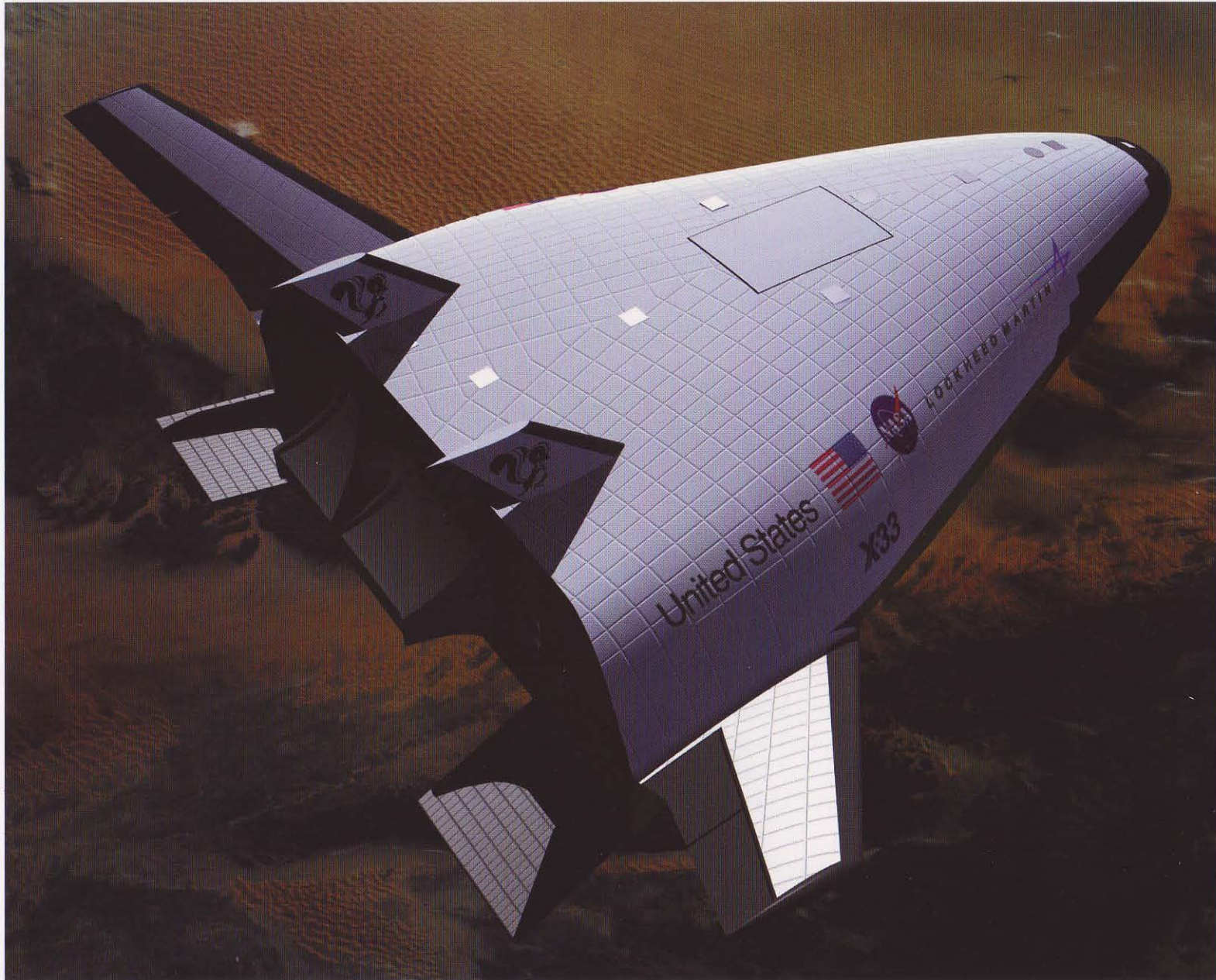




National Aeronautics and  
Space Administration

## X-33 Advanced Technology Demonstrator





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On July 2, 1996, NASA selected Lockheed Martin to design, build and fly the X-33 test vehicle between March and December 1999. The X-33 vehicle will demonstrate advanced technologies that will dramatically increase reliability and lower the cost of putting a pound of payload into space from \$10,000 to \$1,000.

The X-33 program will demonstrate in flight the new technologies needed for a Reusable Launch Vehicle (RLV), dubbed the "VentureStar," using a half-scale prototype. The goal of the program is to enable private industry to build and operate the RLV in the first decade of the next century. NASA will be a customer, not the operator, of the RLV.

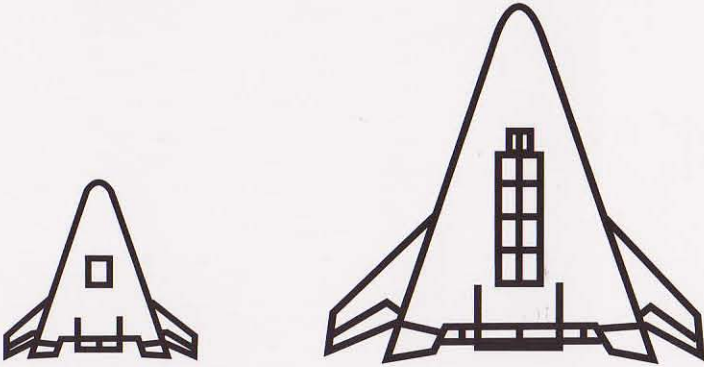
The Lockheed Martin Skunk Works X-33 design is based on a lifting body shape with a new "aerospike" rocket engine and a rugged metallic thermal protection system. It will be an unmanned vehicle, launched vertically like a rocket, reaching an altitude of 50 miles and speeds of more than Mach 15 (15 times the speed of sound), and landing horizontally like an airplane. The vehicle has a 5 foot by 10 foot simulated payload bay, but will not carry cargo.

Time between the X-33 test flights will normally be seven days, and a two-day emergency turnaround time between flights will be demonstrated. NASA has budgeted \$941 million for the X-33 program through 1999. Lockheed Martin will invest \$212 million in its X-33 design.

The industry team includes lead Lockheed Martin Skunk Works, Palmdale, CA; AlliedSignal Aerospace, Teterboro, NJ; Rocketdyne, Canoga Park, CA; Rohr, Chula Vista, CA; and Sverdrup, St. Louis, MO.

The government team includes NASA's Marshall Space Flight Center, Huntsville, AL, the program manager; Ames Research Center, Mountain View, CA; Dryden Flight Research Center, Edwards Air Force Base, Mojave, CA; Jet Propulsion Laboratory, Pasadena, CA; Johnson Space Center, Houston, TX; Kennedy Space Center, FL; Langley Research Center, Hampton, VA; Lewis Research Center, Cleveland, OH; and Stennis Space Center, MS.

For more information on the RLV program, and to view the latest images of the X-33, visit the program's Web site at <http://rlv.msfc.nasa.gov>



<u>X-33</u>		<u>VentureStar</u>	
Length	63 ft	Length	127 ft
Width	68 ft	Width	128 ft
Takeoff weight	273,000 lbs	Takeoff weight	2,186,000 lbs
Fuel	LH2/LO2	Fuel	LH2/LO2
Fuel weight	210,000 lbs	Fuel weight	1,929,000 lbs
Main Propulsion	2 J-2S Linear Aerospikes	Main Propulsion	7 RS2200 Linear Aerospikes
Take-off thrust	410,000 lbs	Take-off thrust	3,010,000 lbs
Maximum speed	Mach 15+	Maximum speed	Orbital
Payload to Low Earth Orbit	N/A	Payload to Low Earth Orbit	45,000 lbs