

## Review of

### Northrop Grumman B-2A Spirit (Stealth Bomber)

Created by Area-51 Simulations

The B-2 Spirit is a four engine, two crew, military strategic stealth bomber built by Northrop Grumman since the late 1980s. The stealth bomber features low observable stealth technology and is designed for penetrating anti-aircraft defenses. There are in total built 21 aircrafts that all are in service at the United States Air Force, except for AV- 11 which were severely damaged by fire and AV- 12 which crashed in 2008.

The B-2 is a versatile aircraft in regards to deploying both conventional and nuclear weapons, and is the only aircraft today that are able to carry large air-to-surface standoff weapons in a stealth configuration. The total weapon load is up to 80x 500 lb JDAM GPS-guided bombs or up to 16x 2,400 lb B83 nuclear bombs - this combined with the advanced stealth technology equals an aircraft that an enemy would not want to meet, and probably never will see before it is too late.

#### Specs:

- **Produced by** *Northrop Grumman*
- **First flight** *17 July 1989*
- **Introduction** *April 1997*
- **Role** *Stealth Strategic Bomber*
- **Status** *In active service*
- **Number built** *21*
- **Unit costs** *US\$ 737 million (1997)*
- **Primary user**
  - *United States Air Force*



I received this add-on through FSPilotShop and the download went as usual very quickly and without any problems. The connection to the download server is good and the download file is not more than app. 56 Mb, so the download was completed within just a few seconds or so.

The installation also went perfectly - very quick and easy, just activate the included installation wizard and that will take care of the rest for you. The installation wizard is very user friendly and all I had to do was to provide the installation wizard with my key-code. Hereafter the complete installation including selecting the correct FSX directory was performed automatically.

After the installation had completed I opened up my FSX airplane folder to verify that the aircraft had indeed been installed correctly. This of course was perfect and I now opened up my FSX and went directly into my virtual hangar. I went directly to the Area-51 Simulations folder in my virtual hangar but could not find the aircraft there. I found the B-2 located in the Unknown folder which I think is not really good - it is a small detail that I can easily correct myself, but it shows me that maybe this aircraft has been rushed to the market.

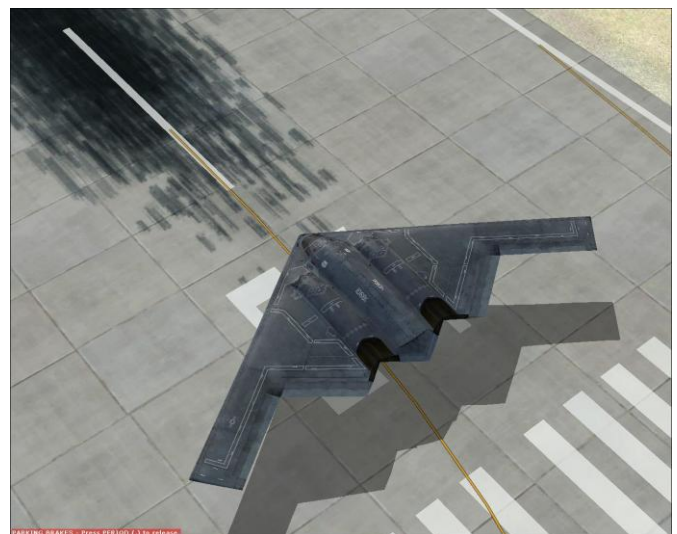
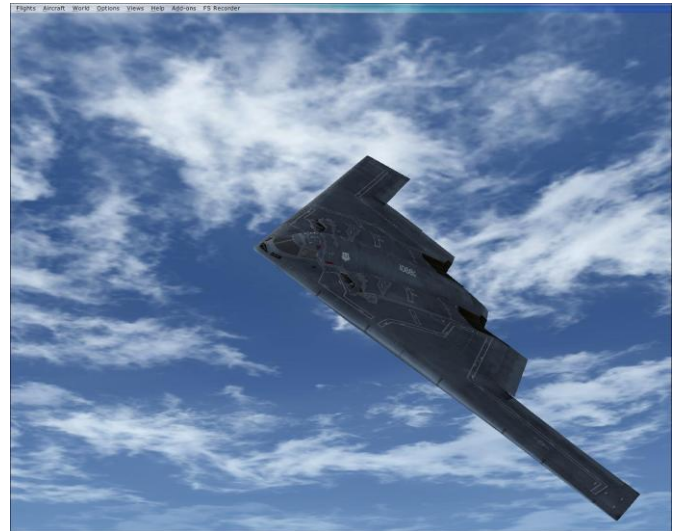
When I entered my virtual hangar and found the B-2 I was quite surprised because I only found one livery - I had expected a minimum of maybe 3-5 liveries since there are actually built 21 aircrafts. I know that the 21 real life aircrafts looks a lot like each other, but they each represent different states of the US - but that said, I was now ready for taking the aircraft for a flight.

