Standard Aircraft Characteristics

XB-64A

NAVAHO

NORTH AMERICAN

TWO XRJ47-W-7

WRIGHT

PILOTLESS AIRCRAFT

SECRET

8 DEC 52

BY AUTHORITY OF
THE SECRETARY
OF THE AIR FORCE

XB-64A NAVAHOr

SURFACE-SURFACE
XB-64 A
PILOTLESS AIRCRAFT
### Mission and Description

**Navy Equivalent:** None

The XB-64A is a ramjet powered supersonic pilotless aircraft which is capable of carrying a large atomic warhead at speeds of at least Mach 3, 25 to a range of 5500 nautical miles.

The basic pilotless aircraft design for the development program is a mid-wing trapezoidal platform with side air-inlets. The fuselage is a parabolic body of revolution, with the air-intakes and engine nacelles faired into the aft body section. The all-moving forward horizontal surfaces provide pitch trim control. Wing tip ailerons provide pitch and lateral control. This configuration is similar for all phases of the program, differences being principally in power plants, internal arrangement and structure.

### Development

**Project Initiated**
Feb 46

**Contract Date**
Feb 46

**First Flight (XB-64A)**
Mar 58

The XB-64A, an improvement of the XB-64, will meet all military requirements including the range of 5500 n.m. A total of thirty (30) will be fabricated and flown for a total of sixty (60) flights. Completion of development is programmed for April 1960.

### Dimensions

**Wing**
37.9'

**Length**
84.5'

**Height**
12.4'

### Guidance

**SYSTEM**
Inertial

**TERMINAL ACCURACY**
50% hits within 1500 ft of Target

**CONTROL**
System: Auto-navigator & Auto-pilot

### Launching

Launched vertically from ground using booster which will separate at approximately 65,000 ft altitude.

**PREPARATION & LAUNCH TIME**
Approximately 2 Hours.

### Warhead

**Type**
Atomic; BW; CW

**FUZE**
Barometric
GUIDANCE AND CONTROL

The guidance system for the XB-64A employs an inertial autonavigator. During the boost phase, roll and yaw is stabilized by rate and position signals obtained from single degree of freedom rate gyros with associated integrators. Pitch is controlled along a time program of altitude using an integrated rate gyro signal. When booster drag exceeds its thrust due to thrust cut-off, the booster automatically disengages from the pilotless aircraft. This action energizes necessary relays for entering the climb phase of autopilot control. The large change in moments experienced by the pilotless aircraft during separation necessitates converting the forward control surfaces from trimmers to fast acting surfaces. During the climb phase of flight, the ramjets are started and a gradual transition to cruising condition is made until, at a pre-set flight time, the climb phase ends and cruise phase is initiated. During this phase, a constant Mach number is maintained by the horizontal control surfaces. The autonavigator continuously indicates position which is used in connection with a maneuver programmer so that the pilotless aircraft follows a pre-set course to the target. The only restriction on this pre-set course is that it be contained within a 700 nautical mile band about a chosen great circle. At a pre-set "range to go" sensed by the autonavigator, the pilotless aircraft noses down to make final approach to target. Continuous dive-in control is maintained until impact. The autonavigator corrects errors in the integrated gyro signal prior to the dive-in. The pilotless aircraft is roll and yaw stabilized during the dive by single degree of freedom rate gyros. The terminal trajectory consists of a sharply increasing dive from approximately 88,000 ft becoming vertical over target at approximately 18,000 ft altitude.