

NDIA



2023
**AIRCRAFT
SURVIVABILITY
SYMPOSIUM**

**The Multi-Domain Kill-Web:
Opportunities for Collaborative Survivability**

October 31 – November 2 | Monterey, CA | [NDIA.org/AircraftSurvivability](https://ndia.org/AircraftSurvivability)

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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 than 100 years, NDIA and its predecessor organizations have been at the heart of the mission by dedicating their time, expertise, and energy to ensuring our warfighters have the best training, equipment, and support. For more information, visit NDIA.org.

Get Involved

Learn more about NDIA's Divisions and how to join one at NDIA.org/Divisions



Lt Gen Chris Bogdan, USAF (Ret)
Division Chair

Dr. Richard Huffman
Symposium Chair

Jack Rau
Symposium Chair Elect

Amy Howell
Secretary

Air Combat Survivability

Who We Are

NDIA's Air Combat Survivability Division addresses all aspects of susceptibility reduction (probability of hit), vulnerability reduction (consequences of hit), and the overall survivability discipline, including countermeasures, signature reduction, tactics and training, camouflage, concealment and deception, as well as damage resistance, damage tolerance, and combat damage repair. The division also focuses on the transfer of information and technology between the military survivability and civil aviation communities to improve flight safety and to mitigate the effects of terrorist acts.

Schedule at a Glance

Tuesday, October 31

Optional Tutorial Day

Naval Postgraduate School • King Hall
8:00 am – 5:00 pm

Networking Reception

Hyatt Regency Monterey Garden Terrace
Courtyard
6:00 – 7:30 pm

Wednesday, November 1

Symposium Day 1

Naval Postgraduate School • King Hall
8:00 am – 4:15 pm

Networking Reception and Awardee Celebration

A Taste of Monterey
5:00 – 7:00 pm

Thursday, November 2

Symposium Day 2

Naval Postgraduate School • King Hall
8:00 am – 4:15 pm

Award Presentation and Luncheon

Naval Postgraduate School • Herrmann Hall
11:00 am – 1:00 pm

Event Information

Location

Symposium Venue

Naval Postgraduate School
1 University Circle
Monterey, CA 93943

Host Hotel

Hyatt Regency Monterey Hotel & Spa
1 Old Golf Course Road
Monterey, CA 93940

Attire

Civilian: Business
Military: Uniform of the Day

Survey and Participant List

You will receive via email a survey and list of participants (name and organization) after the symposium. Please complete the survey to make our event even more successful in the future.

Event Contact

Maura Deely

Meeting Planner
(703) 247-2588 | mdeely@NDIA.org

Tommy Kienzle

Program Coordinator, Divisions
(703) 247-2575 | tkienzle@NDIA.org

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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.

Event Code of Conduct

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Antitrust Statement

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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Poster Presenters & Displays

Development and Field Testing of Survivable HPM & OCO-laden UAS

Dr. Travis Fields

Associate Professor, University of Missouri-Kansas City

Design, Fabrication, and Testing of Low-Cost RCS Reduction of Group 1-2 Fixed Wing UAS

Alec Chance

Mechanical Engineer, University of Missouri-Kansas City

Enable Countermeasure Effectiveness by Improving Sensor Performance Requirements Derivation and Optimizing Sensor Platform Orbit Locations

Gillian van Ysseldyk

Senior Principal Systems Engineer, BAE Systems, Inc.

A Predictive Model for Lidar Systems in Rotorcraft Engagement Scenarios

Dr. Jeremiah Brown

Phenomenology Innovation Cell Lead, IERUS Technologies, Inc.

Effect of Ballistic Shot Dependency and Weave Matrix on Composite Materials

Maj John Hansen, USAF

Assistant Professor of Aerospace Engineering,
Air Force Institute of Technology

Manned-Unmanned Teaming (MUM-T) Simulation for Survivability

Dr. Joshua Edmison

Chief Mission Architect, Northrop Grumman

Mission Command for Autonomous Systems: Realizing the Promise of Advanced Autonomy

Ben Schwartz

Director of Human Engineering, Monterey Technologies Inc.

