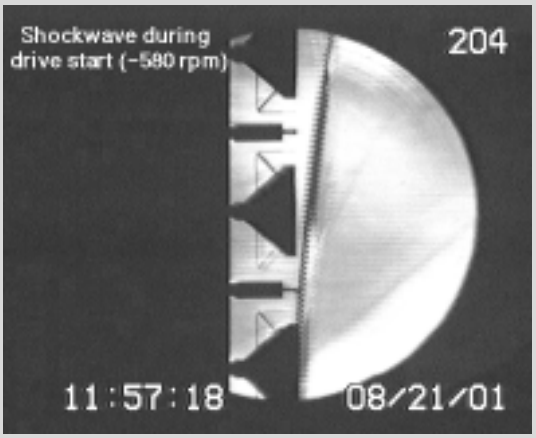
FO OUTLOOK
NASA AMES RESEARCH CENTER

Information for the NASA Ames Aeronautical Test and Simulation Community November 2001

9-BY-7 COMPLETES IST, GETS READY FOR CUSTOMER TESTS



Schlieren photo of supersonic shockwave passing through the test section

By James Strong

The 9-by-7-foot Supersonic Wind Tunnel is about to reopen for business. The wind tunnel, following an extensive modernization, is nearing the end of its final tests and checks before going back online for customer testing in December.

NASA Ames already has received inquiries about tunnel time in the 9-by-7, where customers can expect greater productivity and higher-quality data thanks to automation and other major improvements.

The scheduled 20 weeks of the 9-by-7's integrated systems test (IST) started the week of June 4 with Phase 1. This phase primarily involved system safety checks such as E-stops, comp stops, hard wired system, kirk keys and tunnel entry procedures. Control system tuning was also a major activity during this phase. This phase was entirely wind off.

The second phase officially started with successful motor bumps on June

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STAR TEST DATA MAY HELP DEVELOP QUIETER AIRCRAFT

By Catalina Ortiz

Data from a just-completed test at NASA Ames' National Full-Scale Aerodynamics Complex could help develop the quieter aircraft that the airline industry needs. Reducing commercial aircraft noise is an increasingly important technical challenge as well as an economic and political objective for airports and manufacturers, particularly in the face of stricter regulations that are planned.

The Subsonic Transport Aeroacoustic Research (STAR) project, which tested a large-scale half-span model of the Boeing 777 airliner, examined for the first time different combinations of possible design changes intended to reduce airframe noise during takeoff and landing.

The test, conducted at the NFAC's 40-by-80-foot Wind Tunnel, also illustrated the value of the facility in conducting acoustic research after its recent modernization. In addition, the STAR project has further demonstrated the ability of Ames' personnel to successfully conduct such important tests.

"This test was a huge undertaking. From designing, building, and instrumenting the model to overall test planning, we had many people working very hard to get the job done," says test manager Tom Arledge. "The end result was a successful test that is directly applicable to what industry is working on."

Aircraft make the most noise during takeoff and landing, when their landing gear, wing flaps and slats are extended; the complex shapes of those devices create noise-generating turbulence. This is called airframe noise, as opposed to propulsion noise that is caused by the engines. Engineers are looking for ways to modify these airframe features to reduce noise while ensuring that the aircraft operates safely.

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Serving the Aerospace Industry and Research Community
Wind Tunnel Operations Division
NASA Ames Research Center

FO STAFF OVERCOMES CHALLENGES OF AIM-9X TEST

A recent test of the AIM-9X Sidewinder missile in the 11-by-11-foot Transonic Wind Tunnel posed a difficult combination of challenges, not least of which was an exceptionally tight schedule. But FO Division adroitly adapted, modifying the wind tunnel's data system and designing new hardware to run the test successfully.

AIM-9X model mounted on the kick sting in the 11-by-11-foot Transonic Wind Tunnel

Raytheon Co. needed to test its AIM-9X missile quickly, before a scheduled production run. The company was looking for the source of an aerodynamic anomaly it had discovered during flight testing. The Ames test, conducted this summer, explored the stability and control of the air-to-air missile throughout its transonic operating range.

It also was the first time in at least a decade that a missile had been tested at the Unitary Plan Wind Tunnel, which includes the 11-by-11-foot TWT. The 11-by-11-foot's modern data system is designed to provide standard results for aircraft tests. However, engineers testing missiles need to study data gathered and presented according to different standard methods. So the wind tunnel staff adapted the data system to provide the correct information in a nonstandard way – a task that required much effort both in planning and execution.

