

Four men directly responsible for the success of the Courier communications satellite are captured in this photograph which was sent to the satellite through facsimile equipment and sent back by Courier to the earth station in a relay process that took about five minutes. At the

station control console are (l.-r.) George F. Senn, Army Signal Research and Development Laboratory Courier project director; Samuel E. Findler, Courier earth station manager; Pierce W. Siglin, project manager; and Walter P. Teetsel, in charge of all earth stations.

20 years ago, Courier led the way to modern satellite communications

By HARRY CONOVER

Twenty years ago, on Oct. 4, 1960, the Defense Department's communications satellite Courier was blasted into an earth orbit, the precursor of today's satellites that carry radio and television signals to all parts of the world.

Borne into orbit by an Air Force Thor-Able-Star missile launched from Cape Kennedy, Courier carried radio transmitters and receivers and tape recorders developed under the direction of engineers of what was then the Army Signal Research and Development Laboratory, here.

Two key figures in the Courier program still are employed here and both are still involved in military satellite communications. They are Samuel E. Findler, who was in charge of one of the Courier earth stations, and Peter T. Maresca, who was chief of the Astro-Communications Branch of the laboratory's Astro-Electronics Division.

Findler, who has 37 years of federal service, is chief of Tactical and Equipment Techniques Division of Development Operations Directorate of the Army Satellite Communications Agency, here. A veteran of 40 years of federal service, Maresca is acting director of the Engineering Development Directorate at the SATCOM Agency.

More than 67,000 words a minute

Barely settled into its orbit that October morning, Courier began to receive, store and, on command transmit to earth a stream of voice and radio tele-

graph messages at the rate of slightly more than 67,000 words a minutes.

Courier communicated with two stations, one the Courier earth station in West Deal, Ocean Township, the other in Salinas, Puerto Rico.

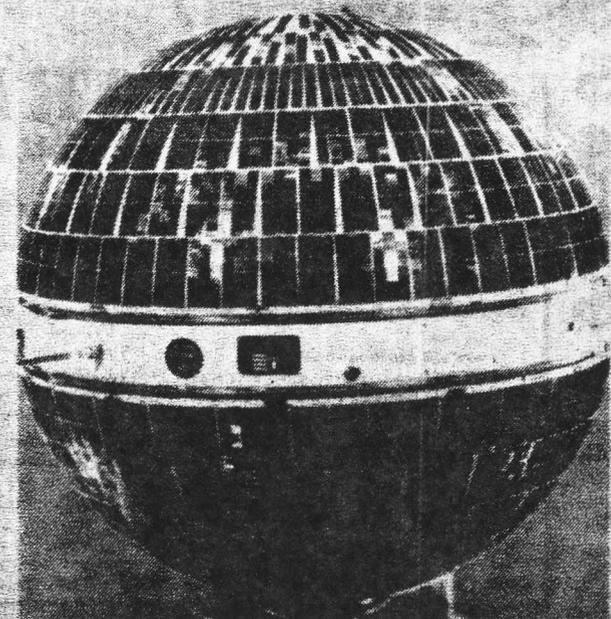
Each time it passed over an earth station, Army engineers loaded the satellite with hundreds of thousands of words in teletypewriter code. In the 14 minutes it stayed within range of either station, Courier picked up or transmitted, or did both simultaneously, 773,693 words of the King James version of the Bible and still had two minutes' time to spare.

During the 18 days its communications system was in operation, Courier figures in the transfer of roughly six million words a day. Both on the ground and aboard the satellite, the telegraphic signals were first recorded on, then transmitted from, magnetic tape.

Nine days after the launching, a major scientific breakthrough was achieved when Courier received photographs from the West Deal earth station and immediately sent them back without any substantial loss in quality. The feat proved the feasibility of storage and relay of all kinds of facsimile messages, including letters, maps, charts and photographs.

Solar-powered, 51-inch sphere

Courier was a 51-inch sphere, the outer surface of which was studded with 19,200 solar cells, also developed by Army scientists here and used in earlier military satellite experiments. When the sun shone on them, the cells generated 62 watts of electricity which



This backup model is an exact duplicate of the Courier.

could be used immediately or stored in batteries.

