Mission and Description

Navy Equivalent: None  Mfr's Model: 624

The mission of the initial BOMARC pilotless aircraft is to intercept hostile aircraft at a distance up to 125 nautical miles. It is capable of cruising the entire distance in approximately 5.5 minutes with a speed of Mach 2,5 at 60,000 feet.

The basic design is a fixed mono-wing arrangement with movable tail surfaces for pitch and yaw control and wing tip ailerons for roll control. The vertical fin and fin tip rudder project above the body. The delta wing of 30° sweepback and the tail surfaces are of semi-monocoque monoplane construction. Attached to the tapered cylindrical body beneath the wings will be two 28" ram-jet engines for high altitude cruise phase of flight.

After further development, the advanced Mach 2,7 cruise BOMARC will be capable of intercepting hostile targets at a maximum range of 250 nautical miles at altitudes from sea level to 80,000 feet.

Development

Design & Development Phase Initiated: Dec 50  Phase I has been completed: Oct 52
Phase II has progressed to the initiation of detail design, fabrication and testing R&D Vehicles, Research & Development Completion: (est) Aug 56

A total of forty-nine (49) interceptors are scheduled in the R&D Program. To date, five (5) flights have been completed and successfully demonstrated: (a) gimbaled rocket control permitting vertical take-off and programmed trajectory control; (b) transition from gimbaled rocket control to aerodynamic control; (c) flight control through transonic and supersonic speeds up to Mach 1,6; (d) reliability of electronic components through successful control, beacon and telemetering systems during boost and control transition; (e) adequacy of ground support and launch facilities.

Weights

<table>
<thead>
<tr>
<th>Description</th>
<th>Lb</th>
<th>L, F.</th>
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<td>Empty</td>
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<tr>
<td>Warhead</td>
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<tr>
<td>Max Launch</td>
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Propellant

Location  No. Tanks  Gal  Fuselage  Grade  Specification

OXIDIZER

Fuselage  2  (tot) 154  Grade  WPN/A
Specification  MIL-N-7354

Guidance Systems

(a) INITIAL: Preset
(b) MID-COURSE: Command
(c) TERMINAL: Active-Pulse-Radar-Target Seeker

Target Accuracy
50% within 50 ft of Target

Control
Type: Autopilot Servo

Launching Method

Launched vertically from a sub-range protective shelter.
PREPARATION & LAUNCH TIME
Automatically maintained in a two minute readiness condition. Upon receipt of an "alert" the interceptor is brought to a "ready to fire" state within 60 seconds. When the "fire" order is received the interceptor is automatically launched within 30 sec.
UNATTENDED STORAGE TIME
Storage in "standby" condition w/o service up to 10 hrs; with minor service up to 200 hrs.

Warhead

Type: Fragmentation

Fuse

Type: VT

Arming Method: In Flight

Dimensions

Wing Span: 18.1'
Incidence: 0°
Dihedral: 0°
Sweepback (LE): 50°
Fuselage (Outer Diameter): 3.9'
Length: 41.2'
Height: 10.3'

Power Plant

No. & Model: (2) XHRM-MA-3
Mfr: Marquardt
Engine Spec No.: Length: 16' Diameter: 28.3' Weight: 454 lb

Booster

No. & Model: XLR59-AJ-5
Mfr: Aerojet
Engine Spec No.: ATS-L1,205
Weight: 372 lb (dry, w/o tanks and associated equipment)
LAUNCHING:
The pilotless aircraft is maintained in a two-minute readiness condition and upon receipt of "alert" it is automatically brought to a "ready to fire" state within ninety seconds. When order to fire is received the pilotless aircraft is erected and launched within thirty seconds. The climb trajectory is programmed along an azimuth automatically introduced prior to launch.

GUIDANCE AND CONTROL

MID-COURSE FLIGHT
Track while scan search radars (AN/FPS-3 or AN/CPS-6B with MkX) which scan 360° in azimuth furnish basic information to a tracking computer within the AN/FSQ-7. A course computer calculates the necessary commands which are then transmitted to the pilotless aircraft. A beacon is installed in the pilotless aircraft to aid tracking. The pilotless aircraft will be equipped with an autopilot servo system accepting information from the ground control system via the data link receiver in the pilotless aircraft.

TERMINAL DIVE
Active-pulse-type radar target seeker, having a range of 7.5 miles on a target of 5 square feet radar cross sectional area. The seeker is oriented in the proper region of space by command and automatically takes over when the target is within range. Target discrimination is attained by means of a 33 degree beam and a range gate within the seeker.

XF-99 PILOTLESS AIRCRAFT