

Mr. Roger L Easton, Sr.
Inducted 2009



Mr. Roger L Easton, Sr., was born in 1921 and graduated with a bachelor's degree in physics from - Vermont's Middlebury College. He came to the Naval Research Laboratory (NRL) in Washington, DC, in 1943 to work in the Radio Division on radar beacons and blind-landing systems for aircraft. From 1944 to 1945, he continued working at NRL as an active-duty Navy officer. In 1952, he applied for and obtained an assignment in the laboratory's Rocket-Sonde Branch, which was becoming heavily involved with space-related research.

Mr. Easton collaborated with Milton Rosen in 1955 to write the NRL Project Vanguard proposal for a U.S. scientific satellite as part of the International Geophysical Year. After President Dwight Eisenhower announced selection of Vanguard as the nation's IGY contribution, Mr. Easton supervised construction of the satellite and design of the Minitrack System to determine the satellite's orbit. When Explorer 1, the first U.S. satellite, launched on 31 January 1958, its signals from orbit depended on transistors and a transmitter that Easton's team had developed for Vanguard. The first successful Vanguard launch on 17 March 1958 resulted in locating certain Pacific islands more precisely, testing the first solar cells in space, and measuring external and internal temperature of the satellite.

The Minitrack System that Mr. Easton implemented to receive signals from the Vanguard satellite included fourteen ground installations situated mostly on a north-south "fence" or "picket" line stretching along the east coast of North America and the west coast of South America. When the need to detect "silent" Soviet reconnaissance satellites orbiting over the United States emerged, Mr. Easton designed the Naval Space Surveillance (NAVSPASUR) system, which became fully operational in February 1959. Running from coast to coast across the southern United States along the 33rd parallel, NAVSPASUR included three transmitters and six receivers. He subsequently improved the sensitivity of this surveillance system to allow detection of orbiting objects at geostationary ranges. Mr. Easton's NAVSPASUR not only contributed mightily to

maintenance of the "space catalog" deep inside NORAD's Cheyenne Mountain Complex, it supplied data during the 1970s and 1980s to support scientific research programs sponsored in the United Kingdom by the Optical Tracking Subcommittee of the British National Committee for Space Research. On 1 October 2004, NAVSPASUR officially transferred from the Navy to the Air Force and was renamed the Air Force Space Surveillance System.

Problems with synchronizing the NAVSPASUR transmitters to the receivers led Mr. Easton, by then head of NRL's Space Applications Branch, to originate an experimental satellite program to solve the timing problem. Beginning in 1964, his team developed TIMATION--an acronym derived from "TIME navigATIOn"--satellites, the first of which launched in May 1967. In the 1970s, this effort evolved into a pair of Navigation Technology Satellites (NTS) that tested atomic clocks for the first time in space. Using time measurements from NTS 2, Mr. Easton verified Einstein's theory of relativity. The essence of his invention was to place most of the synchronized clocks in the satellites. This idea resulted in a fully synchronized system that allowed users to find distances to the satellites passively, i.e. without the user having to communicate to the satellites and without interference from millions of other users. When a joint program office for the Global Positioning System (GPS) was established under Air Force Colonel Bradford Parkinson's leadership in 1972, the results from the NRL team's TIMATION and NTS satellite experiments contributed to development of the world's first space-based system for highly accurate, three-dimensional positioning, navigation, and timing worldwide.

Before retiring from NRL in 1980, Mr. Easton accumulated eleven awards from the U.S. Patent Office, including one in 1974 for a "Navigation System Using Satellites and Passive Ranging Techniques" For his outstanding contributions to space surveillance and space-based navigation, Mr. Easton received the Defense Distinguished Civilian Service Award (1960), accepted the Institute of Navigation's Colonel Thomas L. Thurlow Navigation Award (1978), shared in the National Aeronautic Association's Robert J. Collier Trophy (1992), and earned The American Philosophical Society's Magellanic Premium for Navigation (1997). The Naval Space Surveillance Center honored him in 1991 by establishing the Roger L. Easton Science and Engineering Award, and the NRL followed suit in 1995 with creation of the Roger L. Easton Award for Engineering Excellence. On 13 February 2006, President George W. Bush presented Mr. Easton with the nation's highest honor for technological achievement--the National Medal of Technology.