

## **HCDC HC 326 'UNCLEAR FOR TAKE-OFF – F-35 PROCUREMENT' – FIRST SIX-MONTHLY UPDATE FROM THE MINISTRY OF DEFENCE**

In the Government's response to the House of Commons Defence Committee's report on F-35 Procurement (HC 326), we undertook to provide the Committee with a six-monthly progress report. The Government welcomes the Committee's continued recognition of the challenge of delivering the largest and most complex international defence programme in history. The Government remains committed to delivering the F-35 programme on time and within budget, providing a cutting-edge capability for the Armed Forces in their defence of the United Kingdom.

The Committee asked for detail on the progress made in addressing each of the issues identified in their report and any additional problems encountered since the report. Specifically, the Committee requested detail on the ongoing cost of the programme, including sustainment, spares and logistics, software upgrades and the unit recurring flyaway (URF) costs. Following any future trials of communications between F-35s and current operational combat aircraft via the Multifunctional Advanced Data Link (MADL) systems, such as Babel Fish III, the Committee asked the Ministry of Defence (MOD) to produce a memorandum informing the Committee of the progress made.

The Government's first formal update to the Committee's recommendations and conclusions is set out below. Following a summary of progress since the last update, the Committee's headline issue findings are each addressed in turn.

### **Progress report**

The UK F-35 Programme continues to be delivered on time and within budget. The most significant and tangible milestone since our last update is the arrival of our first four Lightning F-35B aircraft at their new home of RAF Marham on 6 June 2018. The earlier than planned arrival enabled the aircraft to support RAF100 events and de-risk the integration of Lightning into Marham operations. A further five aircraft arrived on 3 August 2018 as 617 Squadron completes its move to the UK as planned. 617 Squadron will commence an intensive period of training this autumn in preparation for the declaration of Initial Operating Capability for land-based operations by the end of December.

Planning and preparation for First of Class Flying Trials (Fixed Wing) this autumn is well advanced. HMS Queen Elizabeth will sail to the eastern seaboard of the US in the late summer and embark F-35 programme-owned F-35B aircraft and personnel from the Integrated Test Force (ITF) based at Naval Air Station Patuxent River. These specialist aircraft flown by British pilots and test experts including embedded British personnel will conduct the trial to provide the first embarked flight clearance, ensuring that the Lightning aircraft and the Queen Elizabeth Class (QEC) carriers can operate safely together. This is a major step towards re-generating a Carrier Strike capability for the UK.

In terms of the international F-35 Program, on 11 April 2018 the conclusion of System Development and Demonstration flight testing by the ITF was announced. This is a major achievement for the enterprise with over 9,200 test flights and 65,000 test points achieved. The test team conducted six at-sea detachments and performed more than 1,500 vertical

landing tests with the F-35B variant. The developmental flight test team completed 183 Weapon Separation tests, 46 Weapons Delivery Accuracy tests and 33 Mission Effectiveness tests, which included numerous multi-ship missions of up to eight F-35s against advanced threats. The three UK F-35B instrumented aircraft operated by 17 Squadron contributed to the Development Test Program. UK personnel have been fully integrated in this decade of work, deepening our understanding of the aircraft's capabilities. On 11 June 2018, the three hundredth F-35 aircraft rolled off the production line, demonstrating the Program's continued progress and momentum.

In addition to the arrival of the first aircraft in the UK and the progress with the Autonomic Logistics Information System (ALIS) detailed below, the UK took delivery of our fifteenth F-35B and the UK Deployable Mission Planning and Support Facility has been delivered at RAF Marham and testing commenced.

In November 2016, the UK was chosen to be a global repair hub providing maintenance, repair, overhaul and upgrade services for F-35 avionic and aircraft components, generating hundreds of millions of pounds of revenue for the UK defence industry. The components will be serviced and maintained through Sealand Support Services Ltd (SSSL), an innovative partnership enterprise between Defence Electronics & Components Agency (DECA), BAE Systems and Northrop Grumman, supported by key F-35 original equipment manufacturers and centred at DECA MOD Sealand in North East Wales.

In April 2018, a further UK bid was submitted to the F-35 Joint Programme Office for SSSL to provide the same services for additional F-35 components, with a decision expected by December 2018.

## **Costs**

There have been no changes since the last report to the UK F-35 Programme approved costs of £9.1 billion. By the end of this financial year, we anticipate seeking the approval of the Investment Approvals Committee (IAC) to spend around an additional £1.1 billion of our assigned budget on capability development and upgrades, enhanced reprogramming capability and sustainment. The IAC and scrutiny team will carefully consider value for money in all submissions. When the price of an F-35B from Low Rate Initial Production (LRIP) Lot 11, which comprises the latest order placed on contract and representing the single aircraft to be delivered in 2019, is confirmed following contract award we anticipate a continued trend of cost reduction. The LRIP Lot 10 price (\$122.3 million) covers airframe and engine only and does not include cost of UK unique elements, estimated at \$2 million per aircraft. Of note, the price of our first two aircraft in LRIP Lot 3 was \$161 million each. The Joint Program Office (JPO) is in negotiations for Lots 12, 13 and 14, which are combined into a single contract, in which we expect to see further reductions in aircraft price.

