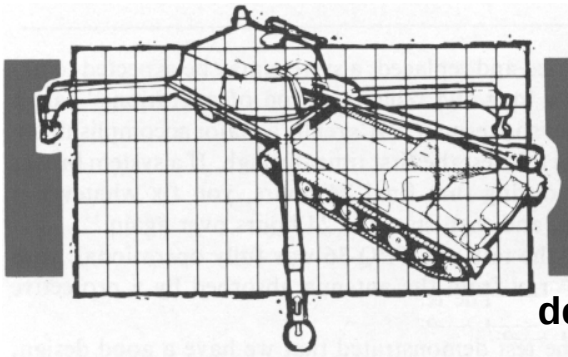

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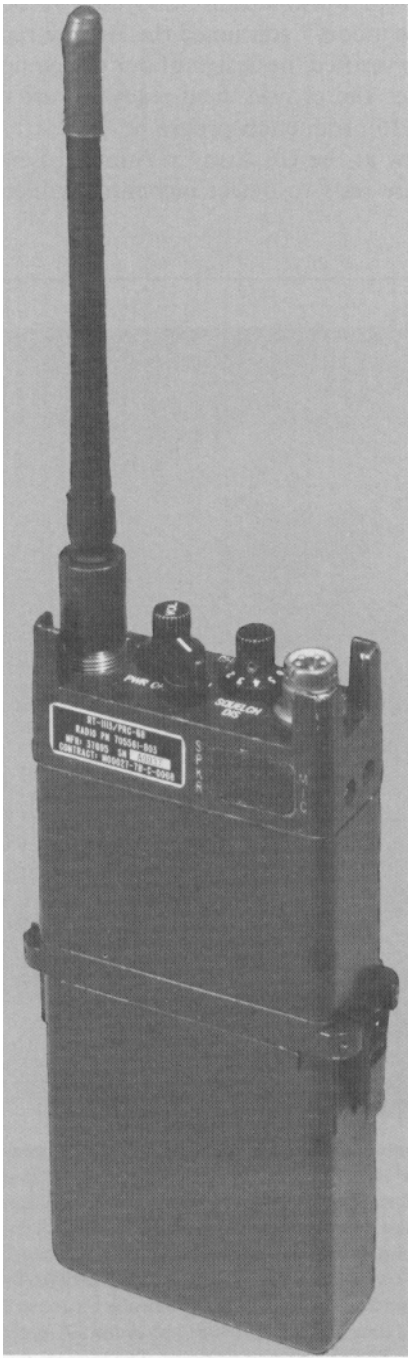


Small Unit Transceiver.

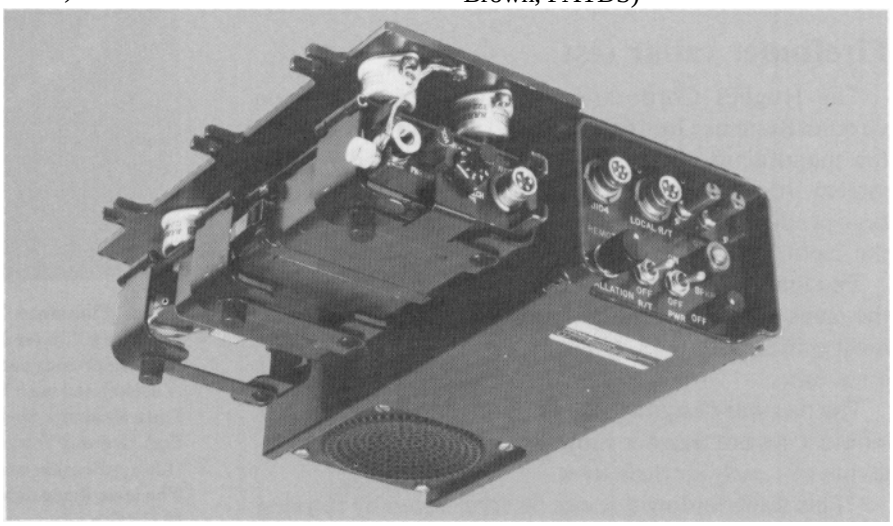
USAREUR firing batteries to get new intra-battery radios

Department of the Army recently approved priority issue of the handheld AN/PRC-68 Small Unit Transceiver (SUT) to USAREUR M109 battalions scheduled to be reorganized under the 3x8 concept. The radio, now in production by Magnavox, should be fielded in Europe during the June-August 1981 time frame.

