

Sustaining Key Skills in the United Kingdom's Military Aircraft Industry

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Maintaining a healthy domestic military industrial base has been an important facet of defence acquisition policy in the United Kingdom for many years. A set of guiding principles and specific priorities were set out in the Defence Industrial Strategy of 2005, which also highlighted potential future challenges. More recently, the Ministry of Defence (MOD) has pursued a variety of studies to gauge the fitness of industries and production capabilities that have been deemed to be critical to UK national security.

The long-term vitality of the UK's fixed wing military aerospace industry is one such area of enquiry that is of particular concern to policy-makers. With forecasts indicating that defence budgets to develop and procure new fixed wing aircraft are likely to decline in coming decades, the MOD turned to RAND Europe to evaluate the current and future health of the industrial base out to the year 2035.

Researchers from RAND performed this evaluation in 2009, reviewing the economic and policy literature on military aerospace and conducting qualitative and quantitative surveys of UK industry and government. Drawing from these surveys and the literature, RAND determined the key skills that the UK fixed wing aerospace industry base requires, assessed whether UK industry currently possesses those skills and evaluated the extent to which these skills might be sustained in the future.

What key skills does the UK military fixed wing industry require? Does it possess those skills?

Drawing from an extensive survey and structured interviews, we identified a set of key skills that are both critical for the development, production and support of military aircraft and sustained only through demand from the MOD. The study also mapped these key skills to aircraft type. For combat aircraft, key skills included those associated with survivability and stealth, with aerostructures,

Abstract

How can the United Kingdom (UK) Ministry of Defence (MOD) sustain the key industrial skills required to develop, produce, and support its fixed wing military aircraft during the coming decades? A recent RAND Europe analysis concludes that a new UK manned or unmanned combat aircraft programme could, if initiated by the year 2015, preserve critical design and development skills through this decade and sustain domestic competences to maintain and upgrade the fleet in the decade thereafter.

with mission systems, with whole systems integration and with command, control, communications, computers, and intelligence (C4I). For air support (comprising air Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR), air-to-air refuelling and air transport), the group of key skills required were a subset of those required for combat aircraft, including mission systems and C4I. The key skills unique to combat aircraft included stealth and aspects of the powerplant.

We also found that these required skills resided in the military fixed wing industrial base in 2009. In terms of age profiles and experience across relevant competences, the industry had sufficient breadth and depth to deliver the MOD fixed wing programme out to 2015, albeit with a declining employment that might indicate the sector is readying itself for leaner years.

Will the future MOD workload sustain key skills?

To assess future demand for key skills, we examined four scenarios provided by the MOD that bounded possible future approaches to meeting the UK's medium- and long-term military aircraft requirements in the 2010–2035 period.

- *Manned Future*, in which the MOD would meet combat air requirements by making further purchases of the Joint Strike Fighter (JSF);
- *Unmanned Future*, in which the MOD would meet combat air requirements by developing a bespoke unmanned combat air system (UCAS);
- *50/50 Future*, in which the MOD would meet combat air requirements by evenly splitting acquisitions between the JSF and a bespoke UCAS; and
- *Techno-Shock Future*, in which the MOD would meet combat air requirements by developing a bespoke non-traditional weapons-based UCAS.

For each scenario, we assessed the extent to which key skills would be sustained by demand from the MOD. An example of our evaluation of how well key combat air skills would be sustained is shown in the figure. For blocks of five years, it depicts skills that would be sustained in green, those that would be partially sustained in orange, and those that would not be sustained in red. It shows that a manned combat air project or a UK bespoke UCAS beginning with early concept work by 2015 would exercise the full set of key military fixed wing skills. Consequently, it indicates that Unmanned Future and 50/50 Future scenarios would provide sufficient demand to sustain key skills out to 2035. Conversely, off-the-shelf purchases of JSF (Manned Future) or a weapons-based UCAS (Techno-Shock Future) would not sustain the range of key combat air skills within the UK fixed wing industrial base beyond 2020. Under all scenarios, manufacture and routine maintenance capabilities are likely to be sustained throughout the 2010–2035 time period.

