

PROJECT TAGBOARD



In the early 1960s, Lockheed had developed the Mach 3 "A-12" spyplane that the CIA recognized as a possible mothership for an advanced reconnaissance drone. A program to launch such a drone from the A-12 took precedence after Power's U-2 was brought down in the Soviet Union. The highly secret drone was given the preliminary designation of "Q-12."

To limit its weight and cost, the Q-12 was designed to be expendable. Its camera payload and guidance system were constructed in its nose section to be ejected and recovered after a parachute descent.

The Q-12, its name changed to D-21, was carried on the back of the A-12 launch vehicle designated as "M-21." ("M" designated "Mother" and "D" stood for "Daughter." The project now had the codename "Tagboard".

Built with titanium and various radar-absorbing plastic composites, the "D-21A", looked like a stovepipe with a cone in its inlet. Its vertical tailfin and wings running the length of the stovepipe that gave the drone something of the look of a sweptback manta ray. Forty-two feet, 10 inches, 11,000 pounds, and having a wingspan of 19 feet, the D-21 flew up to 1,700 MPH at a ceiling of 95,000 feet and 3,450 mile range.

A "Q-bay," contained the reconnaissance payload and guidance systems in a module (known as a "hatch") that plugged neatly into the bay where it could be ejected at the end of the mission to be snagged out of the air by a C-130 Hercules similar to the

method used by the Air Force to recover film canisters from reconnaissance satellites.

The M-21 was a two-seat version of the A-12, with a pylon on the fuselage centerline between the tailfins to carry the drone in a nose-up attitude. A periscope allowed the back-seater, or "Launch Control Officer (LCO)", to keep an eye on the D-21. Two M-21s were built, along with an initial batch of seven D-21s for test flights.

The first (non-launch) flight of the M-21 and D-21 combination was on 22 December 1964 to study aerodynamics and other systems issues. The first launch occurred on 5 March 1966. Though deemed successful, it concerned the flight crew that the drone hovered above the back of the M-21 for several seconds.

The second successful launch took place on 27 April 1966, prompting plans to construct 15 more D-21s. A third flight on 16 June 1966 was successful, however a launch attempt on 30 July ended in disaster when the D-21 collided with the M-21 on release, destroying both aircraft. The two crewmen ejected safely and landed at sea, but one drowned when his pressure suit leaked. This accident terminated the D-21 project as far as the A-12 (M-21) was concerned. The Tagboard project became Senior Bowl and continued with a B-52 used as the mothership launch vehicle. The D-21 drone was ultimately replaced by the new KH-11 Keyhole reconnaissance satellite.

Thirty-eight D-21s were built, with 21 expended. The other 17 were put in mothballs at the Davis-Montham Air Force Base "boneyard" near Tucson, Arizona. Four of the drones were eventually transferred to the US National Aeronautics & Space Administration (NASA) in the late 1990s. NASA considered using their D-21s to test a hybrid "rocket-based combined cycle (RBCC)" (ramjet) engine, however, this idea was abandoned, with NASA preferring to use a derivative of the agency's X-43A hypersonic test vehicle for the experiments. The remainder ended up in air museums.



Top View of D-21B

SENIOR BOWL



4200TH SUPPORT SQUADRON

OFFICER ROSTER

- | | |
|------------|-------------------------|
| Commander: | Col Arden B. Curfman* |
| DCOP: | LTC Edward C. Wright* |
| DCOT: | LTC Marvin. R. Leitzel* |



Senior Bowl Pilots:

- LTC Dick Baldwin
- Maj. Robert E. Haynes
- Maj. J. W. Sayer
- Maj. John Soper
- Maj. Thomas J. Arnone
- Capt. Wayne E. Hostetler
- Capt. Robert A. Holbrook
- Capt. James A. Fain Jr.
- Capt. Robert J. Haley

B-52H Navigators:

- Maj. Archie G. Slaten
- Maj. Richard J. Hamel
- Capt. Richard F. Trowbridge
- Capt. Kenneth O. LaVergne
- Capt. Frank A. Koi
- Capt. John R. Hazlett
- Capt. Ronald H. Combs

D-21B Launch Control Officers:

- Capt. Carter S. Miller
- Capt. William E. Klein
- Capt. James A. Scherer
- Capt. Thomas R. Allocca
- Capt. Ernest Cy Wilson
- Capt. Grant H. Everett



- Capt Larry A. Elliott
- Capt John T. Fuller

4200th Support Squadron Maintenance:

- LTC Eugene F. Keutzer - DCM
- Capt. Glenn W. Ferebee (B-52H)
- Capt. G. S. Hendrick (B-52H)
- Capt. William H. Smith (D-21B)
- Capt. J. A. Thomas (D-21B)

Operations:

- LTC Daniel J. Paparoski – DCOP –KC-135
- Maj. Robert J. Circe
- Maj. Junius H. Kershaw
- Capt. Richard W. Dondero DCI
- Lt. Craig Libuse - SECURITY

* On the B-52H pilot roster as line pilots