

# Northrop Grumman B-2A

**History:** The B-2 emerged from the need for the United States to develop a new generation of strategic bombers capable of penetrating enemy defences. Previous bombers such as the B-47, B-52 and B-1 had relied on speed, altitude and then low altitude flying to overcome enemy defences but, by the 1980s, defences had improved to overcome those advantages. In particular, improvements in air defence systems based on advanced radar detection and air defence management, and new generations of interceptors and ground to air missiles, made it almost certain that attacking bombers could be detected and destroyed. The solution to this problem was to develop bombers that could not be detected by radar or other means so that defence systems could not be deployed against them.

The B-2 began development as the High Altitude Penetrating Bomber that became the Advanced Technology Bomber, before evolving into a production aircraft, the B-2. An estimated \$23 billion dollars was spent on developing the B-2 in the 1980s. The prime contractor, responsible for the overall systems design and integration was Northrop Grumman with other team members being Boeing, Hughes, General Electric and Vought. The first B-2 was publically displayed on 22 November 1988 when it was rolled out, and it made its first flight on 17 July 1989. The first aircraft, named *Spirit of America*, was delivered on 17 December 1993 and all B-2s entered service with the 509<sup>th</sup> Bomb Wing based at Whitman Air Force Base in Missouri. From 2003 other bases capable of hosting the B-2 have been constructed at Diego Garcia, Guam and in the United Kingdom.



Because of its immense expense - the B-2 is worth three times its weight in gold - only 21 were constructed. It is sometimes said that they are too valuable to risk in combat but their large payload and the nature of wars taking place in the past decade has allowed the United States to use them selectively, delivering precision guided weapons to specific targets. As a result many B-2 operations have involved the deployment of a single aircraft to fly half way around the world to deliver its payload onto high priority targets, before returning to one of the bases capable of hosting it. The B-2's debut occurred during the Kosovo War in 1999 and since then it had been used against targets in Afghanistan and Iraq. During the Afghanistan war B-2s flew from their base in the United States to deliver their payloads before flying on to Diego Garcia and, during the opening phase of the Iraqi war, B-2 were based there. These missions have involved flights

of up to 50 hours for the two-man crew who have been using new sleep techniques and drugs to improve their performance on long flights. It is said that the B-2s stealth characteristics allows it to operate in hostile air space without the massive support needed for more conventional air operations so that, despite its cost, the B-2 provides the United States with a highly efficient air warfare system.

The B-2 has suffered from serviceability problems, mainly due to problems with its 'Low Observable materials', or paint. There are also said to be problems with its ability to cope with some modern radar threats and British Aerospace caused controversy when it released a video taken during the Farnborough Air Show in September 1996 of its Rapier SAM system tracking a B-2 during a fly past. Despite the large amount of information available on the B-2 these days it is likely that there is even more that we don't know, and won't find out about for years, if not decades.

**Data:** long range strategic bomber. *Engines* four General Electric F-118-GE-100 turbofan engines of 84.52kN (19,000 lb st). *Wing span* 52.43m (172ft). *Length* 21.03m (69ft). *Maximum take-off weight* 152,635kg (336,500lbs). *Maximum speed* 764km/h (475mph). *Range* 112,223km (7595miles). *Armament* up to 18,144kg (40,000lb) of disposable munitions in a wide range of options.

#### The kit: Revell 1:144

I've had little luck with B-2 models. The 1:72 Testors kit is one of the most difficult to assemble because of problems with poorly fitting parts. Still, it looks not too bad, if you don't look too closely. Back in 1996 I'd made Revell's 1:144 that had gone fairly well, until it came time to apply the decals, when things went hideously wrong for no reason that I could do anything about. I'd been wanting to replace it for a long time - about ten minutes after I'd completed it - but I hadn't seen a new Revell kit on the shop shelves or at a swap and sell for many years. When I finally found one I grabbed it, and quickly got around to making it.

There's really not much to say about making this kit. The basic structure comprises upper and lower fuselage and upper and lower outer wing panels, a couple of engine fairings to go on the upper fuselage, and that's about it. The undercarriage is nicely moulded, as is the cockpit interior, and you get the option of leaving one of the weapons bay doors open to show a missile of some sort inside. What more do you want? Everything is in black plastic, and nicely moulded, as we've come to expect from Revell. The gaps between parts is a little extreme, particularly so between the upper and lower fuselage parts, but the edges between the two parts is located a few millimetres back from the leading and trailing edges on the underside so any little blemishes that occur are well hidden.



The problem the last time I'd made one of these kits seemed to result from a reaction between the decal and the paint and varnish I used. The paint beneath the decals frosted almost instantly and I was unable to solve the problem because the decals were ruined. This time I was scrupulous in how I went about painting the model, finishing with a coat of gloss so the decals would settle better this time. I noticed from available photos that B-2s have dispensed with the black leading edge but, since the decals are for the first aircraft, I thought it best to show them, even though it was a little more effort. Nothing went wrong this time, and the result is a cute looking model, much cleaner than the previous one.