The international F-35 Program has progressed cost reduction initiatives as demonstrated by two recent contract awards. First, on 30 April 2018 the F-35 JPO awarded Lockheed Martin a \$1.4 billion sustainment contract to support operations for the F-35 fleet around the globe. This annual contract combines purchases for the US Services, F-35 Partner nations, and Foreign Military Sales customers, supporting 390 total aircraft and around 68,000 flight hours to the end of May 2019. This represents a significant reduction of about 12% of support costs over the US Financial Year 2017 Sustainment Contract.

Secondly, on 31 May 2018 the US Department of Defense and Pratt & Whitney announced a contract award for the eleventh lot of F135 propulsion systems to power all three variants of the F-35 Lightning aircraft. This contract covers 135 total engines, as well as programme management, engineering support, production non-recurring efforts, spare modules and spare parts. The total award for the LRIP Lot 11 propulsion systems is approximately \$2 billion. In general, the URF price for the 25 LRIP Lot 11 short take-off and vertical landing propulsion systems (including lift systems) was reduced by 3.39% from the previously negotiated LRIP Lot 10 URF. This contract will have significant benefits for UK industry – notably for Rolls-Royce and its supply chain.

The F-35 programme strives to be transparent on costs and continues to be subject to intense scrutiny ranging from this inquiry and those of the Public Accounts Committee, to investigations including the National Audit Office<sup>1</sup>. The programme also regularly publishes information in the Government Major Projects Portfolio. We also provide updates on the programme through answers to Parliamentary Questions, and the media – which continues to place the programme under close scrutiny. The JPO, as lead element for the International F-35 Programme, is reviewed annually by the US Government Accountability Office, which published its latest report on 5 June 2018. The JPO also receives an annual Director of Operational Test and Evaluation report on the status of the programme. All of this data is made available to the UK and underpins our additional scrutiny activities.

## **Connectivity**

In 2016, the Babel Fish III trial assessed fourth to fifth generation fighter communications utilising the F-35 MADL. This was the first-time that non-US fourth and fifth-generation aircraft have shared data using a MADL gateway and is an important demonstration of interoperability as the UK moves closer to Initial Operating Capability (IOC). The trial report was received in April 2018 and the outcome was to commission the Babel Fish IV trial this year to look at how information will flow from fourth generation collection assets (Typhoon) through the gateway to allow fifth generation manipulation utilising high-end processing. To date the UK has been leading the way in interoperability of fourth and fifth generation platforms; we expect this evidence to form the basis of formal requirements and future investment choice.

Both QEC carriers will receive the Maritime Network Evolution upgrade which introduces a modern coherent way of managing the various communications links (radio to satellite communications) that link the ship to shore and other units. Following this upgrade, both carriers will be capable of receiving up to eight times the current UK military satellite capacity. The planned bandwidth of the QEC aircraft carriers meets the intended user requirements now and is being scaled to meet the needs of a deployed Maritime Task Group in the next decade.

## **Software**

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<sup>1</sup>“Delivering Carrier Strike” (HC1057; 16 March 2017).

Progress has been made in the commissioning and testing of ALIS on MOD networks at RAF Marham. The ALIS servers have their own dedicated and secure space within the Lightning Operations Centre, which was opened in February 2018. The ALIS system is operational in the UK and was fully tested ahead of aircraft arriving in the UK. ALIS is also being installed on HMS Queen Elizabeth and will be in place for First of Class Flying Trials. ALIS is an important system for F-35 and it has been, and will continue to be, subject to rigorous cyber-testing.

## **Communications**

The MOD has put in place a comprehensive communications strategy setting out how we ensure the F-35 Lightning narrative and key messages reach the widest audiences. Recent examples include the 75<sup>th</sup> anniversary of the Dambusters raid, the arrival of the first aircraft in the UK, the Royal International Air Tattoo and RAF100 events. We will be conducting a vigorous pro-active media campaign centred around key events this autumn and beyond.

## **Summary**

As detailed above the F-35 Lightning Programme has again achieved much in the last six months. The main effort in the US this autumn is flying trials on HMS Queen Elizabeth and Operational Test & Evaluation. The main effort in the UK is front-line training towards declaring IOC at the end of the year and further developing RAF Marham by opening a Maintenance and Finishing Facility and an Integrated Training Centre.