

This Bird Has Flown: EarlyBird's Silence Stuns Industry

From triumph to tragedy in just four days: EarthWatch (Longmont, Colorado) is attempting to re-establish contact with its EarlyBird 1 satellite, successfully launched into orbit December 24, 1997, but silent since December 28. The loss of the 3-meter EarlyBird could have a profound effect on the entire high-resolution commercial satellite industry, while raising concerns about the fallibility of satellites.

According to the company, EarthWatch lost communications with EarlyBird because of an "anomalous satellite undervoltage condition." Bob Wientzen, EarthWatch's marketing communications manager, offered no comment as to why the satellite isn't communicating beyond the "anomalous condition" quoted above. After reaching its orbit, the satellite was "put into a controlled tumble," according to Wientzen, rotating very slowly end to end in a "predetermined attitude." Wientzen could not confirm whether or not this rotation affected EarlyBird's power and thus its ability to communicate.

Engineers from EarthWatch and Orbital Science (Dulles, Virginia), which owns EarlyBird's manufacturer, CTA Space Systems (Rockville, Maryland), are "analyzing the satellite's state" by running simulations and establishing a test bed with components from EarlyBird 2. EarthWatch is attempting to issue commands to EarlyBird to turn off its noncritical, power-draining components. Wientzen also confirmed that CTA Space Systems has issued an appeal to amateur radio enthusiasts in the southern hemisphere to look for signals from EarlyBird.

Trying every conceivable option may take several weeks. Wientzen

confirmed that EarlyBird is insured but denied rumors that EarthWatch is attempting to re-establish communications only because it must do so in order to submit a claim. "All efforts are being made toward that end [communication]," said Wientzen. "We have not given up."

Wientzen also denied that anyone at EarthWatch has been laid off or that development of EarlyBird 2 or the 0.82-meter QuickBird 1 has been cancelled, despite some hardy rumors proliferating on the Internet. "Work on QuickBird continues," Wientzen said as this issue went to press.

Wientzen did confirm rumors of former president Douglas Gerull's January 7 resignation, effective January 23. Gerull led EarthWatch during EarlyBird's manufacturing and testing phases and was "designated" to a new position — vice president, product operations — as of October 13, 1997.

Wientzen characterized EarthWatch employees as being "cautiously optimistic." But the emotional rollercoaster has certainly affected the company, its competitors, and avid industry watchers. "Launch day was a tremendously emotional thing," Wientzen recalled. "We were all breathless, we were drinking champagne. Finding out that we'd run into this interruption in communications was very saddening." Vipin Gupta, an image analyst at the Livermore, California, site of Sandia National Labs (Albuquerque, New Mexico) said he was "ecstatic on Christmas Eve" when he heard about EarlyBird's launch. "If it is indeed a failure, obviously it's a setback for the industry."

Brian Webster, Space Imaging EOSAT's (Thornton, Colorado) marketing communications director, echoes an overwhelming sentiment: "This is a tough loss for the entire industry. It reflects on every company's ability to build, launch, and manage this kind of satellite imaging operation."

Joanne Gabrynowicz, a professor of remote sensing law and policy at the University of North Dakota (Grand Forks), believes that EarlyBird's difficulties demonstrate the difficulty of establishing a space-segment-focused remote sensing industry. Past failures weigh heavily on vendors' and potential customers' minds. Barry Haack, a geography professor at George Mason University (Washington, D.C.) is disturbed by "the great failure rate in the last few years, dating back to Landsat 6, of spaceborne remote sensing satellites. There was also the loss of one of NASA's small satellites, Lewis, on August 26, 1997, and the loss of SPOT 3 while in orbit [due to a fatal power surge in November 1996]." Gabrynowicz reflected that "there's still a lot we need to know to make a remote sensing company viable as a commercial activity."

EarthWatch insists that its hopes are not diminishing. Should the satellite respond, EarthWatch plans to "evaluate the satellite operating state (including the anomalous undervoltage event)" before reinitialization.

— Charmaine Cooper

Landmine Detector Makes Life-Saving Field Forays

A new minefield detection system developed for the U.S. Marines by ERIM International (Ann Arbor, Michigan) and the Naval Surface Warfare Center Dahlgren Division's Coastal Systems Station (CSS) could make landmines less of a wartime threat.

The detection system, housed in an unmanned vehicle, could reduce the death rate associated with amphibious warfare. According to Marine Lieutenant Colonel Dennis Verzera, "We can afford to lose machines, but it's tough to lose a soldier."

The new system is designed to sense and map minefields on the shoreline and inland, although it

has also passed detection tests on interior fields. Developed as part of the Advanced Concept Technology Demonstration program, the Coastal Battlefield Reconnaissance and Analysis (COBRA) system consists of commercially available multispectral video cameras deployed in a Pioneer unmanned aerial vehicle (UAV), linked up to a data-processing groundstation.

The system has one forward-looking camera, which searches for obstacles on the ground and provides location information, while two downward-looking multispectral cameras collect imagery of the potential landing zone. Jim Wright, ERIM's lead COBRA engineer, explained that spinning filters in the multispectral camera will enable the computer to detect various contrasts between the mines and the environments in which they've been planted. Rapidly flashing video imagery gathers relevant information; the system can even cue an operator for further analysis of an area. The information is gathered and recorded on-board the Pioneer UAV; a track file of the UAV flight path, indicating the position of minefields, is transmitted in real time back to the COBRA groundstation.

Engineers built COBRA in an approximately 1-square foot box weighing less than 100 pounds in an effort to meet the size, weight, and vibration requirements of the Pioneer UAV.

The system completed developmental testing and operational assessment and was used last summer in the Joint Countermine Advanced Concept Technology Demonstration, Demo 1, at Camp Lejeune, North Carolina. COBRA is scheduled to begin serving as one of the tools necessary for battlefield readiness in 2003.

— Sarah Swanson