"A lot of people did a lot of work to make the data system give the customer the data they wanted," says Doug Peña, test manager for the AIM-9X.

The 38-percent scale model of the AIM-9X was 45 inches long and had a diameter of 1.9 inches. It was mounted on an internal strain-gauge balance, which in turn was mounted on the end of a sting mount. But the hardware wasn't readily available, so FO Division had to design a new sting mount – another difficult job.

Because the model extended back over a slim 1.5-inch diameter sting and because the model was to be mounted on an internal balance, engineers knew the model would deflect considerably during the test. The model, however, could not touch the sting or else the test results would be invalid. Yet the gap between them was about only one-eighth of an inch. The challenge was to design and build a sting and put the whole assembly together so hardware and model would not touch under any test condition.

Another complication was a short amount of time wind tunnel personnel had to prepare the model and conduct the test. The model arrived on the Friday before the Monday the test was scheduled to start. There wasn't time to take the model to the prep room at the 12-foot Pressure Wind Tunnel to accomplish the standard one-to-two week preparation. That had to be done at the 11-by-11-foot – a less efficient way of doing the same procedure.

"These problems were the sort of things we're used to finding a way around, but usually we have more time," Peña says. But once the test began, it yielded the information Raytheon was looking for.

"We were able to acquire data with approximately 1-degree fidelity, and the customer immediately saw the anomaly," Peña said. "They were happy with the data … and gave us a very high rating."

Peña praised the entire AIM-9X team, singling out Harold Reimer, who designed the new sting for the AIM-9X, as well as Max Amaya, Alan Boone and Pat Whittaker, who were instrumental in adapting the data system.

The AIM-9X test acquired data to understand missile-roll characteristics over a large angle-of-attack range. A 7.5-degree offset roll mechanism was installed on the kick sting's blade section, allowing the study of missile aerodynamics at angles of attack up to 46 degrees and a full 360-degree of missile roll range.

FILM CREW SHOOTS IMAX FOOTAGE AT THE NFAC

Crew from SK Films shoots the LRTA in the 80-by-120-foot Wind Tunnel

The National Full-scale Aerodynamics Complex isn't just the world's largest wind tunnel. It's also the most photogenic.

A film crew spent four days at the NFAC this summer, gathering footage for an IMAX movie to be released by the National Air and Space Museum. The crew, from SK Films of Toronto, filmed the Large Rotor Test Apparatus operating in the NFAC's 80-by-120-foot Wind Tunnel and a small-scale rotor model installed in the 40-by-80-foot Wind Tunnel.

The movie, to be called "Straight Up," will look at the advanced technology of vertical flight. It will be the latest in a series of large-format films by the National Air and Space Museum, which is part of the Smithsonian Institution. "Straight Up" is scheduled for release in October 2002.

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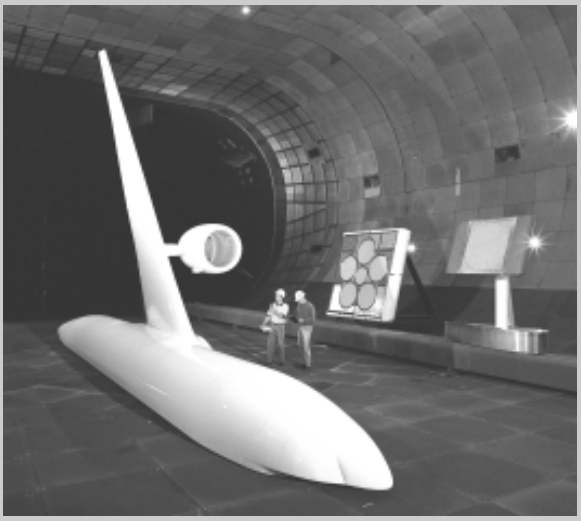
STAR TEST IN 40-BY-80

(Continued from page 1)

The STAR project, funded by NASA, involved the testing of a 26-percent scale model of the left side of a Boeing 777. It accurately simulated landing gear and other moveable parts such as flaps and slats, just like a real airliner. Ames built the model to the exceptionally tight tolerance of 0.03 of an inch; tolerances for a model this size typically are at best 0.125 to 0.25 of an inch.