I started my view of the B-2 by taking a walk around the external part of the aircraft. The model is very well made and looks very realistic. The paint job is done beautifully and the model features all the unique details that are found on the real B-2. This I have verified using various pictures from the internet and from Airliner.Net.

Furthermore the model also features various animations such as landing gear up/down, gear suspension, wheels turning, flaps, spoilers, door/latter, control surfaces etc. However a little minus was that the nose wheel was not animated when turning the aircraft. This is a small detail, but a rather important one, and the lack of this details takes away some of the realism when using this aircraft taxiing from parking to take-off and back.

The model is of course also equipped with lights and the effect from these lights are of a quite good quality with a clear, clean and bright shine. I did however miss the starboard side wing tip light (the green one) which for some reason did not appear on the model. The textures used on the model are of a good quality and creates a very realistic look of the aircraft.





After my external walk around the aircraft I decided to check out the inside of the aircraft. The model is equipped with only a virtual cockpit and no 2D cockpit. The virtual cockpit is in general quite well made and I think the best B-2 virtual cockpit that I have yet seen.

The virtual cockpit is filled with various animations as controls, clickable buttons and switches, glass cockpit instrumentation and a huge number of nice details. The depth created is very realistic and the finish is clean. The realism of the instrumentation is fair, but since the images that I have been able to find of the interior of the B-2 cockpit is very sparse, I cannot confirm the exact location of all buttons, switches and general instrumentation. One thing I did notice was the throttles in the model - it seems that the throttles are pushed in a straight direction which could be correct, but normally the throttles would be placed on a quadrant with a slight curve.

The quality of the glass cockpit is not overwhelming but it does provide a fair realism to the virtual experience of this cockpit. The atmosphere created is okay but again not entirely what I had expected, since the colors of the panel and sides of the virtual cockpit are very bright (white) and



what I had expected was a darker cockpit color instead. I did find one cockpit image from the Wikipedia that shows the panel color to be dark grey or something like that, and not as the virtual cockpit created.





Not all switches and buttons are animated or assigned to a specific function, but all standard systems are of course fully working. The FMC on the center console and on the first officers side is not functioning and can neither be used or even turned on/off. This I find to be a bit unfortunate since the FMC is a very important instrument for a pilot flying modern age aircrafts.

The autopilot is fully operational and I have actually also tested the B-2 using the GoFlight MCP-PRO and found no issues with that, when only using the basics as flight director, heading, altitude, climb rate and airspeed selections.

The sound set included for this model is not the unique sound of the B-2 and resembles more just a standard jet engine sound set. The quality however is fair with a clear and clean sound and a sound set that works with both stereo, 2.1 and 7.1 surround sound.

Included in the model is a great many different views that easily can be selected by using the top bar menu **Views**. These views includes both external views and also internal virtual cockpit views which helps the simmer get the best visual of the aircraft.



In regards to the flight dynamics, then I of course cannot confirm if they are accurate or not since I have never tried to fly this aircraft in real life. However I have tried to compare the aircrafts data/specifications that I could find on the B-2, to the flight dynamics created for this model. The resemblance is fair and the experience that I got using this aircraft was quite realistic. The flight dynamics are not perfect but they are useful and provides the simmer with a good sense of the flight characteristics that this aircraft features.

My conclusion for this aircraft is, that the model is very well made but have a few minor lacks in regards to e.g. the nose wheel and the starboard wing tip light. The model is created with an eye for the details with textures of a good quality, and features a great many animations together with a very realistic paint job.

The virtual cockpit is fair and features several animations, a fair glass cockpit quality, great depth, clean finish and a huge amount of details. The textures used in the virtual cockpit are not high quality but they do create a quite realistic environment. The colors of the instrument panel and the side panels are a bit too bright according to real life, but the general experience of the virtual cockpit is good.