Agenda

THIS EVENT IS CLASSIFIED AS SECRET//NOFORN

TUESDAY, OCTOBER 31 – OPTIONAL TUTORIAL DAY

7:00 am – 5:00 pm

Registration Open

KING HALL FOYER

7:00 – 8:00 am

Continental Breakfast

KING HALL PATIO

8:00 – 8:15 am

Welcome Remarks

KING HALL

Brig Gen Guy Walsh, USAF (Ret)

Executive Vice President, NDIA

8:15 – 9:45 am

U.S. Space Force's Military Application of the Space Environment (MASE)

KING HALL

Ryan Ellis

Deputy Program Manager, Booz Allen Hamilton

Terry Buckeye

Defense Mission Expert, Booz Allen Hamilton

9:45 – 10:15 am

Networking Break

KING HALL PATIO

- 10:15 – 11:30 am **U.S. Space Force’s Military Application of the Space Environment (MASE)**
KING HALL
Ryan Ellis
Deputy Program Manager, Booz Allen Hamilton
Terry Buckeye
Defense Mission Expert, Booz Allen Hamilton
- 11:30 – 1:00 pm **Lunch on Own**
- 1:00 – 2:45 pm **F-35/F-135 Live Fire Testing**
KING HALL
Thao Nguyen
Senior Fellow, Systems Survivability-Vulnerability Engineering, Pratt & Whitney
Mark Stewart
Fellow, Vulnerability Analysis & Live Fire Testing, Lockheed Martin
- 2:45 – 3:15 pm **Networking Break**
KING HALL PATIO
- 3:15 – 4:55 pm **F-35/F-135 Live Fire Testing**
KING HALL
Thao Nguyen
Senior Fellow, Systems Survivability-Vulnerability Engineering, Pratt & Whitney
Mark Stewart
Fellow, Vulnerability Analysis & Live Fire Testing, Lockheed Martin
- 4:55 – 5:00 pm **Closing Remarks**
KING HALL
- 6:00 – 7:30 pm **Networking Reception**
HYATT REGENCY MONTEREY – GARDEN TERRACE COURTYARD

WEDNESDAY, NOVEMBER 1

- 7:00 am – 4:15 pm **Registration Open**
KING HALL FOYER
- 7:00 – 8:00 am **Continental Breakfast**
KING HALL PATIO
- 8:00 – 8:15 am **Welcome and Introductory Remarks**
KING HALL
Dr. Richard Huffman
Research Staff Member, Operational Evaluation Division, Institute for Defense Analyses
Symposium Planning Chair, Air Combat Survivability Division, NDIA
Lt Gen Chris Bogdan, USAF (Ret)
Executive Vice President, Booz Allen Hamilton
Chair, Air Combat Survivability Division, NDIA

- 8:15 – 8:30 am **NPS Welcome**
KING HALL
VADM Ann Rondeau, USN (Ret.)
President, Naval Postgraduate School
- 8:30 – 8:35 am **Industry Keynote Address Introduction**
KING HALL
Lt Gen Chris Bogdan, USAF (Ret)
Executive Vice President, Booz Allen Hamilton
Chair, Air Combat Survivability Division, NDIA
- 8:35 – 9:15 am **Industry Keynote Address**
KING HALL
Randy Walden, SES (Ret)
Former Director, Department of the Air Force Rapid Capabilities Office
- 9:15 am **Poster and Display Hall Open**
KING HALL AUDITORIUM UPPER LEVEL
- 9:15 – 9:45 am **Networking Break**
KING HALL PATIO

SESSION 1 – THREAT

Session Chair: Ken McKenzie

- 9:45 – 9:55 am **Introduction to Session**
KING HALL
Ken McKenzie
Senior Engineer, MTSI
- 9:55 – 10:45 am **SAM Update**
KING HALL
Riley Freelove
MSIC
- 10:45 – 11:10 am **Developmental Threat Systems**
KING HALL
Matthew Carreiro
EERC, Booz Allen Hamilton
- 11:10 – 11:35 am **Laser Range Finder Threat Assessment**
KING HALL
Marius Albota
Technical Staff Member, MIT Lincoln Laboratory
- 11:35 am – 12:50 pm **Networking Lunch**
HERRMANN HALL
- 12:50 – 1:00 pm **Reconvene**
KING HALL

