The B-1 Bomber
A Critical Asset of the Long Range Strike (LRS) Mission

In this era of severe budget pressure, it is important to consider capabilities, costs and flexibility when determining the proper allocation of scarce DoD resources. This White Paper presents these facts concerning the B-1's critical role in Long Range Strike (LRS), and shows why the B-1 is the Air Force's "Most Valuable Player".

In order to continue as a critical asset, the Department of Defense (DoD) and the United States Air Force (USAF) should:

- Keep all 66 B-1s in the inventory;
- Fully fund sustainment and upgrade requests;
- Fill all B-1 authorized skilled manpower positions.

The B-1 has been used much more than the other bombers.

Since 9/11, the B-1 has flown 72% of bomber combat missions.

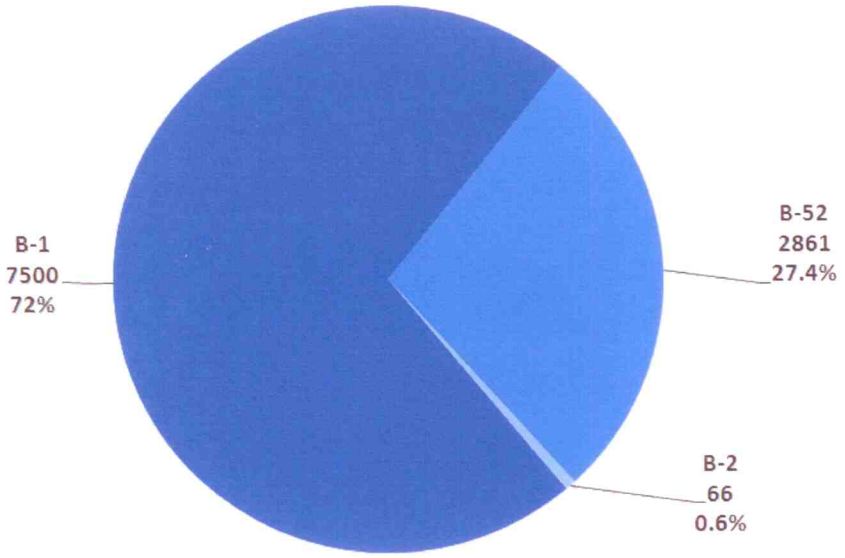

Figure 1 - Bomber Combat Missions, Sept 2001 to June 2010

The B-1 is the only bomber that has been used in combat during the last four years (since May 2006), accumulating over 4500 missions through June 2010. The B-1 is flying combat missions almost every day and is operating over Iraq or Afghanistan in support of our troops on the ground.

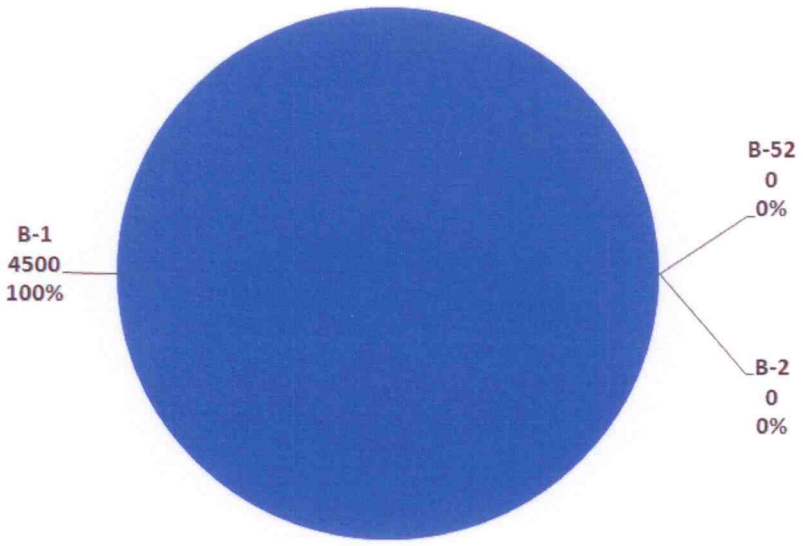

Figure 2 - Bomber Combat Missions, May 2006 to June 2010

Why is the B-1 the Bomber of Choice?

All bombers share the ability to fly long distances, the ability to persist over the battlefield for long periods, and large payloads. Despite these shared characteristics, the B-1 is flying in combat daily, while the other bombers sit on the bench. Why is this?

Cost

The B-1 is the least expensive bomber [1] (see Figure 3). The B-52 comes close, being only 23% more expensive to fly than the B-1. The B-2 is 179% more expensive. The Air Force, and the nation, could not afford to use the B-2 in the types of conflict being fought today.