SUT, which was developed as an infantry squad radio, will offer firing batteries a marked improvement in communication. The radio is lightweight (35 ounces), compatible with the current FM radios (30-80 megahertz), and requires no crystals. The radio has a pre-set base frequency and nine other channels spaced at 200 kilohertz. Transmitter range is between three to five kilometers, with more than enough power (1 watt) to communicate between howitzer sections and fire direction centers, but limited enough to avoid detection and mutual interference.

Radios will be issued to each howitzer section, fire direction center, platoon leader, and battery commander. Its primary use is intended to supplement the battery's wire system and provide quicker response during occupations and hip-shoots and for convoy control.

In a follow-on action, the Field Artillery Board will test the SUT mounted with a power amplifier (OG-174 (VRC)) in February 1981. The SUT and power amplifier will be mounted in self-propelled howitzers and FDC vehicles. This will give the added capability of an external loudspeaker and interface with the VIC-1 intercom and the Battery Computer System. The SUT with power-amplifier system should appear in mid-1983. (Mr. Dick Brown, FATDS)



AN/PRC-68 Small Unit Transceiver with a power amplifier.

Chemical weapon modernization

Recent events, to include Congressional actions on construction of a binary munitions facility, have stimulated increased interest in US chemical warfare policies and posture. It is important that US chemical warfare policies be clearly understood; therefore, the following Department of Defense policy statement regarding chemical weapons modernization was recently released:

> *"The US policy continues to be to seek a complete and verifiable international ban of lethal chemical weapons, and we are continuing negotiations toward that goal. However, in the absence of an adequate verifiable international agreement banning such weapons, it is the US policy to maintain a retaliatory stockpile to deter others from using chemical weapons and to retaliate if deterrence fails. The US is formally committed to the policy of 'no first use' of lethal or incapacitating chemical agents by adherence to the Geneva Protocol of 1925. Any future modernization of the offensive chemical capability would only be for the purposes of deterring the use of chemical weapons by others and for retaliatory employment in the event others use it first. There is no desire to see the use of chemical warfare in any future conflicts, but US forces must be realistic and prepare for such an eventuality."*

A decision is expected in the next few months whether or not to undertake a modernization program and in what form it should take. That decision must take into account such considerations as the need to modernize, attitudes of US allies, and negotiations to ban chemical weapons. The pending decision regarding modernization of our chemical warfare offensive capability does not affect our extensive on-going programs to upgrade defensive capabilities (e.g., detection equipment, protective gear, shelters, and training).

Firefinder radar test

The Hughes Corporation Manufacturing Division Ground Systems Group has reached a major milestone in the manufacture of the AN/TPQ-36 Firefinder radar system—the successful system and burn-in test of the first production TPQ-36 built and tested completely by the factory.

The Firefinder was subjected to seven days of round-the-clock operation and passed, failure free, the final, most critical 24 hours, when weak components tend to burn out.

The test was designed to find the parts and assemblies within a system that are subject to "infant" mortality—giving out early in their lives.

