**CONFERENCE PROGRAMME**

Weapon Systems and Technology Conference

## RAF WEAPONS SYSTEMS - PAST, PRESENT AND FUTURE

**LONDON / 9 MAY 2018**

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<th>Time</th>
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<td>08.30</td>
<td>Registration and Refreshments</td>
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<td>09.00</td>
<td>WELCOME &amp; OPENING REMARKS</td>
<td><strong>Speaker:</strong> Tim Marshall FRAeS, Chairman, RAeS Weapon Systems &amp; Technology Specialist Group, Principal Engineer, QinetiQ</td>
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<td>09.15</td>
<td>KEYNOTE ADDRESS</td>
<td><strong>Speaker:</strong> Air Marshal Stuart Atha, Deputy Commander Operations, RAF Air Command</td>
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<td>09.45</td>
<td>1) “HOW MUCH AND HOW FAR” - ASSESSING THE CLASSIC RAF AIRCRAFT IN TERMS OF PAYLOAD-RADIUS</td>
<td><strong>Speaker:</strong> Paul James Stoddart FRAeS, Scientific Adviser Operations, Air Warfare Centre</td>
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<td>10.15</td>
<td>2) RAF BESPOKE WEAPONS WWII</td>
<td><strong>Speaker:</strong> Arthur Kearse FRAeS, Operational Analyst, AWE</td>
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<td>10.45</td>
<td>Networking Refreshment Break</td>
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<td>11.15</td>
<td>3) NUCLEAR DETERRENCE IN THE COLD WAR</td>
<td><strong>Speaker:</strong> Air Cdre (ret) Edward Jarron</td>
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11.55  4) BESPOKE WEAPONS - COUNTERING THE COLD WAR THREAT
This presentation will include details of bespoke weapons developed during the cold war period and their effectiveness assessment methodologies. Systems covered will include BL755; JP233 & P3T (Sea Eagle).
Speaker: David Marsden MRAeS, Engineering Manager, Martec Ltd

12.25  5) A HISTORICAL PERSPECTIVE OF WEAPONS R&D OVER THE 100 YEARS OF RAE FARNBOROUGH
This presentation looks at the Royal Aircraft Factory’s and the Royal Aircraft Establishment’s work in weapons and weapon systems over the last 100 years. From hand launched bombs to guided weapons, RAE has had a significant scientific, engineering and test role and highlights of this work are recounted.
Speaker: Dr Graham Rood FRAeS, Curator, Farnborough Air Sciences Trust

12.55  Networking Lunch

13.55  6) AIR-TO-AIR HISTORY
Speaker: Dr Malcolm Claus MRAeS, Course Director, Astronautics and Space Technology, Kingston University

14.25  7) RAF GUNS - .303 LEWIS TO GAU-22A AND BEYOND...
This presentation will look at the guns used by the RAF during its 100 year history. As well as the various weapons themselves, it will look into aspects such as ammunition types, weight of fire, harmonization, sights, weapon integration and mounts. Finally, the presentation will look at technologies that could be introduced into future aircraft gun systems.
Bernard Chan ARAsE, Vice-Chairman, RAeS Weapon Systems & Technology Specialist Group

14.55  8) HISTORY OF PAVEWAY
Speaker: Terence “TJ” Marsden, Chief Engineer Weapon Systems, Raytheon UK

15.25  Networking Refreshment Break

15.45  9) ROLE OF GROUND-BASED METHODS FOR WEAPON DEVELOPMENT, INTEGRATION AND RELEASE
An important part of the development of weapon systems from the “dumb” bombs of yesterday up to the highly sophisticated guided weapons of today and the future has been the understanding of the aerodynamic characteristics during carriage, release and free-flight. This presentation provides a brief history of ground-based methods used to provide aerodynamic data to the weapons engineer, including specialised wind tunnel systems, and how their development has been linked with the increasingly complex aerodynamic characteristics and guidance systems associated with modern weapons. Whilst the carriage and release of weapons from external wing pylons is now relatively well understood, there are still many things to be considered for the understanding of carriage and release of weapons from internal cavities at high speed. The presentation raises some potential issues and solutions for future developments of ground-based methods and how these may be applied to new weapon systems.

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## Speaker: Peter Curtis MRAeS, Chief Technical Officer, Aircraft Research Association (ARA)

### 10) MAKING A LOT OF NOISE FOR FUTURE WEAPONS BAYS

Releasing a weapon from an aircraft bay at high subsonic and supersonic speeds presents complex engineering challenges. Harsh aero-acoustic noise and vibration within a weapons bay risks damaging the aircraft or store. A unique ground test facility at BAE Systems' Warton site has allowed engineers to undertake full-scale ground tests which provide much more detailed understanding of the bay environment. Working closely with the Weapon and Ejector Release Unit design organisations within MBDA UK and Harris' Release Systems, the collaborative team has captured high quality data during the trials which culminated in the successful high subsonic release of a store from a bay designed to survive this severe environment. This overview of the technical challenges and how UK Industry collaborated together towards a common goal will show how it underpins the capability to provide flexible weapons bay design in high performance combat aircraft a long way into the future.

### Speaker: Phil Astley-Jones, Technical Manager R&T Structures, BAE Systems

### 11) MBDA AIR WEAPONS, PAST, PRESENT AND FUTURE

MBDA and its predecessor companies have been supplying the RAF with weapons for the last 60 years, from Bloodhound and Firestreak to Meteor and Storm Shadow. MBDA's state of the art weapons have repeatedly proved themselves in combat, some very recently. MBDA continues to innovate both in upgrading existing missiles, such as the ever-evolving Brimstone, and in developing new missiles such as SPEAR3. Through the over-arching complex weapons portfolio management agreement with the MoD, these programmes are managed together in such a way as to maximise efficiencies, and offer the customer flexibility to modify requirements, priorities and phasing.

### Speaker: James Allibone, UK Sales and Business Development Director, MBDA UK

### 12) LONG RANGE ANTI-SHIP MISSILE – MODERN, MULTI-SERVICE, ANTI-SURFACE WARFARE WEAPON

This presentation will look at Lockheed Martin's next generation Long Range Anti-Ship Missile program. LRASM uses the legacy USAF JASSM®-ER as the baseline missile, adding technologies to provide anti-surface warfare superiority. LRASM enables multiple platforms to perform multiple missions, reducing dependence on traditional ISR platforms, yet providing precision engagement in electronic warfare environments.

### Speaker: Chris Mang, Vice-President, Strategy and Business Development, Tactical Missiles and Combat Maneuver Systems, Lockheed Martin Missiles and Fire Control, Lockheed Martin

### CLOSING REMARKS

Tim Marshall FRAeS, Weapon Systems & Technology Group Chairman, Principal Engineer, QinetiQ

### END OF CONFERENCE

18.00

CONFERENCE RECEPTION