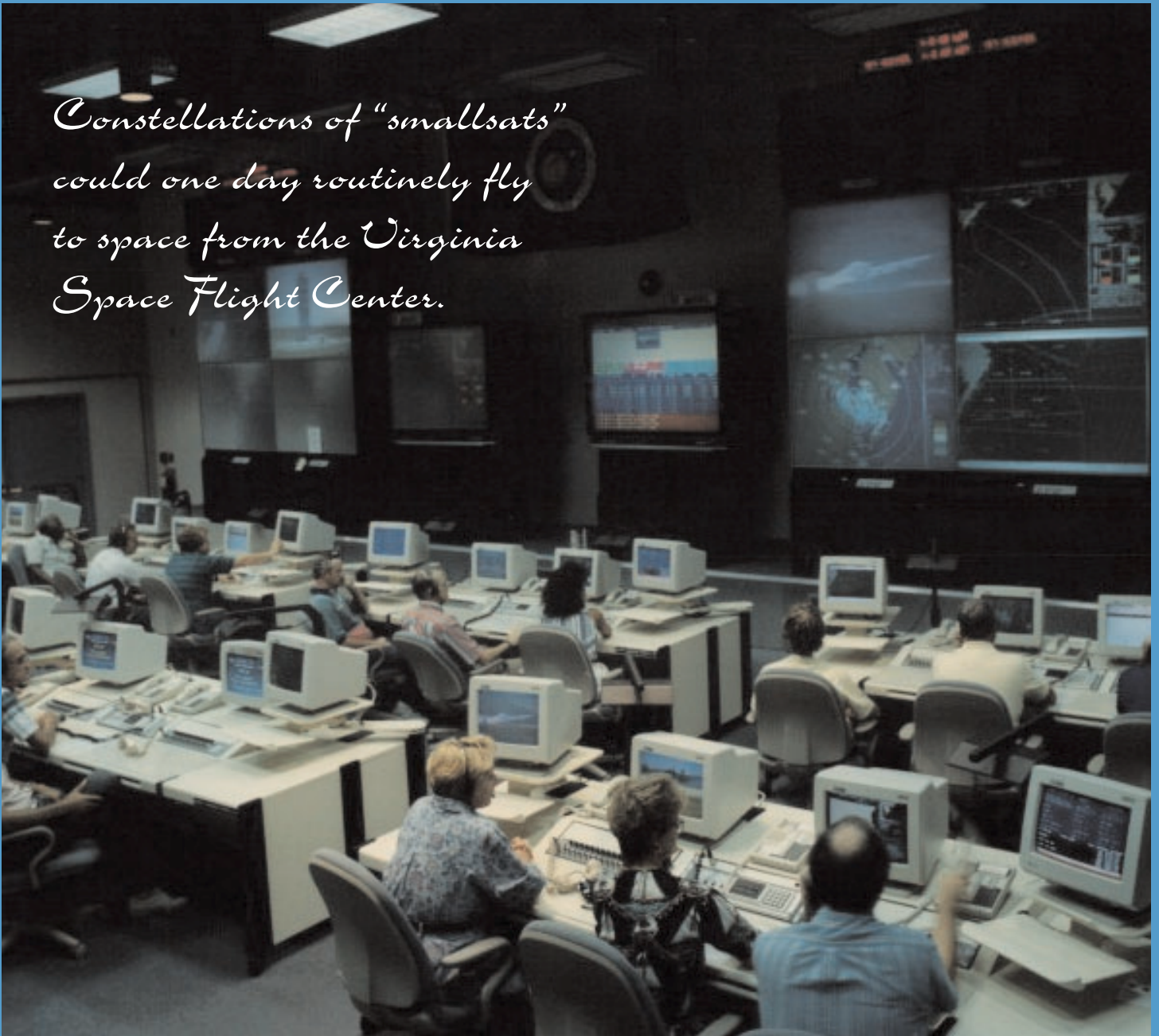

OLD DOMINION'S ENTERPRISE CENTERS
Virginia Space Flight Center


*Constellations of "smallsats"
could one day routinely fly
to space from the Virginia
Space Flight Center.*



*Staff on NASA Wallops Range Control Center monitor rocket launches, conduct initial flight tracking and oversee flight safety.
Photo courtesy of Virginia Space Flight Center.*

