RAE 100

CELEBRATING A CENTENARY

And keeping it affordable

Richard Gardner, Chairman
Farnborough Air Sciences Trust

Hampshire Military Museums Network Meeting
10 July 2019    Southwick
A CENTENARY OF THE RAE AT FARNBOROUGH
BIRTH OF A NEW INDUSTRY
WOMEN IN THE WORKFORCE
NEW TECHNOLOGIES

The application of aerial wireless communication brought a breakthrough in military air power.
GREAT ADVANCES IN TWO WORLD WARS
BIRTH OF THE JET AGE
COLD WAR WINNERS

Developing air science to meet new needs
MAKING AIR TRAVEL SAFE
NEW FRONTIERS
Into the space age
How did the RAE change the world?
What made it unique?
How was it organised?
What did they all do?
Who will be interested?

HOW SHOULD WE TELL THE STORY?
RECOGNIZE DIFFERENT AUDIENCES

- Professionals in aviation sector
- Military and ex-military
- Science and history buffs
- Young people and students
- The general public
- Overseas visitors
Select key developments and game changers since 1918

Explain their significance

Illustrate with artefacts and images

Identify important personalities

Decide delivery options

Consider costs

AGREEING THE PRIORITIES
The Royal Aircraft Establishment Legacy 1918-2018

- Pressurised cockpit prototype in Mk.1 Spitfire (1942) - accident investigation increase - electrically controlled bomb release - elimination of compass interface
- Safety testing of wire-braced igniters in rocket projectiles - blind approach, radio/radar interference - airborne radar & radio-Gyro-gunsight (Mk.1) - rocket firing from aircraft (Hurricane) - emergency arrestor gear for bombers
- Accident investigation/current problems & solutions - power controls in aircraft (Blenheim & Spitfire rudder) - distortion of Spitfire airframe - wing drag on Tornado aircraft - stability of towed gliders - parachute test facility - API development - Ground Position Indicator Mk.1 (Dambusters) - F24 rear looking camera (low level bomb) - low tempo (40-deg C interface)
- Gas Turbine research started at Pyestock - assessment of enemy aero engines - self-sealing fuel tanks - fuel drop tanks - automatic bomb distributor - lighter & lighter aircraft - mobile radar & design & electronics - Mobile g' level accelerometers on aircrew - Mk.4 & Mk.4.2 & Mk.4.3 gyro-gunsight - aircraft launch tests of Admixture corridor catapult - 1943 - 111/2 x 81/2 tunnel completed (400 kph)
- High Mach number flight research (Spitfire Mk.9.2) - RATO for gliders - parachute dive brakes - parachute R&D - Bomber Teacher Mk.VI - F61 camera - LOX & nitrous oxide booster for zero engines (Spitfire) - dynamic loading of aircraft structures - strain gauge development & application - trim-flying model research
- Pressure Compensation for WINSTON CHURCHILL'S YORK aircraft - R&D methods of identification - jet-engine temperature measurement - ship-controlled rocket - communications link between tug & glider - E28839 (W4076) flown at Farnborough - collaboration with USA on British GGS Mk II - cluster bomb development - Carbon Monoxide indicator Mk.II - high-tensile light alloys - underrun-gear trials proposed 1944 - NAE proposed - V/2 (A4) rocket weapon arrives - V/2 service enters inventory - copy V1 impulse motor built & run in three weeks - longitudinal stability at high Mach numbers - engines nacelle redesign on Meteor - low-speed tunnel tests on MILES 24/43 (MILES 543) - 4 x tunnel built in R852 - deck landing experiments - retractable control - oxygen systems & appliance - MBL
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SIX MONTHS!

- From first thoughts to opening day of exhibition
- Need to avoid April 1st clash with RAF centenary events so May 25th chosen for launch
- Need to start working on content immediately
- Essential to work alongside display designer on rolling basis
- Identify affordable project cost cap – £8K
- Search for possible sponsors or partners
Need to establish simple and memorable project title

CHOSEN TITLE – RAE 100
- Partnerships - internally and externally to maximise effort results

- Use opportunity to educate and inform volunteers regarding design and graphics applications

- Establish higher standard for future museum displays beyond this project
SUPPORT FROM THE MUSEUMS SECTOR AND INDUSTRY
SPONSORS BUILT INTO EACH DISPLAY PANEL AND ALL PUBLICITY PLATFORMS
A CHALLENGE TO BALANCE DESCRIPTIONS WITH BREVITY
STANDARDISATION FOR DISPLAYS
30 RAE Departmental themes identified – treated as self-contained stories with key innovations and relevance

Each featured in a display panel 4ft x 3ft representing a compromise on content and readability, mounted on portable display stands.

