

**Testimony of Congressman Brad Sherman  
National Defense Authorization Act for FY 2014  
in support of Hybrid Airship Development**

Chairman McKeon, Ranking Member Smith and members of the committee, thank you for the opportunity to testify today on what I believe to be a critical research and development effort at a crossroads, namely the development of an airship for heavy lift capabilities. The government recently concluded a very promising RDT&E program known as Project Pelican. I am testifying here to urge that the efforts to develop hybrid airships for heavy lift continue in FY2014.

Recent technological developments in hybrid airships have the potential to revolutionize not only military cargo transport and logistics, but also civilian transportation, international trade, and humanitarian relief. I will focus on the military benefit, of course, but will also touch on some of these wider impacts that airships may have because of their implications for the Department of Defense and other government agencies.

It is critical that the efforts that have been undertaken from 2008-2012 be continued. The specific purpose of my testimony, and that submitted for the record by Congresswoman Judy Chu, is to support the inclusion of language requested by Congresswoman Loretta Sanchez, Tactical Air and Land Forces Subcommittee Ranking Member, directing the Transportation Command and the Air Mobility Command to develop an operational prototype hybrid airship vehicle. Congresswoman Grace Napolitano also supports this request.

**The Airlift Capabilities of Hybrid Airships – What are the Benefits to the Military?**

Airships have the potential to carry perhaps hundreds of tons of materiel and personnel anywhere on the globe, at a fraction of the *cost per ton-mile* of fixed wing aircraft, and without the need to tackle inter-modal challenges associated with ship-borne cargo transit. You do not need roads, railroads or ports. All of these things, as we know from the Afghan experience, are either unavailable where you need them to be, can be destroyed by man or nature, or are politically difficult to secure and thus subject to blackmail.

These modes can also be very dangerous in a conflict area. In addition to the obvious tragedy of losing U.S. troops and civilians on the roads of a conflict area, the need to protect vital transit routes for cargo in places like Afghanistan and Iraq bogged down resources that could have been spent on fighting enemy forces and training our allies in those countries for the day when they would take over their own security. A hybrid airship airlift capability would not eliminate all needs for ground transit, obviously, but would certainly reduce the amount of time our men and women are in harm's way on dangerous roads very significantly.

The airships under development today will have the ability to take off and land vertically with little or no ground infrastructure. They do not need a runway. Cargo can be taken directly where it is needed and unloaded, directly from where it sits. All you need is open space to land and unload.

As TRANSCOM Commander General William Fraser told the Committee on March 6, “Hybrid Airships represent a transformational capability bridging the long standing gap between high-speed lower capacity airlift and low-speed higher capacity sealift.” He further noted that hybrid airship technology has the potential to fulfill “Factory to Foxhole” cargo delivery.

While it is too early to be certain of exact operating costs, a hybrid airship with a large cargo capacity (66 tons or greater, up to 500 tons) is estimated to have a per-mile cost of about 20 cents per ton. By contrast, fixed wing costs run approximately 80 cents per ton-mile, not including, of course, the costs of getting the materiel from the airfield to the battlefield when on the ground.

As a member of the Foreign Affairs Committee, I am well aware of the burden faced by our Armed Services in the face of humanitarian catastrophes. No one in the world can deliver food, medicine, medical personnel, and other needed supplies like the United States military. These efforts are often nothing short of heroic. They save lives, and build goodwill for the U.S.

We all remember the 2010 Haiti earthquake, where the port facilities and the airport were heavily damaged. We all remember the earthquakes in 2005 that affected remote areas of northern Pakistan. Thousands of additional victims died due to inaccessibility in the days after these disasters struck. These problems would be greatly reduced with an airlift capability like this, one that can deliver aid where it is needed without those damaged or nonexistent facilities.

### **Non-Military Benefits and Cost-Sharing**

Not only will hybrid airships reduce DoD fuel consumption, they may play a role in the development of domestic energy supply and help the development of wind power. Large equipment that is impossible or economically impractical to ship via ground transit is needed for the development of wind power. You cannot ship the massive blades needed for a wind farm easily on truck or train to the remote areas where it is most windy. You can do so in the cargo hold of a large airship. You cannot just build roads across environmentally sensitive lands to reach some of our best domestic energy sources. An airship, on the other hand, leaves no environmental footprint.

I mention these not only to show that there are non-military benefits to this technology, but to demonstrate that there are significant commercial interests in the continued development of hybrid airships. As a result, the government should not have to bear the

costs on its own if it chooses to fund airship development. The DoD does remain essential to the effort, however.

### **Where Are We? – Follow on Needed to Pelican and other Efforts**

**The Key is Buoyancy Control.** The recently-completed Project Pelican demonstrated that it is possible to overcome previous challenges to hybrid airship development. Most importantly, the technology in Pelican allows an airship to take off and land, as well as moderate altitude in flight, without taking on and unloading ballast, or releasing helium (which cannot then be recaptured) in flight. Put simply, prior to Pelican, airships could go up, they could go down, but they could not go up and down repeatedly while in flight. They also needed to be able to take on ballast, such as water, and/or needed to be tethered while on the ground, which means they needed a lake or significant ground infrastructure and crew.

Pelican demonstrated a technology that allows for an airship to moderate its buoyancy through increasing and decreasing the pressure of the helium needed for lift, without jettisoning ballast or helium. This technology is known as control of static heaviness (COSH). The program began in 2008 as a cooperative effort of NASA Ames and the Office of the Secretary of Defense Emerging Capabilities Directorate (formerly Force Transformation).

An Advanced Demonstrator was constructed in a hangar in Tustin, CA. That demonstrator was tested in January 2013. It met most of the objectives set at the onset of the program and was given a technical readiness level of 6-7 by NASA Ames.

There is no effort proposed at this time for FY2014. In order to build on the successes of the Project Pelican, the government needs to move forward with funding for a prototype vehicle that can carry approximately 60-70 tons. It is important to note that this tonnage capability is not a ceiling – far from it. It appears that lift capabilities of several hundreds of tons are possible, but the next step is a smaller but still very significant prototype.

Therefore, I respectfully request that that the Committee include the language requested by Congresswoman Loretta Sanchez calling for the development of this operational prototype.

Thank you again for this opportunity and for your consideration.