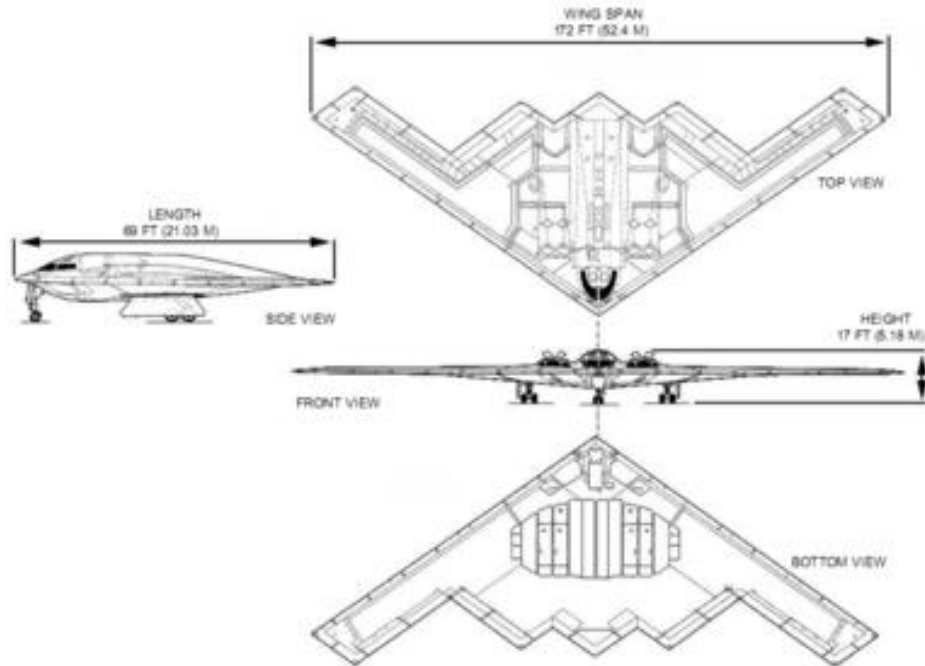
This add-on aircraft created by Area-51 Simulations is above average and really nice on the frame rates, which I find to be very important. I rate this add-on aircraft with 4/5 stars and thank Area-51 Simulations for creating this unique military aircraft, and for contributing to the flightsim community with yet another great add-on aircraft.

## Rays Aviation



*(Please visit my Facebook page "Rays Aviation" for more pictures)*

## Specifications (B-2A Block 30)



- Crew: 2: pilot and commander (co-pilot)
- Length: 69 ft (21.0 m)
- Wingspan: 172 ft (52.4 m)
- Height: 17 ft (5.18 m)
- Wing area: 5,140 ft<sup>2</sup> (478 m<sup>2</sup>)
- Empty weight: 158,000 lb (71,700 kg)
- Loaded weight: 336,500 lb (152,200 kg)
- MTOW: 376,000 lb (170,600 kg)
- Power plants: 4 × General Electric F118-GE-100 non-afterburning turbofans, 17,300 lbf (77 kN) each
- Fuel Capacity: 167,000 pounds (75,750 kg)
- Maximum speed: Mach 0.95 (550 knots, 630 mph, 1,010 km/h) at 40,000 ft altitude / Mach 0.95 at sea level
- Cruise speed: Mach 0.85 (487 knots, 560 mph, 900 km/h) at 40,000 ft altitude
- Range: 6,000 nmi (11,100 km (6,900 mi))
- Service ceiling: 50,000 ft (15,200 m)
- Wing loading: 67.3 lb/ft<sup>2</sup> (329 kg/m<sup>2</sup>)
- Thrust/weight: 0.205

Air Vehicle No.	Block No.	USAF s/n	Formal name	Status
AV-1	Test/30	82-1066	<i>Spirit of America</i>	14 July 2000 – Active
AV-2	Test/30	82-1067	<i>Spirit of Arizona</i>	4 December 1997 – Active
AV-3	Test/30	82-1068	<i>Spirit of New York</i>	10 October 1997 – Active, Flight Test
AV-4	Test/30	82-1069	<i>Spirit of Indiana</i>	22 May 1999 – Active
AV-5	Test/20	82-1070	<i>Spirit of Ohio</i>	18 July 1997 – Active
AV-6	Test/30	82-1071	<i>Spirit of Mississippi</i>	23 May 1997 – Active
AV-7	10	88-0328	<i>Spirit of Texas</i>	21 August 1994 – Active
AV-8	10	88-0329	<i>Spirit of Missouri</i>	31 March 1994 – Active
AV-9	10	88-0330	<i>Spirit of California</i>	17 August 1994 – Active
AV-10	10	88-0331	<i>Spirit of South Carolina</i>	30 December 1994 – Active
AV-11	10	88-0332	<i>Spirit of Washington</i>	29 October 1994 – Severely damaged by fire
AV-12	10	89-0127	<i>Spirit of Kansas</i>	17 February 1995 – 23 February 2008, Crashed
AV-13	10	89-0128	<i>Spirit of Nebraska</i>	28 June 1995 – Active
AV-14	10	89-0129	<i>Spirit of Georgia</i>	14 November 1995 – Active
AV-15	10	90-0040	<i>Spirit of Alaska</i>	24 January 1996 – Active
AV-16	10	90-0041	<i>Spirit of Hawaii</i>	10 January 1996 – Active
AV-17	20	92-0700	<i>Spirit of Florida</i>	3 July 1996 – Active
AV-18	20	93-1085	<i>Spirit of Oklahoma</i>	15 May 1996 – Active
AV-19	20	93-1086	<i>Spirit of Kitty Hawk</i>	30 August 1996 – Active
AV-20	30	93-1087	<i>Spirit of Pennsylvania</i>	5 August 1997 – Active
AV-21	30	93-1088	<i>Spirit of Louisiana</i>	10 November 1997 – Active
AV-22 through AV-165				Cancelled