1:00 – 1:45 pm

Surface Action Groups Threats to USAF Operations

KING HALL

Jeff Elloian

Technical Staff Member, MIT Lincoln Laboratory

SESSION 2 – SUSCEPTIBILITY

Session Chair: Robert Gierard

1:45 – 2:00 pm

Introduction to Session

KING HALL

Robert Gierard

Defense Mission Professional, Booz Allen Hamilton

2:00 – 2:25 pm

Operational Cyber Effects on Weapon Systems

KING HALL

Dr. William Bryant

Technical Fellow, MTSI

2:25 pm

Poster and Display Hall Open

KING HALL AUDITORIUM UPPER LEVEL

2:25 – 2:50 pm

Networking Break

KING HALL PATIO

2:55 – 3:20 pm

Micro Jet Engines for LO Technology Development

KING HALL

Adam Rosenkrantz

Senior Manager, Engineering, Pratt & Whitney

3:20 – 3:45 pm

Survivability, Continuous Monitoring, System Availability, and Reducing Mission Risk. . . It's All About the Data!

KING HALL

Steve Griffing

OT/ICS Security Senior Lead Architect, Booz Allen Hamilton

Mike Weigand

Shift5

3:45 – 4:10 pm

Introduction to Military Application of the Space Environment (MASE)

KING HALL

Ryan Ellis

Deputy Program Manager, Booz Allen Hamilton

4:10 – 4:15 pm

Closing Remarks

KING HALL

5:00 – 7:00 pm

Networking Reception and Awardee Celebration

OFF-SITE LOCATION: A TASTE OF MONTEREY, 700 CANNERY ROW STE. KK, MONTEREY, CA

Additional purchase of a ticket required for all attendees and guests; may be purchased at the registration desk

THURSDAY, NOVEMBER 2

7:00 am – 4:15 pm

Registration Open

KING HALL FOYER

7:00 – 8:00 am

Continental Breakfast

KING HALL PATIO

8:00 – 8:15 am

Welcome and Administrative Remarks

KING HALL

Dr. Richard Huffman

Research Staff Member, Operational Evaluation Division, Institute for Defense Analyses
Symposium Planning Chair, Air Combat Survivability Division, NDIA

Lt Gen Chris Bogdan, USAF (Ret)

Executive Vice President, Booz Allen Hamilton
Chair, Air Combat Survivability Division, NDIA

SESSION 3 – VULNERABILITY

Session Chair: Thao Nguyen and Scott Wacker

8:15 – 8:30 am

Introduction To Session

KING HALL

Thao Nguyen

Senior Fellow, Systems Survivability-Vulnerability Engineering, Pratt & Whitney

Scott Wacker

Technical Director, Aerospace Survivability and Safety Office, United States Air Force

8:30 – 8:55 am

LFTE Policy – 1st Look at the Realistic Testing & Evaluation (T&E) in Multi-Domain Environment Proposal – DOT&E

KING HALL

Greg Ruderman

Director, Operational Test & Evaluation, OSD/DOT&E

8:55 – 9:20 am

Army PEO Aviation Survivability

KING HALL

Jamie Kimbel

Aircraft Holistic Survivability, Program Executive Office, Aviation

9:20 – 9:50 am

Networking Break

KING HALL PATIO

9:50 – 10:15 am

Advancing U.S. Military Aircraft Chemical, Biological, Radiological and Nuclear (CBRN) Survivability

KING HALL

Bill Greer

Senior CBRN Research Analyst, Air Force Research Laboratory

10:15 – 10:40 am **C-DEW Technology in Highly Contested Environments for System Survivability and Mission Success**
KING HALL
Dr. Kent Averett
Research Scientist, Program Manager, Air Force Research Laboratory, Materials and Manufacturing Directorate

