# Introducing...

# HYPERSONIC DEFENSE

Conference and Exhibition Arlington, VA, USA 2<sup>nd</sup> - 3<sup>rd</sup> November 2021

### **Confirmed Speakers:**

- Vice Admiral Jon Hill, Director, U.S. Missile Defense Agency
- Lieutenant General Frederic Parisot, Vice Chief, French Air and Space Force
- Michael White, Principal Director for Hypersonics, Under Secretary of Defense for Research and Engineering
- Brigadier General Paul Murray, Deputy Director of Operations, North American Aerospace Defense Command
- Dr. Jeffrey C. Boulware, Technical Director, Joint Integrated Air and Missile Defense Organization (JIAMDO)
- Eric Johnson, Technical Director, Sea-Based Weapons Systems, U.S.
   Missile Defense Agency
- Denis Vandensavel, Ballistic Missile Defense and Hypersonic Expert,
   NATO
- Dr. Eric Marineau, Program Officer, Hypersonic Aerodynamics, Office of Naval Research, U.S. Navy
- **Dr. Russ Cummings,** Managing Director, DOD HPCMP Hypersonic Vehicle Simulation Institute, **U.S. Air Force Academy**
- Sarah Popkin, High-Speed Aerodynamics Program Officer, U.S. Air Force
   Office of Scientific Research (AFOSR)
- Thomas Karako, Senior Fellow, Director, Missile Defence Project, Center for Strategic and International Studies (CSIS)
- Peter Huessy, Director of Strategic Deterrent Studies, Mitchell Institute for Aerospace Studies
- **Dr. Phillip Ligrani,** Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, **University of Alabama, USA**

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# **Event Programme Day One**

08.30 Registration and Networking

#### 09.00 CHAIRMAN'S OPENING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama, USA

#### MISSILE DEFENCE CAPABILITIES

#### 09.10 OVERVIEW OF U.S. MISSILE DEFENSE CAPABILITIES

- Current BMD capabilities and developments made in recent years
- Current preparedness for hypersonic threat
- Current shortcomings in missile defense capabilities
- Emerging threats and challenges

Vice Admiral Jon Hill, Director, U.S. Missile Defense Agency



#### 09.50 RAYTHEON PRESENTATION

Tay Fitzgerald, Vice President, Strategic Missile Defense, Raytheon Missiles and Defense

10.30 Networking Coffee Break

# 11.00 NEED FOR SPEED: HYPERSONIC WEAPONS WITHIN THE FRENCH AIR AND SPACE FORCE

- Overview of French BMD capabilities
- Current modernisation efforts to defend against possible hypersonic threat
- Roadmap for the next few years

Lieutenant General Frederic Parisot, Vice Chief, French Air and Space Force

#### 11.40 NATO BALLISTIC MISSILE DEFENCE ROADMAP

- Current NATO BMD capabilities
- Current threats being monitored
  - Creating a coordinated defence capability to hypersonic weapons
- Where NATO's defence capabilities will be in the next few years

Denis Vandensavel, Ballistic Missile Defense and Hypersonic Expert, NATO

# 12.20 COMPLEX AIR DEFENSE: ADAPTING TO THE HYPERSONIC ERA

- Considerations for the 2022 Missile Defense Review
- Budget Trends
- Channelling the Threat
- Exploiting New Failure Modes

Thomas Karako, Senior Fellow, Director, Missile Defence Project, Center for Strategic and International Studies (CSIS)

13.00 Networking Lunch Break

#### SIMULATION AND RESEARCH OF HYPERSONIC WEAPONS

### **ATEKNA**

# 14.00 TEKNA PLASMASONIC SOLUTIONS : HIGH ENTHALPY GROUND MATERIAL TESTING FACILITIES

- Development of thermal protection systems using plasma wind tunnels
- Presentation of different technologies
- Review of Tekna's offering

Steven Adler, Plasma Applications Development - Americas, Tekna

Eric Bouchard, Senior Advisor, Product Line Manager – Systems, Tekna

# 14.40 TESTING HYPERSONIC WEAPON CAPABILITIES AND DEFENSES

- Research conducted by ONR on hypersonic weapons
- Challenges for test facilities to review defence systems against hypersonic weapons
- Collaboration needed to create strong defence systems

Dr. Eric Marineau, Program Officer, Hypersonic Aerodynamics, Office of Naval Research, U.S. Navy

