Tunnel Soars Into New Era

BY JAMES SCHULTZ

Like the close approach of a low-flying helicopter, a low-throated rumble begins to build in Jim Cross' office, rattling ductwork and light fixtures. For some, the noise would be enough to trigger a pounding headache. But as the Old Dominion-operated Langley Full-Scale Tunnel, or LFST, begins to push air through its enormous 30-by-60-foot test section, the continued clattering relaxes Cross. Without it, he and his small group of experts wouldn't be in business.

Cross, dean of the University's College of Engineering and Technology from 1984 until 1997, is the architect of an agreement that allows Old Dominion to operate the NASA-owned tunnel for at least the next 10 years and likely beyond. Cross now manages a facility that, officially closed by NASA's Langley Research Center in October 1995, has found a second life as a self-supporting test bed for race cars and next-generation trucks. Business is so good that the final payment on a $400,000 loan that Cross borrowed from the University's Research Foundation was paid in full this October. Revenues derived from tunnel tests are expected to rise nearly 40 percent, to $940,000 in the current fiscal year, from $680,000 in FY 2000.

"We took an old facility that had been stripped and whose replacement value is estimated at $60 million and built it into a viable commercial enterprise," he says. "We've done it with three faculty, two full-time technicians and myself. It was a calculated risk. There were some who thought we were doomed to failure. Now they're astounded we're able to actually operate the place and make a little money."

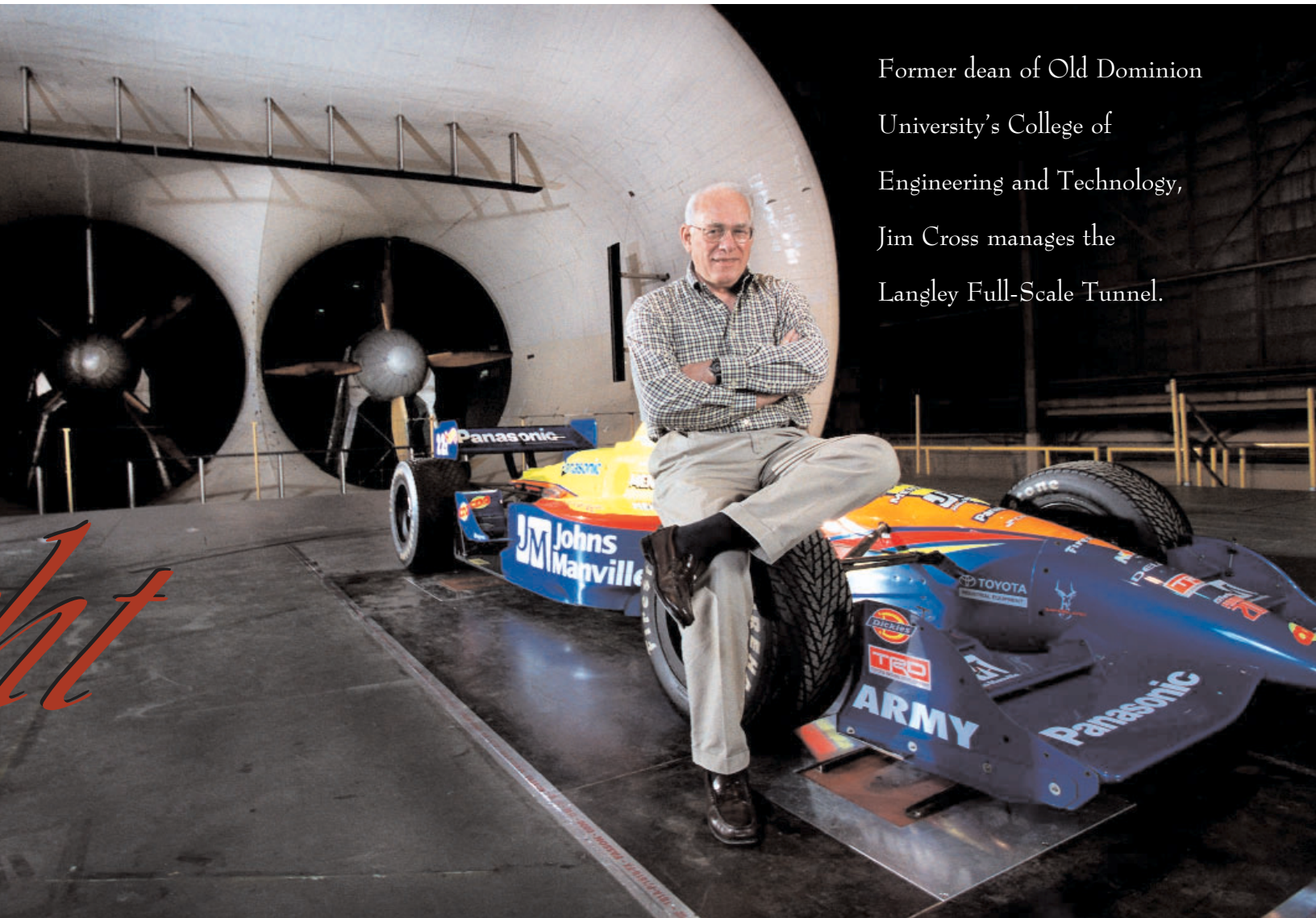
The money is coming from national race car teams looking to evaluate their proprietary designs at an independent site where innovation can be protected from competitors. In part, the University tunnel's success derives from its availability. Before the LFST commenced operation in February 1998, teams were forced to use one of two wind tunnels, in Georgia or Michigan. Both also were used to test American automakers' designs and so were booked only on a space-available basis.

Also receiving tunnel time will be, first, the components and then a full-scale reproduction of the original airplane flown by the Wright brothers in 1903. Plans call for the complete Wright Flyer duplicate to be tested in the LFST in February 2003, prior to a series of tests flights in the original first-flight venue of Kitty Hawk, North Carolina.

The tunnel is the second-largest such facility in the United States and one of the four largest in the world. Within the LFST'S commodious confines, engineers are able to run sophisticated studies, using a combination of advanced computer systems and sensors that track airflow over vehicle bodies and components, record pressures and temperature, and assay acoustic properties.

Bringing the tunnel back up to speed after its 1995 closure was laborious. A vast array of instrumentation and supporting equipment had to be replaced. But for Cross, a Korean War veteran, former fighter pilot and self-described admirer of "things that go fast," the effort proved as much satisfaction as challenge. From the beginning, he says, he saw the reborn tunnel's niche. Its subsequent success benefits Old Dominion in that monies from tunnel studies can be funneled back to support a variety of engineering research conducted by the University.

"Our tunnel refurbishment has brought a lot of national and international attention for the University," Cross says. "But I see the biggest accomplishment as supporting student and faculty research in the College of Engineering and Technology. There are opportunities here that you really can't find too many other places. That we're able to generate revenue above and beyond expenses to support that research — that's pretty gratifying."



Former dean of Old Dominion University's College of Engineering and Technology, Jim Cross manages the Langley Full-Scale Tunnel.