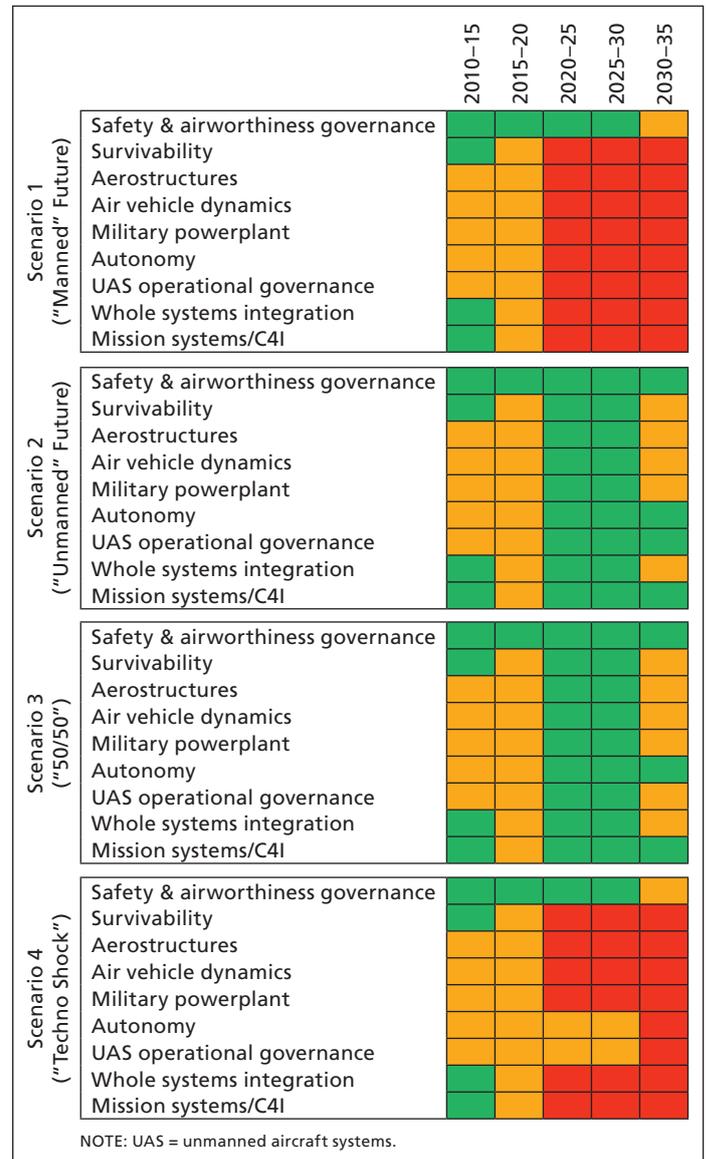
Our evaluation of how well key air support competences would be sustained showed similar results.

Conclusions and policy implications

The study contains three broad conclusions with implications for policy:

- The UK military fixed wing industrial base was relatively healthy in 2009 in terms of its age profile and experience across relevant competences, and it should be able to deliver the MOD fixed wing programme out to 2015, albeit with declining employment.
- The funded MOD programme contains insufficient activity to sustain all key combat air competences for design engineering beyond the end of the 2010–2019 decade.

Sustainment of key combat air skills



- To sustain key design engineering skills for combat aircraft beyond 2020, the UK needs to commit to develop a bespoke combat air programme (UCAS or manned) by 2015. Without such a programme, it is likely that the industry sector will progressively lose key combat air competences after 2015. With such a programme, key competences required to maintain, update and upgrade the in-service fleet within the 2020–2029 decade could be sustained, as well as key competences for air ISTAR (e.g., mission systems and C4I). ■

This research brief describes work done for RAND Europe documented in *Sustaining Key Skills in the UK Military Aircraft Industry*, by Matt Bassford, Hans Pung, Nigel Edgington, Tony Starkey, Kristin Weed, Mark V. Arena, James G. Kallimani, Gordon T. Lee, and Obaid Younossi, MG-1023-MOD (available at <http://www.rand.org/pubs/monographs/MG1023/>), 2010, 168 pp., \$27, ISBN: 978-0-8330-5041-0. This research brief was written by Gordon T. Lee.

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