15.20 Networking Coffee Break

#### 15.50 BASIC RESEARCH IN HIGH-SPEED AERODYNAMICS

- Research portfolio relevant to hypersonic weapon aerothermodynamics
- Flight experiments
- Workforce development

Dr. Sarah Popkin, High-Speed Aerodynamics Program Officer, U.S. Air Force Office of Scientific Research (AFOSR)

#### 16.30 CHALLENGES OF HYPERSONIC VEHICLE SIMULATION

- What are the challenges of testing hypersonic vehicles?
- Challenges of simulating the flight of a hypersonic vehicle
- Create challenges of defending against a hypersonic vehicle
- Developments needed

Dr. Russ Cummings, Managing Director, DOD HPCMP Hypersonic Vehicle Simulation Institute, U.S. Air Force Academy

#### 17.10 CHAIRMAN'S CLOSING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama, USA

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# **Event Programme Day Two**

08.30 Registration and Networking

#### 09.00 CHAIRMAN'S OPENING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama, USA

#### FUTURE OF MISSILE DEFENCE - HYPERSONIC ERA

#### 09.10 ACCELERATING HYPERSONIC DEFENSIVE CAPABILITY

- Current capability shortcomings
- R&D in creating an effective defence system from hypersonic weapons
- Importance of cooperation and collaborations
   Michael White, Principal Director for Hypersonics, Under
   Secretary of Defense for Research and Engineering

# 09.50 CROSS-FUNCTIONAL EFFORTS: LOOKING AT ALL DOMAIN AWARENESS, INFORMATION DOMINANCE, AND DECISION SUPERIORITY

- Reviewing Homeland Defense capabilities to counter hypersonic weapons
- Current Aerospace warnings in place and advances
- Importance of creating IAMD systems that can react to hypersonic weapons

Brigadier General Paul Murray, Deputy Director of Operations, North American Aerospace Defense Command

10.30 Networking Coffee Break

# 11.00 CREATING HYPERSONIC MISSILE DEFENCE CAPABILITIES

The current threats being faced

Systems, U.S. Missile Defense Agency

- Future hypersonic threats
- Importance of creating an HMD capability
   Eric Johnson, Technical Director, Sea-Based Weapons

11.40 **PRIORITIZATION OF JOINT REQUIREMENTS FOR** 

## 11.40 PRIORITIZATION OF JOINT REQUIREMENTS FOR HYPERSONIC DEFENSE

- Role of the JROC and JIAMDO as the global integrator for IAMD requirements
- Multi-domain approaches for defending against hypersonic weapons
- Critical attributes for tomorrow's missile defense enterprise Dr. Jeffrey C. Boulware, Technical Director, Joint Integrated Air and Missile Defense Organization (JIAMDO)

12.20 Networking Lunch Break

# 13.20 IMPACT ON WHAT THE US AND ALLIES NEED FOR MISSILE DEFENSE

- Overview of the amendments needed to track a hypersonic missile
- Current deterrent capabilities
- Challenges that will be faced with hypersonic weapons

Peter Huessy, Director of Strategic Deterrent Studies, Mitchell Institute for Aerospace Studies

# $14.00 \quad \textbf{IAMD TRAINING AND UNDERSTAND - HYPERSONIC} \\ \textbf{ERA} \\$

- Overview of the IAMD Centre of Excellence
- Current training programs based on hypersonics
- Research being conducted to assist NATO nations on hypersonic missile defense

Colonel Evangelos Tzikas, Director, Integrated Air and Missile Defence Centre of Excellence

# 14.40 SUPPORTING HYPERSONIC FLIGHT THROUGH UCAH AND RESEARCH

- University Consortium for Applied Hypersonics
- TAMU Hypersonic Aerothermodynamic Research
- BOLT II Flight Test Experiments

Professor Rodney Bowersox, Director, Texas A&M National Aerothermochemistry and Hypersonics Laboratory

#### 15.20 CHAIRMAN'S CLOSING REMARKS

Dr. Phillip Ligrani, Eminent Scholar in Propulsion, Professor of Mechanical and Aerospace Engineering, University of Alabama, USA

15.30 Networking Coffee Break

16.00 CLOSE OF CONFERENCE AND EXHIBITION

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# HYPERSONIC DEFENSE

Arlington, VA, USA 2<sup>nd</sup> – 3<sup>rd</sup> November 2021

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