State's First Commercial Space Flight Center Lifts Off

BY JAMES SCHULTZ

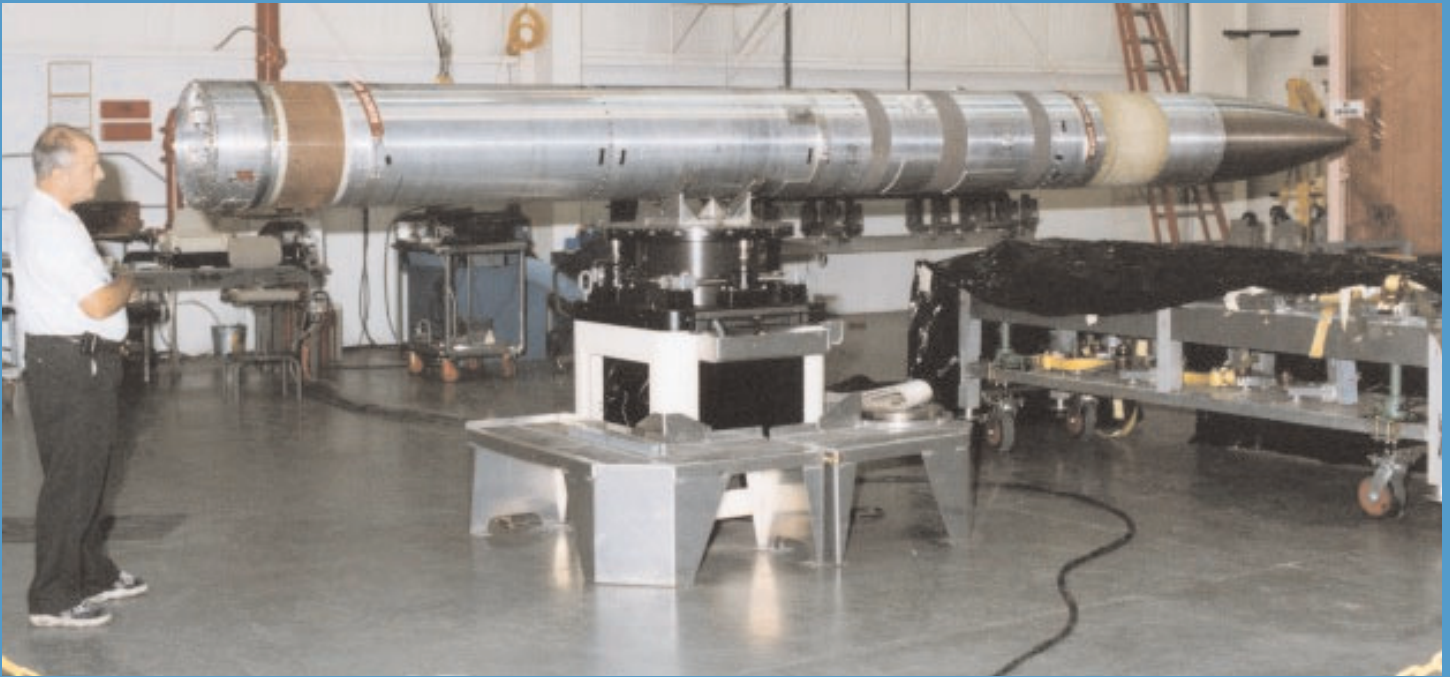
orbiting satellites were a science fiction writer's dream and rockets the preoccupation of backyard hobbyists or the occasional science enthusiast. No human had ever ventured beyond Earth's thin bubble of air. Notions of space flight seemed at best a distant fantasy.

That didn't stop a hardy group of rocket engineers from persevering through mosquito bites and launch failures in the late 1940s and through the 1950s at Wallops Flight Facility on Virginia's Eastern Shore. Sometimes living out of tents pitched yards from the Atlantic, their goal was straightforward: the creation of America's manned space program. Their success and reward came with the Mercury and Gemini missions, followed by a series of spectacular Apollo moon landings.