"Our shops did an amazing job," Arledge says. "When Boeing was here for part of the test, one of the things they checked was the accuracy of the model and they were impressed."

The model was installed on the test section floor with the wing rising vertically over 26 feet. Two arrays of microphones – one fixed and another that moved along the model's length – captured the noise generated during testing. The large, fixed array took a detailed, overall noise picture while the mobile array allowed researchers to put together a three-dimensional picture of the noise. This combination of arrays identified noise sources and showed how the noise propagated away from the model.



Test manager Tom Arledge and engineering lead Kevin James examine the STAR model

But measuring sound was only part of the test. To verify that the noise they detected was applicable to a real Boeing 777, engineers had to validate the model's aerodynamics. So during the test they took force and moment data with the tunnel's external balance, static pressure data from over 2,000 surface pressure ports, and dynamic pressure data at 48 key locations.

Engineers tested different combinations of acoustic modifications, both redesigns of existing features and potential add-ons. "We did find some acoustic treatments that worked and some that didn't – which was what the test was all about. We did meet our goals for noise reduction," Arledge says.

The STAR project, which began in mid-August and concluded in October, was timely. The International Civil Aviation Organization – a United Nations agency that sets standards for civil aviation – is considering new rules requiring a 10-decibel reduction in noise from current levels. The so-called Chapter 4 standards would apply to new aircraft designs starting in 2006.

9-BY-7 GOING BACK IN BUSINESS AFTER MODERNIZATION

(Continued from page 1)

28. The facility was slowly brought up to speed while engineers monitored the many control systems and IST-related instrument systems. The tunnel reached supersonic speed a month later. A few weeks after that, we defined a permanent drive speed setting of 685 rpm. In October we were well into pressure system tuning and supervisory control debugging.

The IST concluded at the end of October with tunnel flow calibration checks occurring the following two weeks. Tunnel validation testing will follow through the end of November with the installation and running of the 2.7% Ref-H supersonic transport model. This model belongs to Ames and was last run in this facility in 1994. The major objectives of this test are to verify the model-testing capability in the facility, compare data from premodernization tests, and train and practice in 9-by-7 model and data quality specific procedures.

Typical of this type of complex technical effort, several developments kept us from running temporarily or slowed our progress. They included: tests in the 11-by-11-foot Transonic Wind Tunnel, which made the drive unavailable to the 9-by-7; disassembly and reassembly of the main-drive coupling because of galling; and the need to extend the travel capability of a proximity probe.

The IST also lost some time when crews cleaned pigeon droppings from the wind tunnel and hung bird-exclusion net and when Ames' wildlife technician removed a skunk that wandered into an aftercooler pit. Work also was suspended for a couple of days following the attack on the Pentagon and World Trade Center.

The "new" 9-by-7 wind tunnel can be expected to benefit customers and testing with the following improvements providing better productivity and higher quality data:

- Automated tunnel conditions and model attitude control
- Fewer air and water leaks into the circuit, leading to better humidity control and less purge time
- A new heat exchanger providing cooler temperature and thus less power for a given Reynolds number

A lot of hard work and dedication by many people have gone into bringing this facility back on-line. The 9-by-7-Foot SWT and 11-by-11-foot TWT can provide our user community with high-quality data over a significant Mach number range. They represent a significant asset for the aerospace community.

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PRIMED FOR THE FUTURE: THE UNITARY AT 45

By Catalina Ortiz

Forty-five years ago, Ames Research Center began operating a unique set of wind tunnels, one its conceivers judged would help the nation become the leader in aeronautical research. The Unitary Plan Wind Tunnel did not disappoint.

The UPWT has been the most heavily used wind tunnel in the United States. The most important military aircraft and commercial airliners were tested there, as were all of America's manned spacecraft. The Unitary Plan Wind Tunnel was declared a national historical monument in 1990 to recognize that fact.

