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### X-24A in Powered Flight after Drop from B-52 Mothership

**Photo Number:** ECN-2511

**Photo Date:** 1970

**Formats:** [545x480 JPEG Image \(74 KBytes\)](#)  
[1164x1024 JPEG Image \(348 KBytes\)](#)  
[3000x2637 JPEG Image \(3,217 KBytes\)](#)

**Photo Description:** The X-24A lights its XLR-11 rocket engine and begins its powered flight after being drop launched from its B-52 mothership, seen here with high-altitude contrails streaming from its wings against a piercingly dark blue sky.

**Project Description:** The X-24 was one of a group of lifting bodies flown by the NASA Flight Research Center (now Dryden Flight Research Center), Edwards, California, in a joint program with the U.S. Air Force at Edwards Air Force Base from 1963 to 1975. The lifting bodies were used to demonstrate the ability of pilots to maneuver and safely land wingless vehicles designed to fly back to Earth from space and be landed like an airplane at a predetermined site.

Lifting bodies' aerodynamic lift, essential to flight in the atmosphere, was obtained from their shape. The addition of fins and control surfaces allowed the pilots to stabilize and control the vehicles and regulate their flight paths.

Built by Martin Aircraft Company, Maryland, for the U.S. Air Force, the X-24A was a bulbous vehicle shaped like a teardrop with three vertical fins at the rear for directional control. It weighed 6,270 pounds, was 24.5 feet long and 11.5 feet wide (measuring just the fuselage, not the distance between the tips of the outboard fins). Its first unpowered glide flight was on April 17, 1969, with Air Force Maj. Jerauld Gentry at the controls. Gentry also piloted its first powered flight on March 19, 1970.

The X-24A was flown 28 times in the program that, like the HL-10, validated the concept that a Space Shuttle vehicle could be landed unpowered. The fastest speed achieved by the X-24A was 1,036 miles per hour (mph—Mach 1.6). Its maximum altitude was 71,400 feet. It was powered by an XLR-11 rocket engine with a maximum theoretical vacuum thrust of 8,480 pounds.

The X-24A was later modified into the X-24B. The bulbous shape of the X-24A was converted into a "flying flatiron" shape with a rounded top, flat bottom, and double delta platform that ended in a pointed nose. The X-24B demonstrated that accurate unpowered reentry vehicle landings were operationally feasible. Top speed achieved by the X-24B was 1,164 mph and the highest altitude it reached was 74,130 feet. The vehicle is on display at the Air Force Museum, Wright-Patterson Air Force Base, Ohio. The pilot on the last powered flight of the X-24B was Bill Dana, who also flew the last X-15 flight about seven years earlier.

The X-24A shape was later borrowed for the X-38 Crew Return Vehicle (CRV) technology demonstrator for the International Space Station.

**Keywords:** X-24A; X-24B; Martin Aircraft Company; lifting bodies; Maj. Jerauld Gentry; NASA Flight Research Center; U.S. Air Force; Air Force Museum; Wright-Patterson Air Force Base; Space Shuttle; X-38; International Space Station; X-15; Bill Dana.

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