Thirty years after Neil Armstrong landed on the moon, space fancy is once again metamorphosing into space fact. Wallops, a NASA-run facility and one of only three operational rocket-launch complexes in the continental United States, is host to the Old Dominion University-affiliated Virginia Space Flight Center (VSFC), the state's first commercial spaceport. While no humans will be boosted from the Eastern Shore site in the foreseeable future, a 21st-century industry might. Constellations of remote-sensing and telecommunications "smallsats," lightweight successors to heavier, current satellite generations could one day routinely fly to space from the space center.

This past April, the VSFC took literal shape with the completion of a launch pad, flame deflector and launch mount. The pad contains 19,000 square feet of reinforced concrete deck space supported by almost 200 concrete pilings, each 85 feet in length. The pad, deflector, mount and a planned service tower are designed to eventually accommodate 150-foot-tall space vehicles weighing up to 500,000 pounds. Including feasibility, environmental and design studies, the entire facility was built for \$3 million.

"You're not an airport until you have a runway," says Billie Reed, an assistant professor of engineering management and executive director of the Virginia Commercial Space Flight Authority, which oversees the center. "You're not a spaceport until you have infrastructure — a launch pad, processing buildings, places where you can bring in and work on your rockets and satellites. That's what makes you 'real' in the eyes of funders."



In one of several pre-flight steps, a sounding rocket is balanced to ensure accuracy in the experiments it carries.
Photo courtesy of Virginia Space Flight Center.

One-Stop Shopping

The center and its Space Flight Authority parent were born as the result of studies begun in 1992 by Old Dominion's Department of Engineering Management. By 1995, and thanks to financial support from the university and Virginia's Center for Innovative Technology, the Space Flight Authority was formally organized and began laying the groundwork for facilities design and environmental permits. Agreements with government and institutional partners, including NASA, were negotiated as well.

This past May, the authority's board of directors voted to approve an agreement with its first private-sector partner, DynCorp, to manage and market the VSFC's space-launch business activities. As part of the deal, the company will invest \$4.5 million toward the construction of a \$9 million launch tower and payload-processing facility slated to be built within the next two years. DynCorp subsidiary DynSpace will have official responsibility for the center at Wallops.

The VSFC bills itself as a one-stop shop for commercial space customers, offering a full complement of launch-range services including safety monitoring; telemetry; radar tracking; command, control and communications; and data retrieval and processing. Once the second phase of construction ends with the building of the service tower and a six-story payload and vehicle-processing facility, the center will

be able to provide a wide array of additional services related to satellite design, assembly and launch.

A key competitive advantage is cost. Excluding rocket-related outlays, companies should find a VSFC-organized launch roughly 65 percent cheaper than what is now available at sites in either California and Florida: approximately \$750,000 versus \$2.2 million. The center also touts its "schedule friendly" space access, meaning that commercial, government and academic users won't have to worry that their launches will be delayed or canceled because of military or space shuttle missions.

Build It And Will They Come?

Despite the center's promise, reeling in customers eager to launch on a regular basis remains the main issue and challenge. Economic impact projections indicate a strong and growing market for satellite launches. So where are the customers? Hedging their bets for the time being, Reed says.

Space remains too risky for many. A launch gone bad can literally send up in smoke months of hard work and millions of dollars of investment. Even though insurance is available, there is no effective means of compensating businesses for the hundreds or thousands of staff hours spent

developing missions and building equipment.

What Reed believes is needed is a pioneer or two to demonstrate that space flight from the VSFC complex is not only cost-effective but reliable. He says the center is close to concluding agreements with one or more customers who may be ready to fly payload by the second or third quarter of 2000. Another potential, enormous opportunity is VentureStar, a single-stage-to-orbit-and-back replacement for the space shuttle. VSFC is among the dozen-plus candidate sites hoping to become home to the \$5 billion project, which could create as many as 4,000 jobs by 2004.