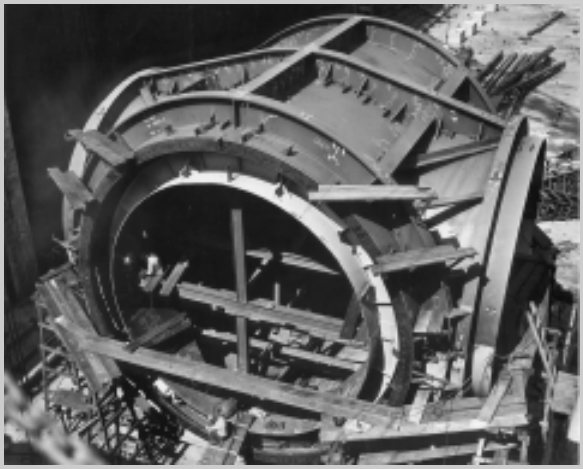
"There has been no facility that has made so significant a contribution since its inception and construction," says Dan Bufton, deputy chief of Ames' Wind Tunnel Operations Division. "Both commercial and military aviation, as well as manned space exploration, have been enhanced because of this facility."

After four decades of operation, the Unitary Plan Wind Tunnel faces new challenges. Changes in world politics and the aerospace industry have reduced overall demand for wind tunnel testing – and increased competition among U.S. facilities for tests.

But the Unitary Plan Wind Tunnel's ability to provide high-quality data at high productivity levels – enhanced by an $85 million renovation – enables the 45-year-old facility to remain a leader in research and production testing for next-generation commercial and military aircraft.

The UPWT's Strategic and Commercial Role

The UPWT grew out of the United States' determination to produce supersonic aircraft and advanced weapons-delivery systems after World War II. The National Advisory Committee on Aeronautics – the forerunner of NASA – and the armed services realized that America's existing wind tunnels would not be adequate for future supersonic research.



This 250-ton valve is one of two built into the UPWT to direct the flow of air to either the 9-by-7-foot or the 8-by-7-foot supersonic wind tunnel

In 1950, Congress gave final approval to the Unitary Plan Act, which authorized $75 million for the construction of transonic, supersonic, and hypersonic wind tunnels throughout the nation. The term "unitary" referred to the combined research needs of the NACA, the armed forces, the aircraft industry, and universities.

Ames' Unitary Plan Wind Tunnel was the largest and most complex of the new NASA wind tunnels. Its design was unique, combining three test sections powered by a common set of motors. Construction began in 1951 and was completed in 1955 at a cost of $27 million. The 9-by-7-foot and 8-by-7-foot supersonic wind tunnels began operation in 1956; the 11-by-11-foot Transonic Wind Tunnel went online the following year.

A crew prepares to unload a rotor from a rail flat car during construction in 1955. The rotor was part of the compressor driving the 9-by-7-foot and 8-by-7-foot supersonic wind tunnels.

Military, commercial and space tests kept the UPWT operating round-the-clock for nearly 40 years, until its recent modernization. Boeing Co. tested all its commercial aircraft there; McDonnell Douglas tested the DC-8 through DC-12. Military tests spanned a wide range of aircraft, form the C-5A transport to the B-1 bomber. The Unitary Plan Wind Tunnel also tested the Mercury, Gemini and Apollo capsules as well as the Space Shuttle.

Modernization and Improved Productivity

After decades of continuous service, Ames' Unitary Plan Wind Tunnel was due for a makeover to improve its performance, capability, productivity and reliability. A plan was developed in 1988; the work began in phases in 1993 and was completed in the fall of 2001.

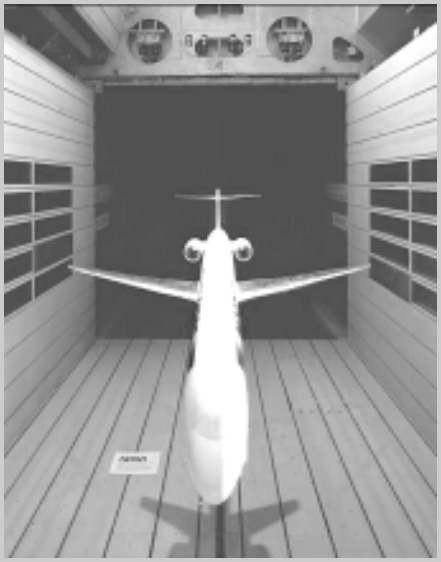
"Our customers said we had to reduce costs and open our schedules to get in faster. Modernization was critical if we were to meet our customers' requirements and demands," says Dan Petroff, chief engineer of the Wind Tunnel Operations Division.

The UPWT modernization has been thorough. Equipment throughout the facility was replaced or reconditioned, including the 150-ton motors, which were rewound and overhauled. Each

PRIMED FOR THE FUTURE: THE UNITARY AT 45

wind tunnel got a new control room. The 11-by-11-foot TWT's airflow was improved. The 9-by-7-foot SWT got a new aftercooler and model-support system. Operations throughout the facility were automated.