The principal items of Courier's equipment were five tape recorders, one for handling voice and four for storing the ultrahigh-speed messages. All equipment, including the recorders, four receivers and four transmitters, accounted for 300 pounds of the satellite's weight of 500 pounds.

The satellite's payload was built by Philco Corp., Philadelphia. The special 28-foot, dish-shaped tracking antennas at the earth stations were designed by Radiation Inc., Melbourne, Fla. International Telephone and Telegraph Laboratories, Nutley, built the earth station receiving, transmitting and control equipment.

At apogee, Courier was 658 miles above the earth and at perigee, 501 miles. As the satellite approached an earth station, it was detected by the antenna which automatically locked on and tracked the satellite until it was out of range.

20 years ago at Fort Monmouth

FORT MONMOUTH — Twenty years ago, on Dec. 18, 1958, SCORE, the world's first communications satellite was blasted into orbit from Cape Kennedy aboard an Air Force Atlas rocket.

The spacecraft carried with it the first voice to be heard from outer space, that of President Dwight D. Eisenhower in a taped Christmas message.

Project SCORE's communications equipment, in the satellite itself and on the ground, was produced in the former Army Signal Research and Development Laboratory, here, often by men who did not know how the components they were making were to be used.

Five of the men who worked on the project are here today, four of them still involved in military satellite communications. They are Samuel P. Brown, Atlantic Highlands; Samuel E. Findler, Neptune; Dominic L. LaBanca, West Long Branch; George Strimple, Tinton Falls, and Rudolph C. Riehs, Allenwood.

Brown, who was deputy project manager for SCORE, is technical director of the Army Satellite Communications (SATCOM) Agency. Findler, chief of Tactical and Equipment Techniques Division in the agency's Development Operations Directorate, was at a SCORE listening post in Potterdam, Calif., along with Strimple who is a communications specialist in the same directorate.

LaBanca, chief of the agency's Systems Development Office, was at a listening post in San Antonio, Texas, at the launching.

Riehs, who was a technical consultant on the SCORE project, is acting director of the Communications Systems Center in the Army Communications Research and De-

velopment Center in the early Space Age, the actual launching date, details of the flight, equipment used and the message to be carried were known only to 88 men who had to know. The five men who remain here, were among about a dozen men at Fort Monmouth who were members of the exclusive "88 Club." The others have since retired.

SCORE's success was a matter of some concern for several hours after the launching. The Eisenhower message could not be triggered until the satellite came over the western United States. The message was copied there and then a clear copy was made as the spacecraft passed over Cape Kennedy.

Even getting the message aboard the satellite was a

problem. A prepared tape had been inserted on the launching pad and the satellite was "buttoned up" when the president's tape arrived.

Rather than delay the launching, Brown, who led the Fort Monmouth team at the cape, took a chance that no one would hear the message and transmitted it into the satellite by radio. Fortunately, no amateur radio operator picked it up.

The message itself was brief:

"This is the President of the United States speaking. Through the marvels of scientific advance, my voice is coming to you from a satellite circling in outer space. My message is a simple one. Through this unique means I convey to you and all mankind

America's wish for peace on Earth and good will to men everywhere."

By today's sophisticated standards, SCORE, an acronym for Space Communication by Orbiting Relay Equipment, was a primitive device. But it was the precursor of all the current communications satellites that can relay thousands of times as much information, including television programs and computer data, from continent to continent.

SCORE proved the feasibility of using a satellite as a vehicle for relaying communications directly from point to point; for picking up information at one earth station, storing it and relaying it to another, and for the transmission of messages inserted

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from earth stations.

Research and development in military satellite communications is continuing to day at the SATCOM Agency, a subordinate element of CORADCOM. The agency is the Army project manager organization for satellite communications.

SATCOM Agency engineers design and develop earth terminals for satellite communications and other satellite systems for use of the U.S. armed forces. The agency also conducts test programs for all military satellite communications in both the research and development and operational stages.

Fifty terminals the agency developed are deployed singly or in combination in the U.S. and on sites around the world.



PROJECT SCORE — Samuel P. Brown points to a detail of Project SCORE satellite communications equipment in Army Communications - Electronics Museum exhibit, as he recalls 1958 launching with (left to right) George Strimple, Samuel E. Findler and Dominic L. LaBanca. Display at Fort Monmouth museum marks President Dwight D. Eisenhower's transmitting his Christmas message through the satellite.