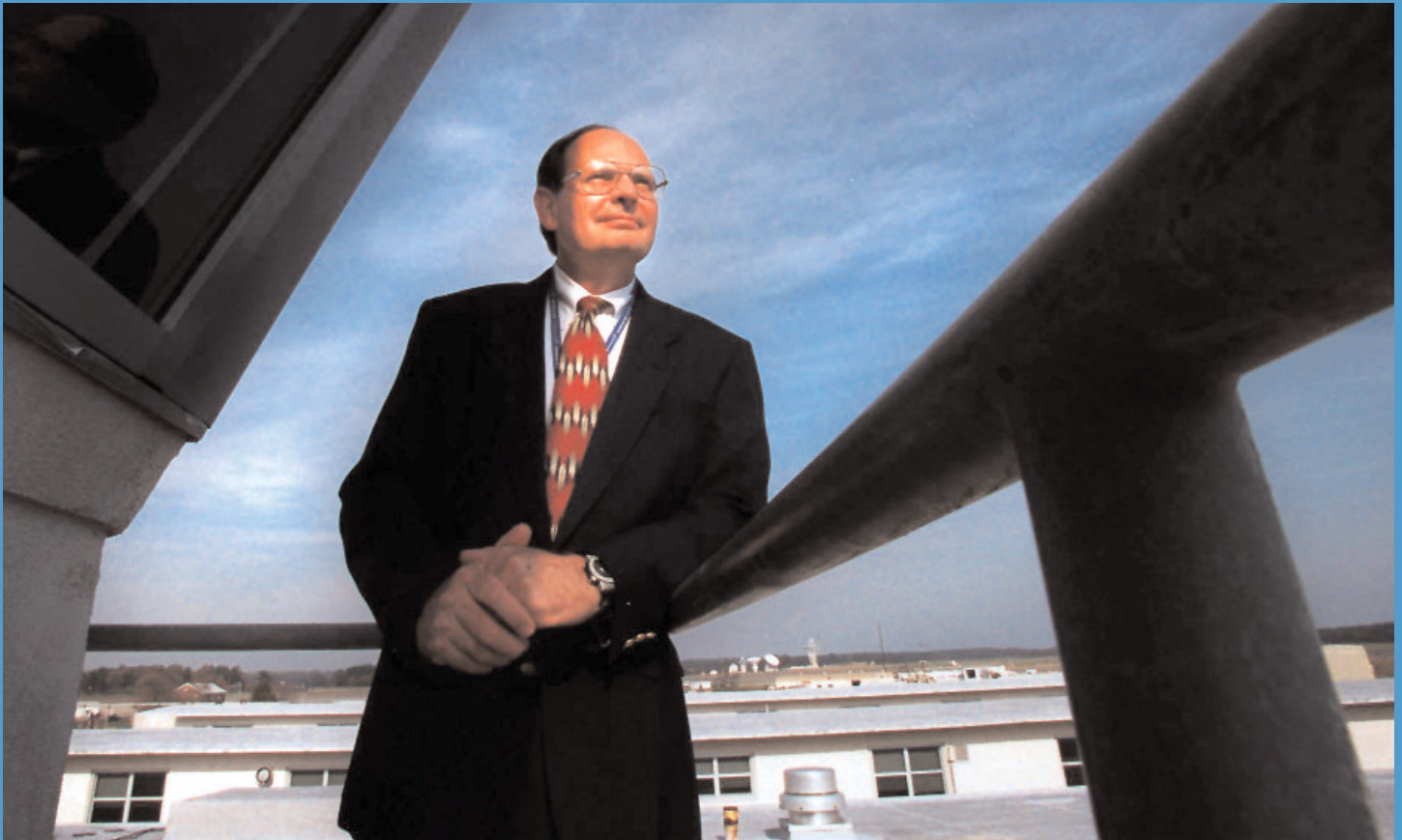
In the meantime, VSFC is doing what it can to nurture small rocket companies, any one of which could create

The Center will provide a wide array of services related to satellite design, assembly and launch.

low-cost alternatives to the more costly stable of rockets currently flying. "There are only three things that drive a launch: cost, cost and cost," Reed contends. "The only way to break this cycle of high cost is with new technologies or new vehicles. That's why we're helping some of these entre-

preneurs pro bono, as consultants to point out what design elements are essential."

Conservative estimates are that, within the coming decade, industry and government will need to launch more than 1,200 low-Earth-orbit smallsats. Reed believes that is precisely the kind of business VSFC will attract and fulfill. "We're in business for the smallsats. That's our mission and that's our market."



Space Flight Authority executive director Billie Reed anticipates that new technologies and new vehicles will reduce launch costs.