CRS INSIGHT

Air Force Bomber Contract Awarded

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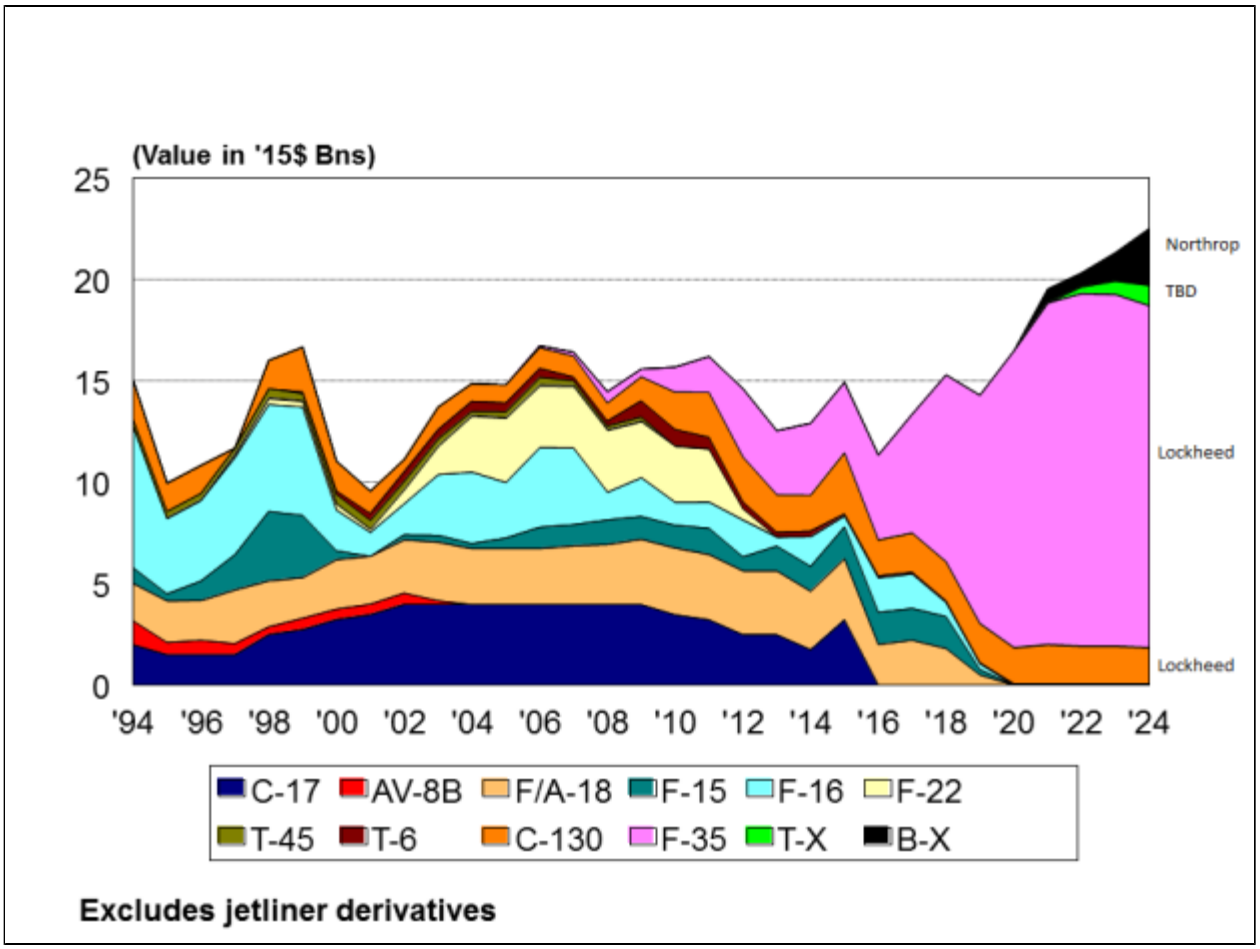
Last night, the Department of Defense announced its intention to award the contract to build the new Long Range Strike Bomber (LRS-B) to Northrop Grumman Corporation. The program will continue under the LRS-B name; the Air Force has not yet assigned the aircraft a "B-3"-style type designation.