10:40 – 11:00 am **Transition To Awards Lunch**
HERRMANN HALL

11:00 am – 1:00 pm **Awards Luncheon**
HERRMANN HALL

Robert Gierard
Defense Mission Professional, Booz Allen Hamilton

Dale B. Atkinson Air Combat Survivability Award for Lifetime Achievement

Randall Walden
Former Director, Department of the Air Force Rapid Capabilities Office

RADM Robert H. Gormley Air Combat Survivability Award for Leadership

John Ireland
National Director of Survivability, Northrop Grumman Aeronautics Systems

Patrick S. Sharp Air Combat Survivability Award for Technical Achievement

Mark Stewart
Fellow, Vulnerability Analysis & Live Fire Testing, Lockheed Martin

Professor Robert E. Ball Young Professional Award for Air Combat Survivability

Walter Bartellino
Component Technical Lead, Senior Principal Survivability Systems Architect, Northrop Grumman

1:00 – 1:10 pm **Reconvene**
KING HALL

1:10 – 1:15 pm **Human Systems Division Presentation Introduction**
KING HALL

Dr. Richard Huffman
Research Staff Member, Operational Evaluation Division, Institute for Defense Analyses
Symposium Planning Chair, Air Combat Survivability Division, NDIA

1:15 – 1:40 pm **Surviving in the Cognitive Cockpit**
KING HALL

Dr. Tom Schnell
Professor, Industrial Engineering, Director, Operator Performance Laboratory, University of Iowa

SESSION 4 – MOD/SIM

Session Chair: Amy Howell

1:40 – 1:50 pm **Session Introduction**
KING HALL

Amy Howell
Director, Operations Analysis, Lockheed Martin Rotary & Mission Systems (RMS)

1:50 – 2:15 pm **Joint Air Threat Model Simulation – Validation (JATMS-V)**
KING HALL

Bart Schmidt
Aviation Combat Forensics Officer, Joint Combat Assessment Team (JCAT)(JCAT)

2:15 – 2:40 pm

Many v Many Air Combat Analysis

KING HALL

Caroline Aust

Technical Staff Member, MIT Lincoln Laboratory

2:40 – 3:10 pm

Networking Break

KING HALL PATIO

3:10 – 3:35 pm

Long Range Infrared Threat Warning, Full Spectrum EW

KING HALL

Michael Hill

Senior Systems Engineer, BAE Systems

3:35 – 4:00 pm

Dynamic RCS Modeling, C-130J Signature Modeling, V-280 (Tiltrotor) Signature Modeling

KING HALL

Jackson Stubbs

Combat Survivability Analyst, NAVAIR

Callan Kent

Susceptibility Engineer, SURVICE Engineering Company

4:00 – 4:15 pm

Closing Remarks

KING HALL

4:15 pm

Conference Adjourns

Air Combat Survivability Awards



Dale B. Atkinson Air Combat Survivability Award for Lifetime Achievement

This award is presented to an individual who has made significant technical and leadership contributions throughout their professional career, spanning many or most of the numerous facets of aircraft combat survivability.

Randall Walden

Former Director, Department of the Air Force Rapid Capabilities Office



RADM Robert H. Gormley Air Combat Survivability Award for Leadership

This award is presented to a person who has made major leadership contributions to combat survivability.

John Ireland

National Director of Survivability, Northrop Grumman Aeronautics Systems



Patrick S. Sharp Air Combat Survivability Award for Technical Achievement

This award is presented to a person who has made a significant technical contribution to any aspect of survivability.

Mark Stewart

Fellow, Vulnerability Analysis & Live Fire Testing, Lockheed Martin



Professor Robert E. Ball Young Professional Award for Air Combat Survivability

This award is presented to an early-to-mid career person who has made a significant technical, analytic, or tactical contribution to any aspect of survivability.

Walter Bartellino

Component Technical Lead, Senior Principal Survivability Systems Architect, Northrop Grumman

Looking Ahead to 2024

It is not too early to consider who among our ranks is deserving of recognition in 2024. Who among your own employees and organizations have demonstrated technical or leadership achievements in the survivability community and are deserving of consideration for one of our annual NDIA awards?

The Air Combat Survivability Division will publish award nomination deadlines and submission procedures in 2024, but questions and early nominations can be directed to the Chair of the Awards Committee, **Robert Gierard**, at gierard.llc@gmail.com.