The 11-by-11-foot TWT reopened for business in 2000. Since then, it has tested the Boeing 777, the F/A-18E/F Super Hornet strike fighter, and the AIM-9X Sidewinder air-to-air missile *(see article on page 2)*. The 9-by-7-Foot SWT is nearing the end of its post-modernization tests and reviews *(see article on page 1)* and should go back online for customer testing in December.



1990 test of the MD-90 in the 11-by-11-foot Transonic Wind Tunnel

The control room of the 8-by-7-foot SWT was rebuilt, but further modernization was put on hold because there's little demand for testing at the high Mach numbers – 2.5-3.5 – the tunnel can produce. The 11-by-11-foot TWT and 9-by-7-foot SWT together have a Mach number range of 0.2-2.6.

Suitability for the new market

Despite its renovation, the UPWT at 45 faces challenges never imagined when it was built.

"There is more wind tunnel testing capability than there are programs – military and civilian aircraft – available to be tested. That puts us in a competitive market that these facilities weren't designed for and we're just learning to adapt to," Bufton says.

Demand has fallen for several reasons, notably the fall of the former Soviet Union and the end of the Cold War. Another has been the decision of Boeing Co., which merged with McDonnell Douglas in 1997, to refine its existing aircraft rather than design new ones that would require new series of wind tunnel tests.

The Unitary Plan Wind Tunnel's competitors are at NASA Langley Research Center in Virginia, Arnold Engineering and Development Command in Tennessee, and NASA Glenn Research Center in Ohio. But the UPWT is exceptionally well suited to compete in this new market, thanks to a combination of features.

The UPWT offers customers high Reynolds numbers, a large Mach range, and fairly large test sections, Petroff says. The

X-15 test in the 11-by-11-foot Transonic Wind Tunnel

Unitary's wind tunnels can do calibration and validation as well as development – unlike other tunnels that specialize in one of those areas, Bufton says. In addition, the improved data quality and productivity resulting from modernization enhances the facility's attractiveness to potential customers.

"Our advantage is that we're cheaper and faster … because we operate at greater productivity. We can do an entire program faster and gather data faster," Petroff says.

Both tunnels of the Unitary Plan Wind Tunnel promise to be busy in the coming year. The division has received inquiries for testing a range of both military and commercial aircraft, Bufton says.

"The (modernization) project took a great deal of time and cost a great deal of money," he adds. "But as we evolve our proficiency in using this new capability, the Unitary has really emerged to be all we hoped it to be. It is a very competent facility – and it will only get better."

1963 test of the Apollo Launch Escape System in the 9-by-7-foot Supersonic Wind Tunnel

FO DIVISION PANCAKE BREAKFAST

FO Division employees enjoyed a pancake breakfast at the 9-by-7-foot Supersonic Wind Tunnel. Mike George, Phil Stich, Joe Cruz, Leroy Wilkinson and Leroy's wife, Lanelle, prepared the flapjacks. Leroy, who organized the breakfast, estimates that employees ate more than 500 pancakes. The breakfast, held in late September, celebrated the nearing completion of the wind tunnel's IST.

IMAX FILMING

(Continued from page 2)

NFAC has been featured in several other films and television programs, including "National Geographic Explorer" and the public television science series "Nova." It was even the backdrop for a fashion shoot for the men's magazine GQ.

In the 80-by-120-Foot Wind Tunnel, SK Films shot the UH-60 Black Hawk helicopter rotor while it was spinning as well as mechanics and instrumentation technicians working on the rotor hub. The crew also took footage of the opening of the exhaust louvers and the fan drive start sequence from inside the tunnel circuit.

In the 40-by-80-Foot Wind tunnel, the crew filmed a Comanche helicopter display model and personel at work. SK Films also shot a remotely controlled helicopter being flown in the settling chamber, which will give viewers an idea of the chamber's great size.

The crew from SK Films is expected to return later this year to shoot footage of a remotely controlled model of the Yamaha RMAX helicopter in the NFAC.

ANNUAL FO/ASF/SVERDRUP GOLF TOURNAMENT

By Philip Stich

The third annual FO/ASF/Sverdrup hackers and duffers convention (golf tournament) was held at the Shoreline Golf Links in Mountain View on July 25, 2001. With the wind blowing in from the bay at a vigorous clip and the most confounding set of scramble rules imaginable, there were more than enough reasons for scores to skyrocket.

