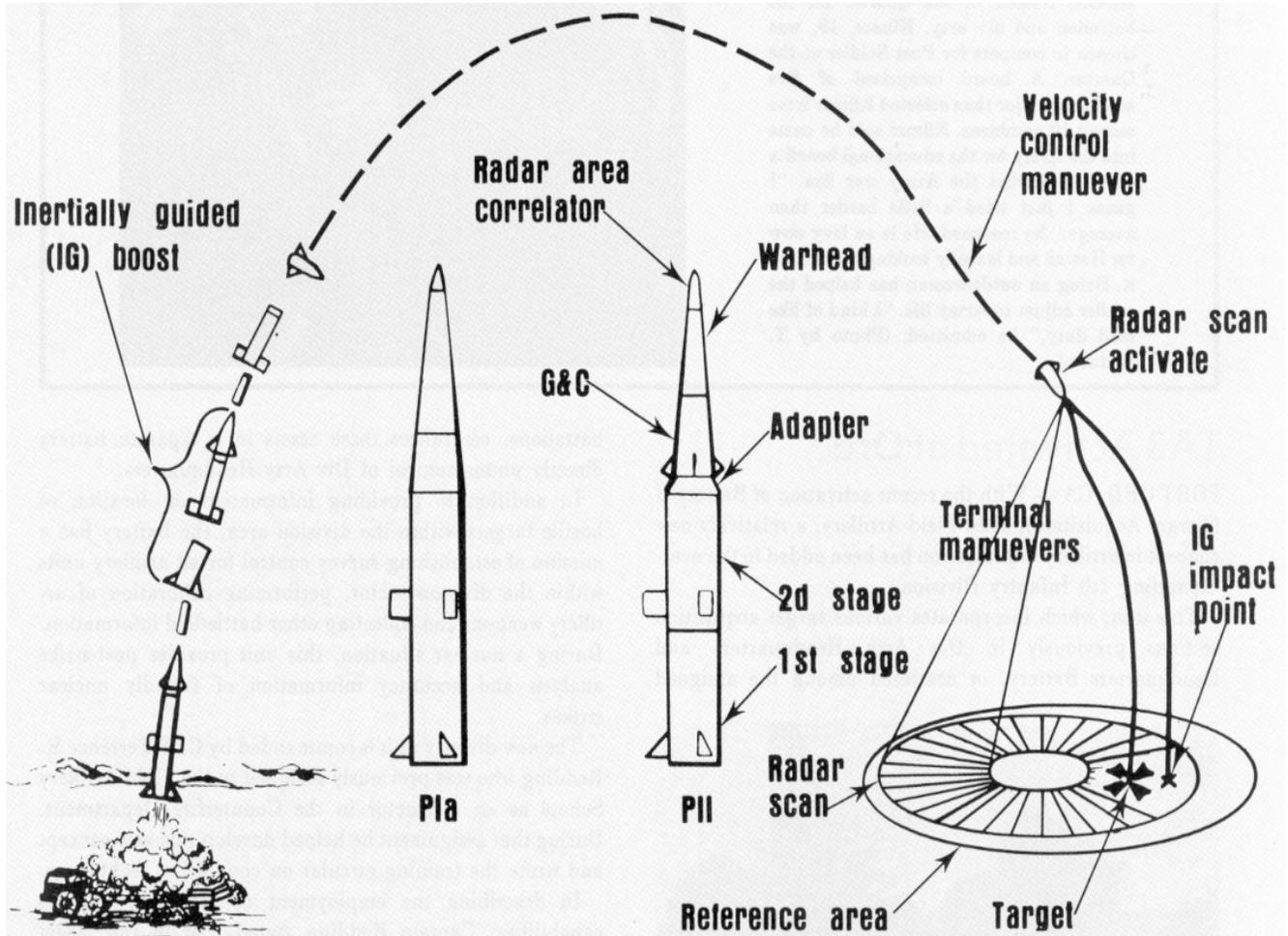


Pershing II

by COL Larry H. Hunt



Pershing is an outstanding example of modernization through modular improvement. The Pershing story is one of constant evolution in both equipment and organizational structure. The 1,101 men who comprised the original Pershing I battalions, with their missiles mounted on modified M113 tracked vehicles, would not recognize today's 1,368-man Pershing Ia battalions as they roll along the autobahns of West Germany on wheeled vehicles at speeds of 40 to 50 miles per hour.

