provides commanders critical information to assess and reduce munitions-related risks. He is leading the effort to identify and reduce munitions risks within South Korea and NATO, as well as working with numerous nations to quantify and eliminate munitions risks whenever possible. Chiapello is the head of delegation to the NATO Conference of National Armaments Directors, Ammunition Safety Group, and chairs the Explosives Safety and Munitions Risk Management Panel within the NATO Logistics Committee.

Previously, Chiapello led the Logistics Division at Marine Corps Systems Command (PM for Ammunition). He was the service’s voting board member to the DDES SB, managing the Marine Corps’ explosives safety program and planning its military munitions sustainment during training, operations and contingencies. From 2004-05, he attended the Industrial College of the Armed Forces.

Chiapello also was the head of Environmental Compliance and Training at Marine Corps Base Camp Lejeune, NC, where he managed compliance with federal and state environmental regulations. He developed an award winning, 40-hour training course for Marines and routinely trained personnel from Marine Corps installations around the world. He also trained more than 1,000 Marines and civil servants on processes and requirements that resulted in balancing the mission with the environment.

As a logistics and environmental compliance officer, Chiapello provided support to the 26th Marine Expeditionary Unit. His responsibilities included preparing expeditionary units for deployments while complying with environmental regulations. During his military career, he deployed twice with the 26th MEU in support of operations Desert Shield and Desert Storm.

MG CHARLES R. HAMILTON, USA

Commanding General, 8th Theater Sustainment Command
U.S. Army

Maj. Gen. Charles R. Hamilton became the Assistant Chief of Staff of J4, United States Forces Korea, Deputy Assistant Chief of Staff, U4, United Nations Command, and Deputy Assistant Chief of Staff, C4, Combined Forces Command on 19 September 2017.

Hailing from Houston, Texas, Maj. Gen. Hamilton enlisted in the U.S. Army. Upon completion of basic and individual training, he was assigned to Fort Hood, TX. In Feb. 1988, he graduated from OCS as the Distinguished Military Graduate and was commissioned a 2nd Lt. in the Quartermaster Corps.

After graduation from the Quartermaster Basic Course, he was assigned as a Platoon Leader in the 240th Quartermaster Battalion, and later selected as aide-de-camp to the Commanding General, Troop Support Command.

Following his assignment as aide-de-camp, he attended the Quartermaster Advanced Course. Subsequent assignments include: Company Commander, 305th Quartermaster Company, Korea; Recorder DA Secretariat, HRC; CPTs Assignment Officer, HRC; Joint Intern/J4 Pentagon; Logistics Staff Officer, G-4 Pentagon; Chief of Supply and Services, 101st CSG, Fort Campbell, KY; Support Operations Officer and Executive Officer, 561st Corps Support Battalion, Fort Campbell, KY; Transformation Action Officer, G-3 Pentagon; XO to the Vice Director, DLA, Fort Belvoir, VA, Commander DLA-Fwd Bagram, Afghanistan; Battalion Commander, 498th Combat Sustainment Support Battalion, Korea, Office of the Chief of Staff as the Logistics Colonels Assignment Officer, Chief of Staff, USFOR-A South/Southwest, Kandahar Airfield, Afghanistan, Commander, 101st Sustainment Brigade, Fort Campbell, KY, deployed his Brigade to Afghanistan “Task Force Lifeliner”. He was then assigned as the Executive Officer to the Army Deputy Chief of Staff, G-4. He was most recently in command of Defense Logistics Agency Troop Support.

Maj. Gen. Hamilton’s education includes a Bachelor of Science in Business Administration from Virginia State University, Masters in Public Administration from Central Michigan University and a second Masters in Military Studies from Marine Corps University. His military education includes Senior Service College as a 2012 OSD Corporate Fellow, the Marine Command and Staff and the Joint Forces Staff College, the Quartermaster Officer Basic and Advanced Course, and the Combined Arms and Services Staff School. He has completed Airborne, Air Assault and Rigger School.
COL LAWRENCE NIXON, USAF

Deputy Chief of Safety
U.S. Air Force

Col Lawrence Nixon is the Deputy Chief of Safety for Headquarters Air Force, Pentagon, Washington, DC. He is responsible for overseeing the Air Force’s flight, ground, space, and weapons safety mishap prevention programs designed to preserve combat capability by preventing mishaps. Colonel Nixon received his commission as a graduate of the Air Force Reserve Officer Training Corps program at the University of Illinois, Urbana-Champaign, IL. He has held positions at the wing, major command, combatant command, Air Staff, and Joint Staff level. He has a background in the Combat Search and Rescue (CSAR) mission area in the HH-60G Pave Hawk both operationally and as a formal training unit (FTU) evaluator pilot. Prior to his current assignment, he served as Air Combat Command’s Director of Safety. His education includes a Masters from the University of Central Missouri, Warrensburg, MO and completion of Squadron Officer School, Air Command and Staff College, and Air War College.


CAPTAIN NIGEL SMITH, RAN

Director, Land EO SPO, Capability Acquisition and Sustainment Group
Royal Australian Navy

Nigel joined the Royal Australian Navy through the Australian Defence Force Academy in January 1991. As a junior officer he enjoyed postings to the guided missile destroyers HOBART and PERTH where he gained Weapons Engineering qualifications. His head of department posting was completed in the frigate STUART. Shore postings have included the Combat Data Systems Centre, Divisional Officer at the Defence Academy, and the Directorate of Navy Weapons Systems.