Our foursome of underachievers was feeling pretty bad about our 4-over-par score of 76, until we hit the clubhouse and found that we were tied for the lead with two other equally untalented teams. There is little doubt that course scoring conditions improved as the day wore on – evidenced by the fact that the final two teams on the course had the best scores of even par 72s. Their victory was somewhat spoiled by the other eight teams who had systematically eaten all of the hors d'oeuvres while waiting for these last two teams to finish the round.

In a mathematical sleight of hand by tournament director Tom Bridge, the team of Ben Deguzman, Bob Olgiati, Stan Din and Daryl Wong was declared the 2001 event winner by virtue of a scorecard playoff.

Second-place honors went to the team of Ed Heim, Clarke Chen, Gary Sorlien and Ev Maynard. The final leaderboard of all participants is provided in the table.

The top five teams received gift certificates to various area restaurants starting with Black Angus (first place) and ending with Burger King (fifth place). Each member of the last place team of Dave Banducci, Frank Hui, Jerry Mulenburg and Rich Exberger (7-over par 79) was awarded a 50-cent discount coupon for antacid tablets.

Other awards included: Rick Giddings for long drive, Dan Loney, Ron Marmol and Dan Malmgren for closest to the pin.

Many thanks to our tournament organizers Tom Bridge and Gary Sorlien for another outstanding outing. For those who didn't win: There's always next year.

Place	Team Members	Score
1st	Ben DeGuzman, Bob Olgiati, Stan Din, Daryl Wong	72
2nd	Ed Heim, Clarke Chen, Gary Sorlien, Ev Maynard	72
3rd	Frank Rosal, David Nishikawa, Wayne Logsdon, Horatio Chavez	74
4th	Dan Loney, Ardith Richardson, Stand Din, Don Bowling	76
5th	Philip Stich, Ron Marmol, Richard Coe, Alan Wong	76
6th	Dan Theroux, Frank Custer, Doug Atler, Ben Reduta	76
7th	Rick Giddings, Joel Hoffman, George Rupp, Steve Buchholz	77
8th	Tom Bridge, Don Ecclestone, Dan Malmgren, Jean Brian	77
9th	Scott Eddlemon, Jerry Guzman, Nick Jize, Mike Weiss	78
10th	Dave Banducci, Frank Hui, Jerry Mulenburg, Rich Exberger	79

DASH 8 TEAM EARNS GROUP 2001 NASA HONOR AWARD

The team that tested an operational Dash 8 aircraft in the 80-by-120-foot Wind Tunnel has received one of NASA's highest honors. Their work, acknowledged with a 2001 NASA Group Achievement Award, demonstrated the wind-tunnel division's ability to plan and carry out a technically challenging test in a short amount of time.

The test of the de Havilland Dash 8 Q 400, carried out in September 2000, was one of the most remarkable ever conducted at Ames. The aircraft was the largest aircraft or model ever tested in the 80-by-120. It also was manned and fully operational during the test, posing a variety of challenges that the 76-member team resolved deftly.

"We've proved this kind of ground based testing can be done safely," says Steven Buchholz, test manager for the Dash 8 project. Buchholz, a senior engineer with Sverdrup Corp., accepted the group honor on behalf of his colleagues during an award ceremony at Ames on July 26.

The Dash 8 Q400 is a twin turboprop airliner used for short commuter flights in the U.S. and Europe. Its manufacturer, Bombardier Inc. of Canada, along with propeller manufacturer Dowty Aerospace Propeller of the U.K., wanted a crosswind test in order to increase the ground-operating envelope in high wind conditions.

A flight-test Dash 8 was flown to Moffett Field and towed to the 80-by-120 on a gravel road built for the purpose. The test team designed and built a custom lifting apparatus to maneuver the aircraft into the wind tunnel.

"That was the biggest challenge – picking up this 46,000-pound aircraft and getting it in the tunnel safely," Buchholz says. The Dash 8 is 107 feet long and has a 93-foot wingspan; once it was in position, there were only 8 inches of clearance between the aircraft's nose and the wind tunnel's side wall.

