

Vanguard Guidance

Guiding the Vanguard rocket to its satellite-launching orbit was a new guidance reference system developed for the project by the aeronautical division of Minneapolis-Honeywell. The guidance brain was about the size of a basketball, and contained three of Honeywell's ultra-accurate HIG gyroscopes and comprehensive electronics.

The system was located in the second stage of the massive Vanguard rocket and guided the vehicle through the first and second stages or powered flight, and the final or third coasting phase of the flight. Just before the third stage and its satellite were nudged ahead into the orbit, the guidance system was called on to provide a final heading control to assure a successful orbiting.

Heart of the gyro reference system are the three Honeywell gyroscopes that were calibrated to a "memorized" heading reference in the three directions of flight; one gyro each for roll, pitch and yaw. Known as HIG (Hermetic Integrating Gyros) they weigh about 4.6 pounds and fit compactly in a cylinder 5.9 inches long and 3.07 inches in diameter. If the rocket rotates incorrectly even an infinitesimal part of a degree, because of shifting of fuel supply, engine irregularity, cross winds, etc., the gyros will sense the error and send an electrical signal through an autopilot amplifier to the error-correcting servo system at the rocket engines.

USAF Officers Train on Bomarc

A group of USAF officers has recently completed the first round of technical instruction in preparation for the activation of Bomarc interceptor bases. The officers, especially selected by the USAF's Air Defense Command for the five-month maintenance engineering seminar, have received their instruction at a special Boeing training school in Seattle.

From the classroom these officers are being given actual on-the-job assignments in Boeing's pilotless aircraft division for several months. Following this, their training will carry them to the Bomarc test firing unit at Cape Canaveral, Florida, and then to the Santa Rosa Island Bomarc opera-

tional testing base now nearing completion adjacent to Eglin AFB, Fla. This last-mentioned base, off the Florida gulf coast, is known as an "employment and suitability testing base." It will be used for operational testing of the Bomarc weapon system and for training purposes.

Thor IRBM Ground Testing

Beckman Instruments Inc. have completed an electronic data processing system which will automate static testing of the USAF's Thor IRBM. The \$100,000 electronic unit was ordered by the missile division of Douglas Aircraft Corp. and has been installed at Edwards Rocket Base, near Boron, Calif.

The data system will speed missile ground tests by automatically recording temperatures, strains and vibrations from up to 350 sources at the rate of 5 samples per second. It will also alert test engineers the instant any monitored variable exceeds pre-set limits. In addition to saving time, the system will conserve technical manpower and test costs by reducing materially the man-hours and equipment which would be required to record test information by conventional methods.

New Bomarc Test Program

Boeing Airplane Co. is nearing the successful completion of the extensive flight test program for its now-in-production Bomarc interceptor missile and will soon start tests on an improved model Bomarc. The model currently

being tested is a supersonic missile of approximately 200-mile range which is designed to seek out and destroy enemy bombers and air-breathing missiles before they can near vital U.S. targets.

A more advanced version of Bomarc, also being developed for the USAF, will have a range of more than 400 miles and incorporate significant technical advances. Both missiles will be able to carry atomic warheads.

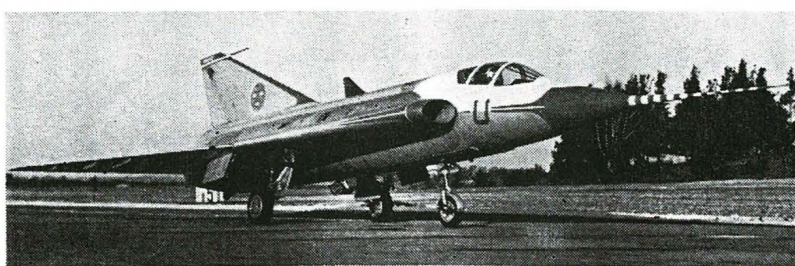
In the majority of Bomarc tests the missiles have been fired without warheads.

Beverly Airlifts Bloodhound

An operational Bristol Bloodhound guided missile, of the type shortly to be handed over to the RAF, was recently loaded complete with trolley and ancillary equipment into a Beverly aircraft and flown from Filton to Cranwell. The missile was required at Cranwell for a secret exhibition. Although Bloodhound is easily transported by road, the opportunity was taken by the RAF to test the air mobility of the missile under simulated operational conditions.

This was the first time that a Bloodhound had been carried by air in the U.K., although Bristol Freighters have been used on several occasions in Australia to carry the missiles from Salisbury to the Woomera range.

Loading of the missile took exactly 10 minutes. A significant point is that on arrival at its destination, the missile is ready for operational use. Being mounted on its trolley, it can be transferred in a matter of minutes to its launcher ready for firing.



FIRST PRODUCTION DRAGEN: The first production model Saab-35A Draken supersonic delta has made its first flight. This model of the Swedish-designed and built single-seat fighter differs from prototype models in that it is powered by a Rolls-Royce Avon with afterburner. Attack version of the Draken can carry air-to-ground rockets of a new type. Shown at right are six 13.5 cm rockets slung on one side; total load is twelve.