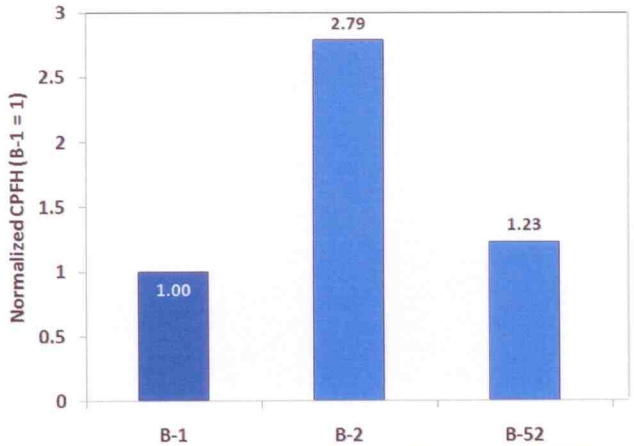

Figure 3 - Normalized Cost Per Flying Hour (CPFH)

[1] There are multiple sources for Cost Per Flying Hour (CPFH). Most do not account for all of the costs required to maintain a fleet of aircraft. The Air Force has a tool, the Air Force Total Ownership Cost (AFTOC) Management Information System, which tracks all costs related to a weapon system.

Most of the detailed cost data supporting Figure 3 is not available for public release. However, the cost of performing Periodic Depot Maintenance (PDM) was published in the 2011 President's Budget. The data, shown in Figure 4, supports the contention that the B-1 is the least expensive bomber, especially when compared to the B-2. For example, in 2010 a B-2 PDM costs over 7.6 times the cost of a B-1 PDM.

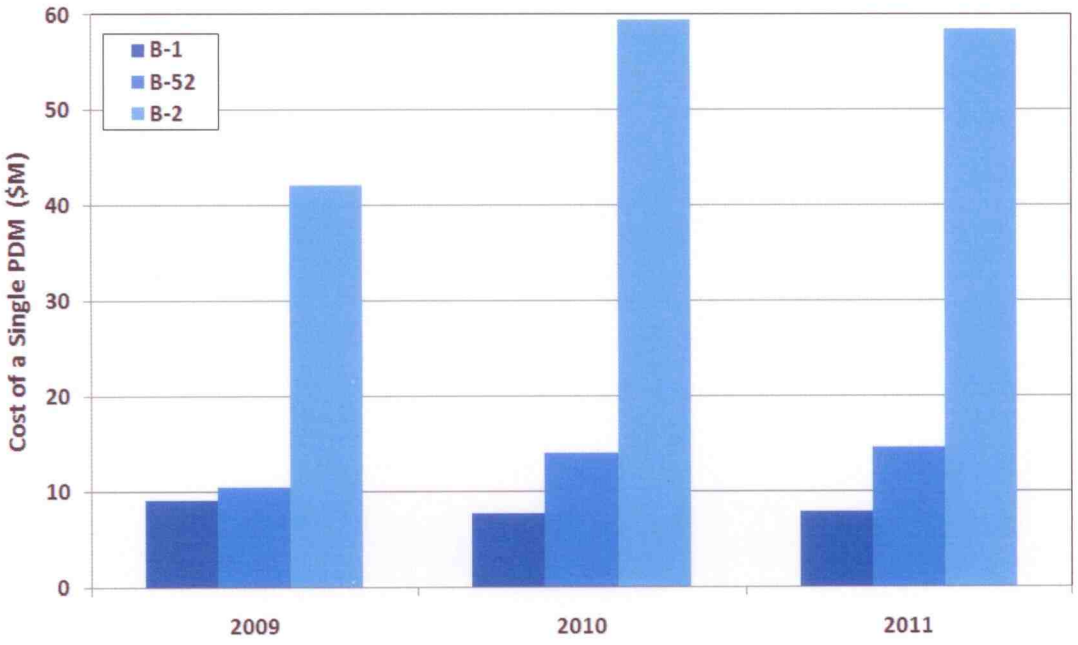

Figure 4 - Cost of a Single PDM

Cost Effectiveness / Efficiency

Since the B-1 carries a bigger weapons payload than any other aircraft, its advantage in Cost Per Flying Hour (CPFH) is increased when assessing cost effectiveness and efficiency in performing the primary function of a strike aircraft, destroying targets. Figure 5 shows relative efficiency in terms of the number of targets engaged per dollar. The B-1 is almost two and a half times more efficient than the B-52 and over four times more efficient than the B-2.