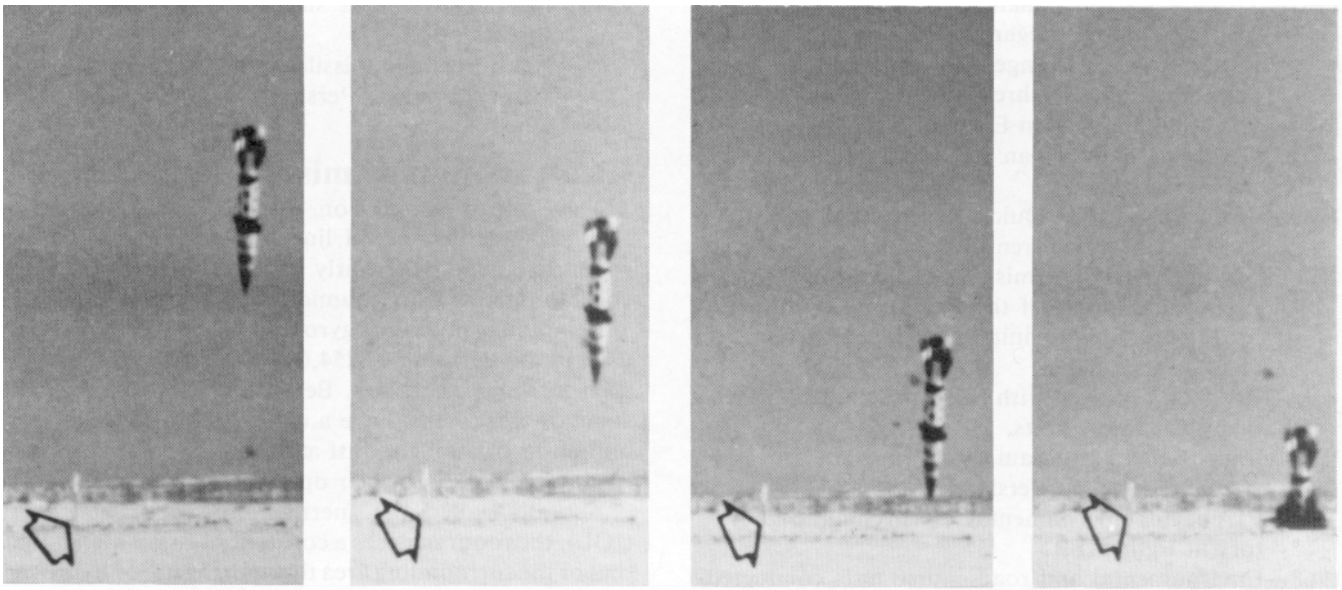
"This fault-finding test can be accelerated by running the system in a heated environment. With weak parts identified and replaced, a system may be expected to undergo a long and reliable period of operation," said a Hughes spokesman. "It's really a major accomplishment to pass this test the first time through. If a system breaks down during that final 24 hours, you fix whatever is wrong, and then start the 24 hours over again."

For the test, the TPQ-36 was fully operational, with the energy from the antenna absorbed by a protective blanket.

"The test demonstrated that we have a good design, good quality, excellent workmanship, and that we can operate in a fail-free mode," continued the Hughes representative. "It also verified the design of our test equipment and procedures and proved them ready for use in the sustained TPQ-36 production program."

The system is now at the US Army's Yuma Proving Grounds for live-fire tests to detect incoming artillery and mortar shells.

Laser Pinpoints Targets—US Army forward observer teams operating "under armor" will be able to pinpoint targets for laser-homing or conventional weapons by using a new laser designator. A technician with Hughes Aircraft Company's Electro-Optical and Data Systems Group adjusts the transceiver assembly on a modified Ground/Vehicular Laser Locator Designator, retrofitted for this application under contract to the US Army Missile Command. The laser designator and rangefinder device will be mounted on the M113 fire support team (FIST) armored vehicles. The system will also maintain its full tripod-mounted capability.



SIG-D flight just released—Composite photographs show results of US Army Missile Command Simplified Inertial Guidance Demonstration (SIG-D) program firing at White Sands Missile Range, NM, in March last year. Taken from high speed motion picture film at the target site, arrow indicates center of target stake. The missile is a T-22 solid propulsion Lance sized missile provided by Vought Corporation, aerospace subsidiary of the LTV Corporation.

400th Pershing missile launched

On 15 October last year, 21 years after the Army's largest weapon was first launched, the 400th Pershing missile roared into clear skies over the McGregor Range launch complex at White Sands, NM. The missile's inert re-entry vehicle landed on target minutes later at the White Sands Missile Range impact area approximately 100 miles away.

German Air Force troops of Missile Wing Two conducted the firing as part of an eight-round series of tests and training launches of the NATO missile system.

Each year a number of operational test firings are conducted under combat conditions to determine the proficiency of troops and the integrity of missiles assigned to the NATO defense role. Additionally, Artillery/Ordnance firings are conducted for training and to check out new concepts, modifications, or procedures.

The first Pershing missile was launched 25 February 1960, from Cape Canaveral, beginning a series of six successful firings during "maiden" testing. Since then, Pershing's record makes it a top contender for the most successful major weapon system to be developed by the United States.

In commenting on the milestone marked by the 400th firing, COL William J. Fiorentino, Pershing Project Manager, said that Pershing has established a commendable record in the three most critical aspects of military procurement—cost, schedule, and reliability—since the first contract was awarded to Martin Marietta Aerospace in 1958.

Since its beginning, the Pershing program has been one of continuing success and accomplishment. Starting with a solid basic system, Pershing has been continually improved in keeping with new roles and advancements in technology. Major modular improvements have been made to the launch, control, transport, and ground support systems to provide a quicker reaction capability and more flexibility for the field commander.