Supplemented by large format tv screens showing historic film clips.

The vast FAST picture library was used avoiding copyright issues.

Supplemented by images taken specially for the project.

Two authors responsible for providing all copy and cross checking.
SELECTING THE FORMATS

- Exhibition display panels (new) and video screens (existing)
- Volunteers prepare suitable video clips from film stocks
- Posters (new)
- Leaflets (new)
- Souvenir glossy quality commemorative book (new)
- Advertising
- Media and pr launch including local radio and tv
- Series of nationwide lectures
- To obtain maximum value from the project all displays were designed to be re-used as part of a rolling museum upgrade programme or as stand-alone displays in single or group sets.

- Established graphics standards to be used for other new projects.

- All new RAE 100 elements are being re-used

- Local FAST display in local shopping centre requested and opened last weekend, to run for two months.
UNMANNED AIR VEHICLES

Unmanned Aerial Vehicles (UAVs) have revolutionized the way we approach aerial operations. They are finding applications in various fields such as military surveillance, disaster response, agriculture, and infrastructure monitoring. UAVs are remotely controlled aircraft that can be operated from a distance, offering advantages over manned aircraft in terms of cost, safety, and flexibility.

One of the earliest and most significant UAVs was the Venesca, a small, lightweight aircraft designed for surveillance and reconnaissance missions. The Venesca, with its simple design and small size, was capable of flying for extended periods without a pilot onboard, making it ideal for monitoring remote or dangerous areas.

The use of UAVs has expanded rapidly in recent years, with advancements in technology enabling longer flight times, greater altitude capabilities, and improved payload capacities. These advancements have led to a wider range of applications, from monitoring wildlife habitats to supporting disaster relief efforts.

The future of UAV technology looks promising, with ongoing research focusing on increasing the autonomy and intelligence of these systems. As technology continues to evolve, UAVs are likely to play an increasingly important role in various industries, offering new opportunities for innovation and efficiency.
Just 2 years before the start of the War, British aviation was significantly lacking aeroplanes to meet any military need.
LATEST FAST PUBLIC DISPLAY IN FARNBOROUGH SHOPPING CENTRE
Associated lectures and film shows have broadened local community engagement.

Many illustrated RAE100 lectures have taken place from Scotland to the South Coast.

Major magazine features followed the RAE100 launch event.

BBC TV South Today broadcast three live news broadcasts with interviews from the museum all day on May 25th.

FAST set up a heritage pavilion featuring the RAE100 exhibition at the 2018 Farnborough International Air Show and featured in show-wide tv coverage throughout the week.

Almost weekly school parties have visited the exhibition and also organisations including U3A, history and aviation groups.

Closer working links forged with Farnborough College of Technology.
The estimated cost of the RAE100 project was around £8k

With partial sponsorship the cost to FAST was close to £4k

However sales of the souvenir book at £10 each have produced a profit and continue to sell well. Please ask the presenter who has some today!

Additional shop sales boosted by the RAE100 events, and an increase in visitor numbers for weekday group visits to the museum and conducted tours of the wind tunnels (charges apply) have helped generate much additional income.

As an all-volunteer museum and trust, all the preparation, management and project work was provided free of charge, apart from paid exhibition display boards and associated publications.

The project undoubtedly provided a significant boost to the status and respect for the work of the trust, especially throughout the aerospace and defence communities, and local government, who all provided VIPs for the opening launch event.
- Need to keep a sharp focus on the outcomes and not be too distracted by the process.
- Establish the project parameters at the outset and stick with them.
- Exploit the project to increase knowledge and experience of volunteers.
- Maximise networking contacts to share your enthusiasm.
- Actively seek out partners and sponsors to assist funding.
- Look for help in kind from those willing and able to reach out.
- Look at how any new assets can be re-used.
- Don’t skimp on quality displays and material.
- Get volunteers involved and motivated and share the praise.
- Never lose sight of deadlines!
- On display materials and services, if you can obtain discounts and bargains, go for it!
ONWARDS AND UPWARDS!