Inboard Profile XSM-62 (N-69A) Aerodynamic Test Missile

erable. Five of these missiles were flight tested to evaluate terminal-dive warhead delivery, warhead arming and fuzing systems, and aerodynamic performance. One of the terminal dive missiles was also flown to evaluate the entry maneuver for the ballistic nose method of warhead delivery and to obtain aerodynamic and system performance data at high dynamic pressures.

In May 1955, flight test and wind tunnel test data indicated that the terminal-dive method of warhead delivery was not feasible because the prescribed dive trajectory could not be maintained with the available elevon control. As a result, the warhead delivery technique was changed at this time to a ballistic nose drop. A ballistic nose had been under development as an alternate method of warhead delivery for the previous two and one-half years. In June 1955 Northrop pro-

posed this program change to the Air Force, and concurrence was obtained in July 1955. The ballistic nose was incorporated in the remaining N-69C missiles. The N-69C program was successfully completed in October 1956.

N-69D Guidance System Test Missiles

This configuration was the first to incorporate the 24-hour Mark I guidance system and, in common with the N-69A configuration, it was recoverable through use of radio control, skids, and a drag chute. The flight test objective for this series was to demonstrate Mark I guidance system capabilities. Although 20 missiles were initially programmed for use during this development stage, the tests were successfully concluded in November 1957 with the use of only 15 missiles.
N-69E Operational Concept Test Missiles

The objectives of this series were to demonstrate operational capability and establish compatibility of the prototype ground support equipment. Fifteen missiles were used in the flight test program, and one was delivered to the Air Force for training purposes. Flight tests were initiated in June 1957 and were completed in September 1958.

The N-69E missile is substantially the same as the operational version. It features a high-aspect-ratio sweptback wing and a vertical stabilizer. There is no horizontal stabilizer; elevons in the trailing edge of the wing provide longitudinal and lateral control. A rudder was originally provided to trim out forces and moments produced by lateral asymmetries, but it was subsequently deactivated in favor of lateral asymmetrical compensation through the elevons. The general structural criteria to which this configuration was designed are as follows:

Design gross weight for structural analysis is 45,000 pounds without droppable fuel tanks or booster rockets; 49,000 pounds with droppable fuel tanks but without booster rockets.

The design yield factor of safety is 1.0.

The design ultimate factor of safety is 1.5 for the initial boost condition during launch and for all ground handling conditions. The factor is 1.25 for all other conditions.
the XSM-62 Snark

Manufacturing Section Breakdown, XSM-62