F-35 Lightning II

A key partner on the world's largest defence programme

FACT SHEET

Overview

- BAE Systems is teamed with Lockheed Martin and Northrop Grumman to deliver the F-35 Lightning II - the world's largest defence programme, which has a current requirement for 3000+ aircraft.
- BAE Systems brings military aircraft expertise to the programme in the areas of airframe, systems and military & technical services.
- The F-35 Lightning II, also known as the Joint Strike Fighter (JSF) will be the world's first and only fifth generation stealthy, supersonic, multi-role fighter.

BAE Systems Involvement

- BAE Systems currently employees over 1500 people on the programme at various locations across the United Kingdom and the United States. BAE Systems Australia also manufacture vertical tail components, expanding BAE Systems' global involvement in the programme.
- BAE Systems brings expertise to the programme from a number of areas. Digital design and precision lean manufacturing techniques, systems modelling and simulation, Short Take Off and Vertical Landing (STOVL) heritage from the Harrier programme and readiness and sustainment knowledge from involvement in other integrated platform support programmes such as Tornado ATTAC.
- BAE Systems has the lead in manufacture of the aft fuselage, vertical and horizontal tails and wing tips, and responsibility for the fuel system, crew escape, life support, prognostics health management integration and UK aircraft carrier integration support.
- BAE Systems also plays a key role in other vital areas of the programme, including UK weapons integration, vehicle management systems, mission systems, structural testing, Autonomic Logistics and Global Sustainment, flight test support, flight sciences, propulsion integration and flight controls including hot gas ingestion, thermo acoustic, ground erosion and wind tunnel testing and flight simulation.
- BAE Systems plays a key role in the Integrated Flight Test Force Team for the F-35. Over 30 BAE Systems employees including two pilots support the team based at Patuxent River, California
- BAE Systems leads UK carrier integration activity. Supported by world class simulation facilities at the companies Warton site in Lancashire, it is the only place in the world where you are able to land the F-35 carrier variant onto the Queen Elizabeth carrier before either are even built.

- BAE Systems Inc. in the US add further key capabilities to the portfolio in the areas of electronic warfare, advanced low observable apertures, advanced countermeasure systems, vehicle management computer and active inceptor systems.
- Current manufacturing activities take place at Samlesbury, Lancashire UK where the site is being further developed in order to provide the infrastructure and capability needed to meet the demand of full rate production of one aircraft a day. Since 2001 through to 2016, BAE Systems will have invested over £150m in F-35 buildings, infrastructure and specialist plant and machinery at its Samlesbury site.
- The Structural and Dynamic Test Facility at BAE Systems' Brough site in Yorkshire also plays a key role in the programme. Static testing of the airframe has already been completed and fatigue testing is progressing to schedule.
- The F-35 programme is divided into three distinct phases, System Development and Demonstration (SDD), Low Rate Initial Production (LRIP), and Full Rate Production (FRP). BAE Systems are currently transitioning from final SDD activities to LRIP.
- Since the start of the SDD phase of the F-35 Lightning II programme, BAE Systems has engaged over 200 different suppliers, and deliveries of components from the global supply chain have begun through the International Industrial Participation program.

Key Facts

- Three variants of the aircraft are in development and feature a high degree of commonality: a conventional takeoff and landing aircraft (CTOL) for the US Air Force; a short takeoff/vertical landing (STOVL) variant for the US Marine Corps; and a carrier takeoff and landing (CV) aircraft for the US Navy and the UK.
- In the USA, the F-35 is being developed for the US Air Force, Navy and Marine Corps to replace the AV-8B Harrier, A-10, F-16 and the F/A-18 Hornet and for the UK's Royal Air Force and Royal Navy to replace the Harrier and Sea Harrier.
- The first flight of the F-35 Lightning II took place on December 15 2006 in Fort Worth Texas.
- Successful first flight of the STOVL variant took place on June 11 2008 with BAE Systems pilot Graham Tomlinson at the controls.
- The short take off and vertical landing variant made its first vertical landing March 18 2010.
- The first flight of the Carrier variant took place on June 6 2010.
- The first flight of the F-35 production aircraft took place on February 25 2011.
- The US Air Force took delivery of its first F-35 production aircraft at Eglin Air Force base on July 14 2011.
- The F-35 program successfully completed static structural testing on September 19 2011.
- The F-35 completed its first vertical landing at sea on board USS Wasp on October 3 2011.
- The four main sub-assemblies of the F-35 Lightning II have been designed and manufactured more than 5000 miles apart. When they are mated together in Fort Worth, the mating joints will be matched with a step of no more than ten thousands of an inch.

Performance

- BAE Systems have produced the initial aft fuselages and horizontal and vertical tails for all three variants, which have been subsequently delivered to Lockheed Martin. Over 60 aft fuselages have been delivered to Lockheed Martin to date (November 2011)

- More than 6000 holes were drilled on the aft fuselage and vertical & horizontal tails for the first STOVL aircraft – all of which are drilled to a positional accuracy that is less than the width of a human hair.
- BAE Systems has successfully manufactured and delivered Nozzle Bay Doors for all three variant of the F-35. The doors are developed using one of the most complex production techniques used in the military aircraft industry.
- Digital design and precision manufacturing techniques pioneered by BAE Systems ensure the F-35 Lightning II meets its demanding stealth requirements.

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