

## TALOS IN RETROSPECT

The Talos system, a product of the oldest of the U.S. Navy's anti-aircraft guided missile programs, has recently been retired from the Fleet after 22 years of active service. The heavy cruisers for which it was designed as the primary armament have been mothballed or retrofitted with newer systems. USS *Oklahoma City*, with the last Talos missile system on board, was decommissioned in 1980.

Talos was the largest and most powerful weapon in the Navy's arsenal of anti-aircraft missiles. During its years of development, and by successive retrofits during deployment, its range grew from 10 nautical miles to well in excess of 100 nautical miles, with midcourse guidance and a terminal homing system of deadly accuracy. Its capabilities were expanded to intercept ships as well as aircraft; to employ features that made it virtually unjammable; to include a nuclear warhead capable of destroying aircraft flying in formation; and to offer a shore bombardment mode.

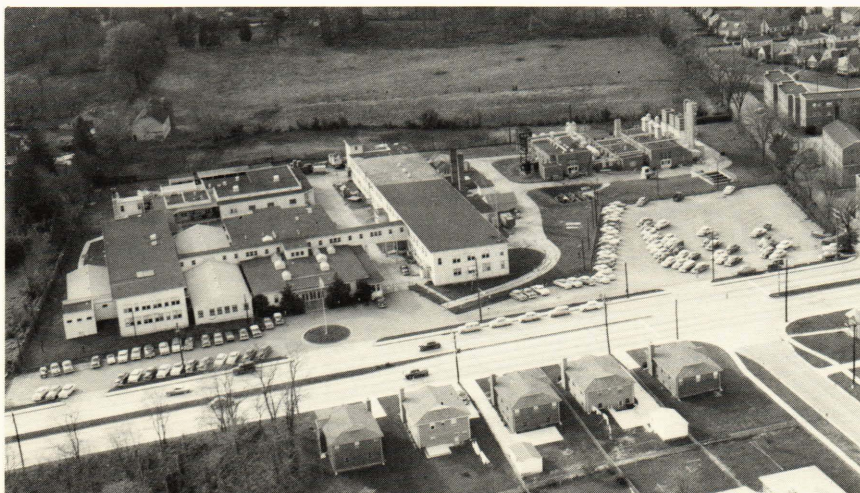
At its inception, when controlled supersonic flight was in its infancy and when the concept of guided missile warfare was only just being formulated, the Talos program set out to pioneer, to chart new territory — to do things that had not been done before. Such a pioneering program generates "firsts." It developed the first rocket-launched supersonic ramjet engine, the first interferometric homing guidance, and the first beamriding missile system. It was the

first to incorporate a tactical nuclear warhead and the first to develop an explosive warhead capable of ejecting a continuous, expanding steel ring.

The ramjet engine deserves a special comment. Following its extensive development and testing phase, it was manufactured for years without a single production engine ever being test-fired prior to use; conformity to production specifications was the sole acceptance criterion. The engines had to ignite reliably at the instant of separation of the missile from the booster rocket at speeds greater than twice the speed of sound and had to maintain controlled speed throughout flight, while delivering up to 70,000 horsepower. No ramjet engine failed to meet these requirements in more than 750 successive flights.

In the Vietnam conflict, Talos distinguished itself in early engagements by its deadly accuracy at long range. The presence of a Talos cruiser in the Gulf of Tonkin was sufficient to suppress all enemy fighter aircraft flights over the Vietnam coastal strip.

In retrospect, perhaps the most important aspect of the Talos effort was not the missile system itself, in spite of its achievements, but rather what developed from it: the current and future generations of anti-aircraft missile systems — both hardware and concepts — and a technology that is now making contributions in fields ranging from satellite systems to biomedical engineering.



Aerial view, in the early 1950's, of APL's Forest Grove Station on Georgia Ave., Silver Spring, Md. The Burner Lab, behind the large parking lot at right, was the site of early ramjet research, development, and testing, which culminated in the Fleet's operational Talos missiles. Midnight explosions and other ear-shattering sounds emanating from this facility led ultimately to the choice of the rural setting of the present facilities in Howard County, Md.