Nigel has enjoyed overseas postings on the Naval Attache’s staff, Washington, and later as the Australian exchange officer to the United Kingdom Defence Ordnance Safety Group. During this three-year posting to Bristol Nigel was also the Australian representative to the NATO Munitions Safety Group AC-326, and the Australian member on the Munitions Safety and Information Analysis Centre (MSIAC) steering committee.

In 2015 he returned to Australia on promotion to Captain to take up the post of Director Ordnance Safety in Joint Logistics Command, with responsibility for Australian Defence explosive safety policy and regulation. During this posting he initiated a significant reform into explosive safety management in the Australian defence organisation.

Nigel assumed his current post in January 2018 as Director Land Explosive Ordnance Systems Program Office, delivering explosive ordnance acquisition projects and managing the explosive ordnance inventory for the Australian Army.

Nigel has a Bachelor’s degree in Electrical Engineering, and Master’s degrees in Explosive Ordnance Engineering, and Project Management. He is a Chartered Professional Engineer with the Institution of Engineers Australia.
EXHIBIT HALL HOURS

TUESDAY, AUGUST 7
9:30 am – 6:30 pm

WEDNESDAY, AUGUST 8
9:30 am – 3:30 pm

THURSDAY, AUGUST 9
9:30 am – 1:30 pm

EXHIBITORS BY BOOTH NUMBER

Karagozian & Case, Inc. .............................. 102
Lightning Protection Institute Inspection Program  ..... 112
Det-Tronics ............................................ 114
Battlefield Clearance Team Licensing ................ 120
CoverSix Shelters a division of RedGuard ............ 203
A-P-T Research, Inc. ................................. 205
ABS Group .................................................. 207
Vaisala ...................................................... 211
Armag Corporation .................................... 213
KF Armory ............................................... 217
Safety Management Services, Inc.................... 219

EXHIBIT HALL MAP

Food & Beverage

Entrance

Food & Beverage

Entrance
EXHIBITOR DESCRIPTIONS

ABS GROUP 207
ABS Group (www.abs-group.com) provides technical advisory, risk management and certification services to support the safety and reliability of high-performance assets and operations. Our Advanced Engineering division evaluates explosive operations for compliance with explosive safety standards and conducts blast testing at our state-of-the-art shock tube test facility to support design verification and R&D programs and help minimize threat to life, damage to property and loss of mission.

A-P-T RESEARCH, INC. 205
A-P-T Research, Inc. is a 100% employee-owned, small business based in Huntsville, Alabama. APT provides professional engineering & programmatic services in a variety of disciplines including systems engineering, risk assessment & analysis, test planning, range safety, system safety, software system safety, explosives safety, industrial & quality engineering, quality assurance, mission assurance, Independent Verification and Validation (IV&V), software development & modeling, and related areas.

ARMAG CORPORATION 213
Armag is the leading manufacturer of pre-engineered and portable Magazines for safe and secure storage of ammunition and explosives. Our Magazines are designed to meet or exceed requirements prescribed by the US DoD and ATF. We are excited to announce new designs for the first 3-Bar flat-roof Earth Covered Magazine and Portable Shipboard Magazines.

BATTLEFIELD CLEARANCE TEAM LICENSING 120
BCTL, Co. created the Mystic Suite of Software time saving tools to help manage your projects and operations. From monitoring work certificates to stay in compliance, to tracking work hours in the field, all on your mobile phone or tablet. Customizable tracking capability lets you track anything pertaining to a project, on a project by project basis. Visit us at www.mystichq.com for more details and your free trial.

COVERSIX SHELTERS A DIVISION OF REDGUARD 203
We offer design/build capabilities for hardened modular buildings used as viewing bunkers and control rooms on military ranges and for command and control, offices, living accommodations, and others around the world. We performed live testing of our blast, ballistic and forced entry protection and use renowned third-party engineers to verify all protective design. We’ve received design approvals and completed work for the most stringent agencies/facilities and want to work on your next project.

DET-TRONICS 114

KARAGOZIAN & CASE, INC. 102
Karagozian & Case, Inc. (K&C) is an internationally recognized blast consulting firm established in 1945. Since, that time K&C has been a leader in protective design serving the US Department of Defense (DoD), US Air Force, US Navy, US Army Corps Engineers, GSA, and numerous private customers all over the world. Practice areas include: Protective Design & Engineering; Modeling, Simulation & Analysis; Products & Software Development; Applied Research & Testing; Threat & Vulnerability Assessments
KF ARMORY

KF Armory Defense LLC presents the latest innovation in ballistic and explosives safety, the Modular Interlocking Ballistic Barrier System. The MIB2S are NIJ/UL rated to defeat multiple hits of 50 Cal API-T. In testing MIB2S also defeated RPG-7 HE Frag, 200 pounds of ANFO, 1200 grain cutting charges, 10-inch platter charges and Mk211 Raufoss. The man-portable blocks can stacked to protect EOD teams from a suspicious packages, or increase range safety. Video available at www.kfarmory.com/mib2s/

LIGHTNING PROTECTION INSTITUTE INSPECTION PROGRAM

The Lightning Protection Institute Inspection Program provides trained professionals to physically inspect installed lightning protection systems giving peace of mind to building owners, engineers and architects. Our Extended Master Inspection Program provides a respected alternative independent third-party resource for the certification of lightning protection systems for structures housing explosives; addressing NFPA, UFC, Army, Navy, and Air Force conventional and explosives safety standards.

SAFETY MANAGEMENT SERVICES, INC.

The mission of Safety Management Services, Inc. is to safeguard people, processes, and the environment. Our mission is accomplished by assisting our clients in maintaining the safety of their operations through the systematic identification of safety-related deficiencies, along with the development and implementation of solutions based on sound principles.

VAISALA

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