Currently, the system is undergoing the latest modular improvement through the Pershing II program, now in full-scale engineering development. Included in the modular improvements is a new radar correlator terminal guidance system that will provide pinpoint accuracy and thus allow the use of smaller yield nuclear warheads with greater military effectiveness and reduced collateral damage. Also, its increased range will permit a whole new spectrum of accessible targets for Pershing in its deterrent role in defense of the free world.

A chronology of Pershing highlights is as follows:

1958—Army Missile Command awarded the Orlando Division of Martin Marietta first contract to design and develop the Pershing system.

1960—First missile fired from Cape Canaveral (first-stage propulsion only) just 22 months after award of original contract.

1962—First full flight (400 miles) at Cape Canaveral.

—First Pershing battalion (2d-44th) activated, trained, formally organized.

—Cold-weather tests in Alaska.

1963—Tropical tests in Panama.
—Tactical findings began at White Sands Missile Range, with full-range (400 miles) firings over populated areas in three states.
1964—Pershing deployed in Europe.
—German troops began Pershing training in the United States.
1965—Pershing assigned Quick Reaction Alert (QRA) role as nuclear deterrent in support of NATO, in addition to its basic mission of providing massive firepower support of the field army. Major improvement program initiated to meet this requirement.
—Pershing deployed with Federal Republic of Germany Air Force units.
1967—Improvement program completed and the new system designated Pershing IA.
—PIA begins environmental tests in climatic laboratory at Eglin AFB.
1968—Environmental and road-course tests conducted at Orlando.
—Green River, Utah, service test firings into White Sands Missile Range.
—Beginning of "Operation SWAP" to equip US Army Pershing missile units with Pershing IA. This operation exchanged, item for item, new equipment for the old in a direct contractor-to-troop delivery system, bypassing the traditional Army supply system and without interruption of the units' combat readiness.
1970—US phase of Operation SWAP completed.
1971—German Air Force units equipped with PIA via SWAP.
1972—Work begins on development of Automatic Reference System and Sequential Launch Adapter (ARS/SLA) ground equipment.
1973—Pershing production line, closed since 1967, reopened for replenishment program.
1974—Contract awarded for advanced development of new terminal guidance system for Pershing (Pershing II).
—First missiles fired with new ARS/SLA ground equipment.
1975—Production contracts awarded for ARS/SLA for both US and German units.
1976—ARS/SLA ground equipment delivered to PIA units in the field.
1977—First Pershing II flight tests (five missiles) successfully conducted at White Sands Missile Range, demonstrating new terminal guidance system with analog correlator device.
1978—Pershing program marks its 20th birthday.
—Contract awarded by Army for Engineering Development phase of Extended Range Pershing II.
1979—Captive flight test conducted for Pershing II, using digital correlator.
1980—Pershing II motor static firing tests conducted successfully.
—400th Pershing missile fired.
—After 22 years, Pershing program remains on schedule.

Clean room aids missile performance

The "clean room" on Pueblo Depot Activity's Pershing missile rebuild line is exactly that—a clean room designed to be nearly dustfree, as well as having constant temperature, humidity, and pressure.

Rebuilding precision gyroscopes and accelerometers used in the Pershing's $254,000 guidance system makes such a facility necessary. Because the moving parts on some of these items have a clearance of only about 20 millionths of an inch, dust and other particles can have an adverse effect on their operation.

Actually called the Inertial Guidance Laboratory (IGL), the room encloses a constant pressure higher than that of the surrounding area through the use of hydrocarbon-free air compressors. According to IGL supervisor W. E. Greenarch, the air in the room completely changes every 90 seconds and the floor is totally grounded to prevent static electricity.

"These gyros are so sensitive that they can detect sunlight and are affected by it," says Greenarch.

Employees who enter the IGL must first don a surgical-room-type outfit. By necessity, they cannot wear beards, and are not permitted to enter if their skin is peeling for any reason.

In addition to this "clean room," there is also a "super clean room," in which the environment is even more controlled.

The Super Clean Room (environmentally controlled laboratory) was completed in March 1969 and greatly increased the depot's capability in performing overhaul of the Pershing stabilizing platform. Total cost was approximately $571,000. Additionally, a special air control unit was erected on the roof of the building.