Keynote Biography



Randy Walden, SES (Ret)

Former Director, Department of the Air Force Rapid Capabilities Office

Mr. Walden was Director and Program Executive Officer for the Department of the Air Force Rapid Capabilities Office, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, in Washington, D.C. In this role, he was responsible for directing selected study, development, and fielding activities as tasked by the Under Secretary of Defense for Acquisition and Sustainment; Under Secretary of Defense for Research and Engineering; the Secretary of the Air Force; the Chief of Staff of the Air Force; the Chief of Space Operations; and the Assistant Secretary for the Air Force for Acquisition, Technology, and Logistics. The Department of the Air Force Rapid Capabilities Office has been responsible for the development and deployment of significant upgrades to the Integrated Air Defense System now operational around the National Capital Region, as well as the launch and experimental operations of the X-37 Orbital Test Vehicle and development and fielding of the B-21 Raider. Other

responsibilities include technical integration of Department of Defense classified activities, and the representation of these activities to the U.S. Air Force Headquarters, the Office of the Secretary of Defense, Congress, and the White House.

Prior to this position, Walden was appointed to the Senior Executive Service, serving on the Air Staff as the Technical Director for the Directorate of Special Programs (SAF/AQL); Deputy and Technical Director of the Air Force Rapid Capabilities Office, Office of the Assistant Secretary of the Air Force (Acquisition); Director for Information Dominance Programs (SAF/AQI), Office of the Assistant Secretary of the Air Force (Acquisition); and Director, Air Force Test and Evaluation (AF/TE), Headquarters Air Force.

Walden retired from active duty in 2002 with 27 years of military experience and from the Senior Executive Service in 2022 with 20 years of civilian service in the United States Air Force as an acquisition and technical professional in positions ranging from flight test engineer (where he participated in the development, ground, and flight-testing of

numerous aerospace weapon systems) to squadron commander and culminating in chief, Special Studies Division, Air Force Red Team, Directorate of Special Programs, Office of the Assistant Secretary of the Air Force for Acquisition.

Walden received bachelor's degrees in mathematics and aerospace engineering, respectively, from Christopher Newport College and Parks College of St. Louis University, as well as a master's degree in engineering management from Florida Institute of Technology. He graduated from the USAF Test Pilot School and holds a master non-rated aircrew badge as a Flight Test Engineer.

In recognition of his contributions, Walden has received the Defense Meritorious Service Medal, the Meritorious Service Medal, the Aerial Achievement Medal, and the Air Force Achievement Medal, as well as the Meritorious Senior Professional Presidential Rank Award and the Distinguished Executive Presidential Rank Award. He is a member of the Society of Flight Test Engineers.



Leading the Way in Engagement, Networking, and National Defense

Plan Ahead for Success | 2023 – 2024 Featured Meetings, Conferences, and Events



2023 Expeditionary Warfare Seminar

November 1, 2023* | Arlington, VA



2024 Tactical Wheeled Vehicles Conference

February 26 – 28, 2024 | Charlotte, NC



2024 Ronald Reagan Missile Defense Conference

April 16 – 17, 2024 | Washington, DC



I/ITSEC 2023

November 27 – December 1, 2023 | Orlando, FL



2024 Pacific Operational Science & Technology (POST) Conference

March 4 – 7, 2024* | Honolulu, HI



DLA Supply Chain Alliance Conference & Exhibition

April 23 – 24, 2024 | Columbus, OH



Small Business Innovation Summit

December 5 – 7, 2023 | Lincoln, MA



2024 Munitions Executive Summit

March 19 – 20, 2024 | Parsippany-Troy Hills, NJ



MODSIM World 2024

May 20 – 22, 2024 | Norfolk, VA



38th Annual National Logistics Forum

February 6 – 7, 2024 | Oklahoma City, OK



2024 Human Systems Conference

March 21 – 22, 2024 | Arlington, VA



Training & Simulation Industry Symposium (TSIS) 2024

June 12 – 13, 2024 | Orlando, FL

*All Classified | **Partially Classified

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