Workers use guide ropes to steady the Dash 8 as it is hoisted into the 80-by-120-foot Wind Tunnel

A three-man flight crew was aboard the Dash 8 during the three-day test. That required the test team to figure out how to supply fuel to the aircraft while minimizing risk to the crew, how to communicate with them, and get them to safety if a mishap arose.

The project lasted less than four months from conception to completion, far shorter than most tests at the National Full-Scale Aerodynamics Complex. The team included NASA employees, contractors, and members of the 129th Rescue Wing of the California National Guard.

"There was a lot of hard work – lots of time, lots of thought – that went into this project," Buchholz says. Based on the results of this test, the FAA let the manufacturer increase the Dash 8 taxiing envelope to meet customer requirements.

BOB GISLER WINS EXCEPTIONAL ACHIEVEMENT MEDAL

Modernizing NASA Ames' 11-by-11-foot Transonic Wind Tunnel was a long and extensive undertaking. One of the most critical parts of that project was to make sure all measurement and recording devices worked properly before testing could resume.

Bob Gisler

Bob Gisler planned and led that instrumentation effort, earning an Exceptional Achievement Medal in the 2001 NASA Honor Awards. Gisler, instrumentation engineer for the Unitary Plan Wind Tunnel, was one of seven people at Ames to receive the honor this year.

Frank Kmak, chief of the Wind Tunnel Engineering Branch, called Gisler's work outstanding. "Bob's instrumentation expertise and leadership during these tests were critical to the success of these tests that demonstrated the tunnel readiness to … customers," Kmak said.

The 11-by-11-foot – the workhorse of Ames' wind tunnels – was renovated in the late 1990s. The work was part of the $85-million program to modernize the entire Unitary Plan Wind Tunnel. The work to the 11-by-11-foot included automating operations, enhancing air-flow quality in the test section, and improving the main drive system.

Gisler led the instrumention for the integrated systems test (IST), which demonstrated the 11-by-11-foot's capabilities following modernization. He also was involved in specifying the complex steady-state and unsteady sensors, data acquisition systems and software analysis tools required for the test. After the IST, Gisler's team supported critical calibration tests.

Kmak noted that Gisler identified the use of a new dynamic data-analysis system to control-system engineers and helped solve a model support problem during the Boeing 777 test.

"Bob excels at providing innovative solutions to instrumentation challenges and is a model for leadership and technical excellence," Kmak said.

FO DIVISION EMPLOYEES OF THE MONTH

LEROY WILKINSON

Leroy Wilkinson manages training for wind tunnel operators and auxiliary facility operators. He was named contractor of the month for his work training bench board operators at the Unitary Plan Wind Tunnel, a project that resulted in a significant improvement in run rates. Leroy, a Sverdrup employee, was commended for his understanding of facility systems, ability to transfer his knowledge to others, and his can-do attitude. His efforts contributed to the successful F-18 performance test carried out in the 11-by-11-foot Transonic Wind Tunnel. He is now carrying his operator-training program over to the 9-by-7-foot Supersonic Wind Tunnel.

PRECIOSO GABRILLO III

Applications programmer Precioso Gabrillo was named contractor of the month for his outstanding applications program development support for the Large Rotor Test Apparatus (LRTA) at the National Full-Scale Aerodymics Complex. A Sverdrup employee, Precioso develops test-specific software that runs on the wind tunnel's data system. He was applauded for overcoming the adverse conditions of short staffing and increasingly shortened lead times without the help of new software tools or additional assistance.

ERIC MATTOX

Supply technician Eric Mattox was named contractor of the month for his efforts in tracking down FO Division's two-way radios and developing a process to distribute and manage them. Eric, a Sverdrup employee, coordinates shipping and receiving for the wind tunnel divisions and is responsible for inventory control and parts requisitioning. In working with the radios, Eric tracked down about 300 handsets – many missing or unaccounted for – and made sure that each was programmed properly and had the proper manuals and accessories. The project took eight months. Eric received praise for his positive attitude and strong work ethic.

DAVID GILMORE

Applications programmer David Gilmore was named contractor of the month for his outstanding program development support for tests at the 11-by-11-foot Transonic Wind Tunnel. He was cited for his work in support of the high angle-of-attack takeoff or landing (HATOL), F-18 and X-37 6-percent tests. David, a Sverdrup employee, develops test-specific software that runs on a wind tunnel's data system. He was commended for surmounting the challenge of increasingly shortened lead times without the benefit of new software tools or additional help.