Note that the B-2, despite its relatively low efficiency and low signature, comes at a high cost, a cost which explains why it is a benchwarmer in today's wars.

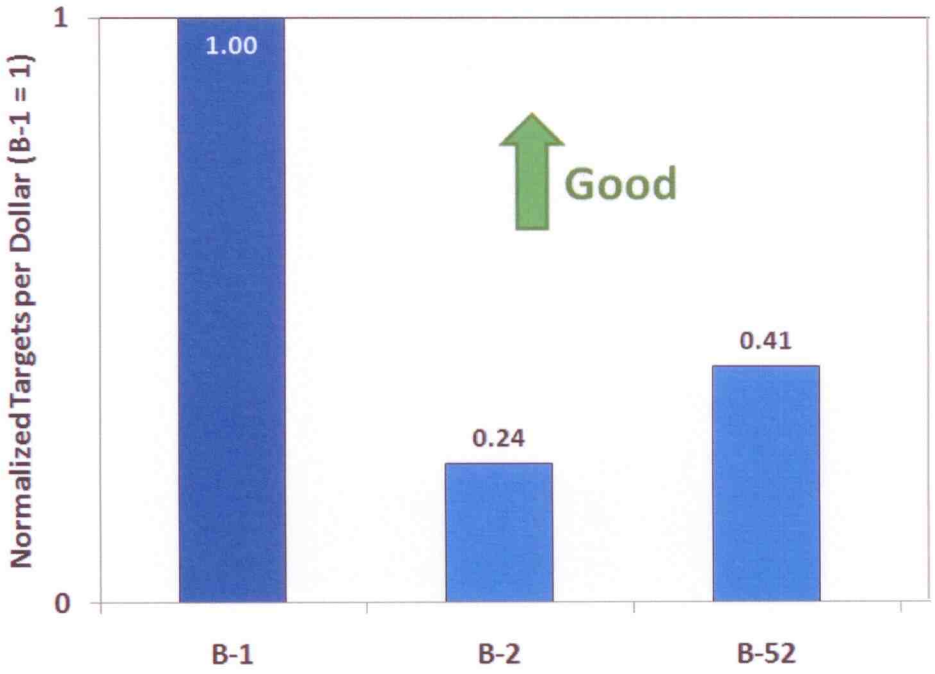

Figure 5 - Normalized Targets Engaged per Dollar

Fleet Size

With 66 aircraft, the B-1 fleet has been able to provide constant support in the current conflicts and meet the demands of a high ops tempo. At 76 aircraft, the B-52 fleet may be large enough to support the same level of activity, but the B-52 is not being used for this purpose. The B-2 fleet of 20 aircraft could not generate the required number of sorties for more than a couple of days and is clearly not capable of doing what the B-1 fleet does.

Deployability

For the reasons below, the B-1 is much easier to deploy to forward bases than either the B-2 or B-52. The B-1 can, therefore, be based much closer to target areas, further increasing its effectiveness and efficiency, particularly compared to other bombers.

Special Needs

The B-2 must be stored in special climate-controlled hangars when not in use to maintain its stealth characteristics. These hangars are expensive, and exist only at Whiteman AFB in Missouri, Diego Garcia in the Indian Ocean, and Andersen AFB on Guam. Consequently, the B-2 has rarely deployed. Most B-2 combat missions have originated at Whiteman, with durations often exceeding 40 hours. This severely limits the number of sorties that can be generated by the B-2 and is extremely expensive.

Nuclear Sensitivities

The B-2 and B-52 are nuclear capable bombers. Many countries are unwilling to have these aircraft based in their countries. In recent conflicts, the B-1 has been deployed to two bases in the Area of Responsibility (AOR). The B-52 has deployed only to England and the British possession of Diego Garcia, both thousands of miles from the AOR. Use of the B-1 is therefore much more efficient, both in terms of the hours required to reach the AOR and the tanker support required to do so.

Airfield Requirements

The B-1 can operate from bases with smaller runways than the B-52.

Versatility

Speed

The B-1 is much faster than the B-52 and the B-2. This makes it much easier for the B-1 to operate in force packages, as it can keep up with fighters in most situations. The B-1's speed also decreases the time required to respond to time-sensitive support needs. In addition, due to its combination of high fuel load and speed, the B-1 has a greater capability to escape enemy fighters before they can close to engagement range.

Mixed loads

Unlike the other bombers, the B-1 can mix any combination of bombs among each of its three weapon bays and also within each bay. This flexibility makes the B-1 extremely useful in dynamic situations where missions change in flight, as is usually the case in today's conflicts, and the types of bombs needed can vary.