The other competitor, a team of Boeing and Lockheed Martin, has not announced whether they plan to protest the award. If the contract proceeds without protest or Northrop wins the protest, plans call for the company to build 100 strategic bombers to replace aging B-52s and B-1s, beginning in 2025. LRS-B is one of the Air Force's top three procurement priorities.

If the award stands, Lockheed Martin will remain the principal supplier of purpose-built combat aircraft to the Department of Defense, as shown in the following chart by the Teal Group aerospace consultancy. LRS-B is the top wedge, labeled "B-X."

Figure 1. U.S. Fixed-Wing Military Aircraft Programs



Source: The Teal Group.

Basic Design

Following cancellation of the previous Next-Generation Bomber program in 2009, Air Force and Department of Defense officials conducted a "front-end analysis" looking at different concepts to accomplish the long-range strike mission. Options included large aircraft carrying long-range standoff weaponry, conventionally armed ballistic missiles, air- and sea-launched cruise missiles, and other configurations. The resulting LRS-B, approved by Defense Secretary Robert Gates in 2011, is an optionally-manned penetrating bomber.

Although the specific design remains classified and was not disclosed, the LRS-B was designed around three specific capabilities:

- 1. A large and flexible payload bay capable of carrying a full range of current and future armament.
- 2. Range, although classified, was another significant criterion.
- 3. Projected average procurement unit cost of $550 million per plane in FY2010 dollars, which was announced publicly to encourage competing manufacturers to constrain their designs. The unit cost was a key performance parameter in the program, meaning that inability to reach that price could disqualify a bid. (That price is based on acquisition of 100 aircraft; variations in quantity may affect actual unit cost.) At the award announcement, the independent cost estimate for Northrop's winning bid was revealed to be $511 million per plane, equivalent to $564 million in FY2016 dollars.

Initial LRS-Bs will be manned, with unmanned operation possible several years after initial operational capability (IOC). Nuclear qualification will also take two years or so after IOC.

Few technical details were revealed at the time of contract award. No mention was made of speed, although the combination of long range, large payload, and cost constraints strongly suggest LRS-B will be subsonic.

Technical Maturity

An earlier CRS Insight noted that the LRS-B budgeted funding and deployment schedule implied that considerable development had already been accomplished. The Air Force has now confirmed this, with senior program officials stating that both competing designs were at an unusually high level of detail and development for a system in which the prime contractor had not been selected. The low-observable characteristics of both designs were investigated in detail against current and anticipated threats, and final designs were complete down to the level of, for example, individual access panels.

Major subsystem risk reduction was also accomplished, and both designs used substantial amounts of existing subsystems (sometimes with LRS-B-specific refinements), reducing technological risk and, presumably, shortening the time required for EMD once a contract is awarded. Indeed, although DOD's usual Technology Readiness Levels are not being used to measure maturity on the program, program officials state that no further technology development is required to move LRS-B to production. They see the most challenging part of LRS-B as the integration of technologies in the EMD phase.

LRS-B will employ open systems architecture, similar to that already being demonstrated on F-22, U-2, B-2, and other platforms. This means that the initial LRS-B aircraft can be augmented more easily by advanced technologies as they are developed; it also means that what might be expensive development of advanced sensors and/or other subsystems can be deferred and competed independently of the aircraft itself.

Air Force officials have been at great pains to emphasize that LRS-B is part of a family of systems, with the implication that it is the node of a larger, distributed network of sensors and communications, not all of which may have been publicly disclosed. Connectivity with this family of systems has been included in the LRS-B designs from the start, although it is not possible to gauge the maturity or stability of these systems (and thus how much LRS-B may have to be adapted in the future should those external systems change).

Acquisition Strategy

Although it is one of the Air Force's largest programs, LRS-B is being acquired through nontraditional means. Instead of the regular acquisition process, LRS-B is being managed and acquired through the Air Force Rapid Capabilities Office, with reduced overhead and a much smaller program office than typical for such a significant program.

The initial acquisition of LRS-B will take place in five low-rate production lots totaling 21 aircraft. Two to three test aircraft will precede the production lots. The development program began on Friday, October 23, when Under Secretary of Defense for Acquisition, Technology and Logistics Frank Kendall selected Northrop Grumman (constituting "Milestone B" in this acquisition).