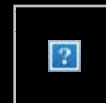


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From: NASANews@hq.nasa.gov
Date: Wed, 28 Jan 1998 16:40:06 -0500 (EST)
Fwd Date: Fri, 30 Jan 1998 02:57:17 -0500
Subject: NASA News: 40th Anniversary of 1st U.S. Satellite

Douglas Isbell
Headquarters, Washington DC
(Phone: 202/358-1753)
January 28, 1998

Mary Beth Murrill
Jet Propulsion Laboratory, Pasadena, CA
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RELEASE: 98-15

SPACE PIONEERS RECALL FIRST U.S. SATELLITE LAUNCH UPON 40TH ANNIVERSARY

Forty years ago this week, a team of scientists and engineers successfully launched Explorer 1, the first U.S. satellite to orbit the Earth. This historic accomplishment marked the nation's debut in the Cold War-era space race and set the stage for the establishment of the civilian space agency that would become NASA.

NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA, was still operated as a research laboratory for the U.S. Army when it was selected in November 1957 to develop the first U.S. satellite, including its science package, its communications system, and the high-speed upper stages for the Army's Redstone rocket that would guide the tiny, 20-pound Explorer 1 into the great unknown. JPL and the Army completed the assignment and successfully launched the satellite in less than three months. JPL and the Army Ballistic Missile Agency, based in Huntsville, AL, joined in firing the satellite toward space from the missile test center at Cape Canaveral, FL, on Jan. 31, 1958.

The scientific experiment onboard, a cosmic ray detector built by Dr. James Van Allen of the University of Iowa, soon returned one of the most important findings of the space program: the discovery of what are now known as the Van Allen Radiation Belts around the Earth. Explorer 1 went on to operate for three months.

Following the Soviet Union's launch of Sputnik on Oct. 4, 1957, "there was a lot of pressure to get a satellite in orbit as quickly as possible," said Dr. William Pickering, then JPL's director and the orchestrator of the Explorer 1 effort at JPL.

The intensive effort was accomplished by a team of experts from U.S. academia and the military, along with top World War II German rocket scientists such as

Dr. Wernher von Braun, who emigrated to the United States in the post-war years to help lead the development of American rocket capabilities. A globally linked telecommunications system developed by JPL tracked Explorer 1 and received its scientific data as it circled Earth. Amateur radio operators around the world were invited to listen in on Explorer 1's radio communications, including one key amateur radio shack operated largely by JPL ham radio operators at the Los Angeles County Sheriff's substation in Temple City, near JPL.

The most difficult technical challenge, said Pickering, "was getting the three rocket stages to work consistently, to get it all to go in the right direction, with no guidance system." Considering the telecommunications and computing capability of the Explorer 1 era versus that available for last summer's Mars Pathfinder mission, Pickering said, "it's astonishing to think what has happened over 40 years."

Van Allen, still an active planetary and space physics researcher, recalled that, the morning after the historic Explorer 1 launch, "a big press conference had been called at the Great Hall of the National Academy of Sciences in Washington, DC, and although it was 1:30 in the morning, there was still a huge crowd of reporters waiting around."

Donna Shirley, Mars Exploration program manager at JPL, was in high school when the news hit that Explorer 1 had been launched. "It was a terrific emotional moment," she recalled. "It seemed like a scary thing that the Soviet Union was so powerful that they could launch Sputnik. When Explorer went up, it was, 'Rah, rah, our team!'" she said. "It seemed to be framed in 'us versus them' rather than focused on the real technical and scientific achievement. But the dawn of the Space Age affected my life a lot."

"I don't think the 'right stuff' to work in the space program has really changed all that much" since the days of Explorer 1, said Shirley. "You don't have cigar-smoking guys with slide rules anymore, but I think the 'right stuff' is still the same: dedication and competence."

In late 1958, JPL was reassigned from the U.S. Army to NASA when the civilian space agency was created, and has helped lead the world's exploration of space with robotic spacecraft since then. Operated as a division of the California Institute of Technology, JPL has sent spacecraft to all of the known planets except Pluto, and this year will launch major astronomy and planetary exploration missions to comets, asteroids and Mars, along with many Earth-observing efforts.

As the size of NASA's space missions takes advantage of miniaturized electronics to shrink to fit the new "faster, better, cheaper" mold, some complete space science instrument packages are about the size of that on tiny Explorer 1, Shirley said.

"Miniaturization is allowing us to shrink down the brains of our spacecraft but still allow us to do more with them than we used to. The challenge now is to shrink the rest of the spacecraft down."

Considering the future of space science, Van Allen observed that "there is no shortage of great ideas on what we'd like to do. 'Faster, better, cheaper' is NASA's mantra, and the recent successful launch of the Lunar Prospector spacecraft is the best example of that. But the Hubble Space Telescope is a good example of big projects that will continue to be conducted. I think we have a very bright future in space science in all areas. There is good public support," he said. "There is virtually no limit to what can be investigated in interplanetary science and astronomy."

-end-

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