Day or night, all weather

The B-1 can operate in all weather, day or night, high or low altitude. Due to its capable APG-164 radar, it can see, track, and engage stationary and moving targets in all conditions. The B-52's radar lacks this capability. The B-1's Sniper targeting pod, while not capable of operating in severe weather, allows Positive Identification (PID) day or night. These factors combine to give the B-1 exceptional versatility. The B-2 does not have a targeting pod. In addition, the B-2 is not usually employed during the day or in bad weather.

Air Force acknowledgements of the B-1s much-used capabilities and critical importance

Current Perceptions

In 2001, the United States went to war, and the Air Force came to depend on the B-1 as the bomber that could meet the daily needs of our troops on the ground. Comments by senior Air

Force officials confirm the outstanding job that the B-1 is doing and the need to maintain the B-1 fleet.

> "The B-1 is my roving linebacker capable of being anywhere, anytime, with precision." Brigadier General Darnell, CAOC Director for OIF.

> "If you offered the B-1 with JDAMs in direct support of ground forces as a solution 10 years ago, I would have laughed heartily because it's not what we envisioned. However, faced with a shift in paradigms and a shift in what we have to do, we adjusted and used the airplane in an extraordinarily flexible manner over Afghanistan. It's part of the intellectual shift that's occurring in the Air Force." Major General Leaf, AF/XOR, Mar 02.

> "It is entirely appropriate for us to suggest that the B-1, as we employ it today, is transformational . . . Because we are using it in ways never conceived of previously and gauging our success in terms of battlefield capability." Mr. James Roche, Secretary of the Air Force, Dec 03.

> "The B-1 . . . gives us flexibility on the battlefield that no other airplane would with respect to time sensitive targeting." General Hornburg, Feb 04.

> "If you were able to see some of the work the B-1 did in time-critical targeting during the Iraqi conflict . . . it's got a big future." General Jumper, Mar 04.

> "The B-1 is a key and integral part of the CFACC's (Combined Forces Air Component Commander's) 'tool kit' in our war on terror in the AOR (Area of Responsibility). The incredible capability of the aircraft and the professionalism of the crews...from the maintainers, AMMO, weapons load crews, ops and intel integration to the flight crews...the combined team behind our AOR employment makes it all happen, from close air support to Coalition forces through the full spectrum of combat operations." Lieutenant General Gary North, Commander, USCENTAF, July 2006.

> "The B-1 is a fabulous CAS platform." Lieutenant General Gary North, Commander, USCENTAF, July 2009.

> "The future for the BONE is very bright." Lieutenant General Glen Spears, Commander, 12th Air Force, Spring 2010.

> "Battle tested and battle proven, the B-1 has shown itself to be one of the most versatile platforms, not only in delivering exceptional firepower, but critical surveillance data as well." General Norton Schwartz, Chief of Staff of the Air Force, Spring 2010.

General David Petraeus, Commander, CENTCOM, during hearing to consider his nomination to be Commander, U.S. Forces Afghanistan, June 2010.

> "Now the B-1 does play a very big role in that regard. It is a great platform in at least two respects, maybe more. One, it carries a heck of a lot of bombs, substantial ordnance, and second it has very good ISR capabilities, Intelligence, Surveillance, and Reconnaissance capabilities. And it can loiter for a good time when it's not being asked to drop bombs, which is frankly what it does most of the time because we're not dropping bombs constantly. It is up there waiting, in a CAP."
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> "Then what we do is we use the -- whatever optics that particular bomber has on it, the sniper pod or what have you, and it is almost like having another unmanned aerial vehicle in terms of full motion video and so forth. Not quite the same resolution, some differences in the capabilities, but it is very helpful in that regard as well."
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> "So it's not just a case of a very, very capable bomber just boring holes in the sky, waiting to open the bomb bay doors, it is also a case of a platform that's very capable even as it is just doing that flying around in circles."

Future Operations

Until we cease hostilities around the globe, it is imperative that Theater Commanders have the continued support provided by the most versatile bomber platform in the Air Force inventory, the B-1. Funding should be increased for spares, maintenance, and upgrades to ensure this capability is not degraded by the continued heavy reliance on this weapon system to achieve our National Objectives.

Summary

- Keep all 66 B-1s in the inventory in order to have sufficient assets to meet current and future needs.
- Fund B-1 sustainment and upgrades at the requested levels.
- Fund and fill all authorized, skilled manpower positions for the B-1.