Those first "Pershing Professionals" would marvel at the greatly reduced reaction times for a firing platoon to launch its basic load of missiles, using a sophisticated sequential launch adapter to switch electrical signals, high

pressure air, and conditioned air from one missile to the next.

The survey crews of those old days will watch with awe as the new automatic reference system does in minutes what used to take hours of taping and angle-turning. Even the language — quick reaction alert, combat alert status, reduced quick count, platoon location position — is full of new terms.

The steady improvement in the operational capabilities of the Army's longest range and most powerful weapon system continues today. The next generation — Pershing II (PII) — is currently under development by the Army's Missile Research and Development Command at Redstone Arsenal, AL.

Pershing II will incorporate a highly accurate terminal guidance system in a new maneuverable reentry vehicle. The improved accuracy will provide a substantially higher probability of target kill with smaller warheads.

This combination of improved accuracy and smaller warheads, along with Pershing's rapid response and assumed penetration, permits the destruction of critical, time-sensitive targets with minimum collateral casualties or damage in the immediate target area.

PII will be launched, like PIa, on an inertially guided trajectory to the point where the reentry vehicle separates from the second-stage booster. Inertial guidance position information will be continually updated as it proceeds on a ballistic path through the outer atmosphere. Soon after reentry, an all-weather radar system is activated to sweep the target area below the rapidly descending reentry vehicle.

The live radar returns are compared in a special correlation tube with a pre-stored reference image of the target area. The amount of adjustment necessary to achieve a perfect match or correlation between the live radar return and the pre-stored radar image of the target area provide a measure of guidance error. Corrective commands are computed and the reentry vehicle is maneuvered to bring it back onto course.

Several such correlations are obtained during the terminal descent with each providing increased accuracy. This technique, called radar area correlation, is one of the most accurate guidance concepts available today, and PII will open a new dimension in the Field Artillery's ability to deliver firepower accurately by long-range surface-to-surface missiles.

The terminal guidance system is currently being tested in captive flights. Results to date in both helicopter and high speed jet aircraft have indicated that PII's performance will exceed specifications.

With this improved accuracy, nonnuclear payloads may become effective, thus permitting consideration of a wide range of new missions for Pershing. For example, the Defense Department has recommended to Congress that funds be provided to examine the feasibility of Pershing II as a conventional airfield attack missile.

Pershing II takes full advantage of existing equipment by using the present first- and second-stage missile motors and the existing ground support equipment. In addition, its similarity to the currently deployed missile will allow transition to operational status with a minimum of personnel retraining.

The advanced development program will be complete in 1978 with the launching of six flight-test missiles at White Sands Missile Range. In addition to the new radar guidance system, these flights will test the feasibility of a new earth-penetrator warhead for use in attacking hard, point targets.



Pershing crew member checks azimuth reference unit of new ARS/SLA ground support equipment. Reference unit uses a laser beam in an automatic optical link to align missile gyro with true north, thus eliminating the requirement for launch from pre-selected and surveyed points.

When the PII program is fully implemented, Pershing's life will be extended nearly two decades, into the 1990s. This will mean a total useful life of 30 to 40 years, surely some sort of record for a major weapon system in a world of rapid technological progress.

The improved military effectiveness and the increased deterrence value which PII will bring to Pershing's quick-reaction-alert role in Europe will continue a long tradition of service for this Field Artillery system to which the Supreme Allied Commanders in Europe have long entrusted the task of attacking the highest priority, most time-sensitive targets whose destruction is vital to a successful NATO defense of Western Europe. ☒

COL Larry H. Hunt is the Pershing Project Manager at the US Army Missile Research and Development Command, Redstone Arsenal, AL.