

A New Roadmap for America's Space Endeavors

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A BUZZ ALDRIN "WHITE PAPER"

During this Centennial of Flight year – while America celebrates 100 years since the Wright Brothers' first powered flight – NASA and America's space industry face the most critical crisis in the history of space travel. It is time for a new vision and a new roadmap to usher in the next century of flight. This nation has the talents and resources to lead a new era of space exploration, but we need a new vision to marshal the nation spearheaded by the Administration. Then perhaps five years from now when NASA celebrates its 50th Anniversary, and the next Administration enters into office in 2008, we will be prepared to further refine and expand America's leadership in space.

All of this hangs on the vision we set for today and the pathways we embark on to accomplish that vision. The choices we make today will be the ones we live with for the next 20 to 30 years. Please join me in looking at the issues we need to face for developing a new roadmap for America's space endeavors.

I. **A New Space Vision: The Gateway to Returning to the Moon and Venturing on to Mars**

For America to travel beyond the ISS and low earth orbit to establish a permanent presence in space, the first stop is to create a human-tended outpost, or port, at the area of space between the Earth and the moon known as "Earth-Moon L1" – a libration point 45,000 miles off the moon where the gravity fields between the Earth and the moon are in balance. The port facility at "L1" provides unlimited gateways to returning to the moon, venturing on to Mars, exploring asteroids that approach Earth, and reaching outward into our solar system.

II. **A New Roadmap from the Shuttle to Project Aquila: An Evolving Plan for Safe and Economical Space Transport to Reach "L1"**

A. **Phase-Out of Shuttle Orbiters: Atlantis, Discovery, Endeavor**

Shuttles to fly until the *International Space Station (ISS)* is completed; then retire from service by 2011. It is too late to retrofit Shuttle Orbiters with crew escape modules prior to retirement.

B. **Escape Pod/Lifeboat for the International Space Station**

Develop a 4-person crew *return vehicle (CRV)* for the ISS to replace the Russian Soyuz. The CRV is an early version of the *orbital space plane (OSP)* that NASA has proposed to carry people to and from the ISS and be stationed there as a "lifeboat." But requirements must be severely stripped down for earliest possible *initial operating capability (IOC)*. The CRV is launched inside the Shuttle Orbiter cargo bay. It can also be launched later, without crew, on the *Evolved Expendable Launch Vehicle (EELV)* USAF Delta 4 and Atlas 5.

C. **Launch Vehicle Evolved Space Transportation System (STS): Project Aquila**

Next is the evolution of STS – the four-part Shuttle flight vehicle (*the Orbiter, Main Engines, Reusable Solid Rocket Boosters, and External Tank*), its large staff and its ground complex. The new STS "Aquila" evolves to a heavy-lift-launch-vehicle, consisting of a large *external tank (ET)*, two solid rocket boosters and a pod that combines the crew and cargo on one launch vehicle, and offers great flexibility as to various crew module/cargo payload combinations. The 4-person CRV for the ISS evolves into the Crew Module "Altair" – capable of transporting an 8-person crew. The new Aquila heavy-lift-launch-vehicle is launched by three "RS-68" engines (the new oxygen/hydrogen engines powering the Delta 4) on the base of the external tank.