New communications system takes flight

For more information on SSCS, visit the SSCS URL at:
http://www4.jsc.nasa.gov/eaprojects/gfe/sscs.htm

JSC Photo S99-000826

A GROUP OF PROFESSIONALS has worked together to create the Space to Space Communications System, a network capable of linking the International Space Station, orbiter, and space-walking astronauts simultaneously. Team members are, from left, front: Darwin Patterson, Dave Prentice, John Ngo, Bob Davis, Matt Lemke, Ellen Simmons, Romeo Sanchez, Kanishka Desilva, Samantha McDonald, Ron Merkel, Dawn Greer and Carmelita Brown; back: Robert Watson, Mark Chavez, Ron Hollis, Dave Lee, Jeff Rouze, Cesar Gonzales, Phil Corral, Ron Lewis, Scott Wheeler and Ilia Rosenburg.

By Matt Lemke

TEAMWORK has long been the foundation on which many NASA successes have been built. One latest success involves the Space to Space Communications System.

Mark Chavez, David Lee and Matt Lemke of the Avionic Systems Division and Mark Schmalz of the Systems Engineering Office have led a large, diverse group of contractor and civil service professionals who have created a communications network capable of linking the International Space Station, the orbiter, and space-walking astronauts simultaneously.

The radio system was flown successfully during the STS-95 mission. Astronauts aboard STS-96 and later flights will use it as their primary communications system for space walks. Plans call for the station radio to be launched on Flight 5A with the U.S. Laboratory Module, and SSCS will become fully functional during Flight 6A when the station's external antennas are installed.

The project began in 1991 as a study of how to enhance the capabilities of the current communications system while providing the new capabilities required for the space station. A state-of-the-art time division, multiple access radio network was selected to provide digital quality audio communications among up to five radios simultaneously. This capability will be essential for station assembly flights to allow multiple space-walking astronauts to communicate with both the orbiter and the station. In addition to providing voice communications, the radios can transmit status and crew health data to the orbiter and the station and exchange information between the orbiter and station computers. To accomplish all of these tasks simultaneously, each radio has a custom designed modem that operates more than 10 times faster than the best commercial modems available today.

The SSCS consists of numerous pieces of hardware from around the country. Radios were designed and tested in the Avionic Systems Division with a joint NASA and Lockheed Martin team. After the initial design was completed, Litton Amecom in College Park, MD, joined the team as the manufacturer and worked in a concurrent engineering role to ensure the radios would be easy to build. Boeing, Litton and Lockheed Martin designed and built antennas.

In addition to flight equipment, numerous pieces of ground support equipment were built to support radio testing, orbiter testing, U.S. Lab testing, thermal-vacuum testing and crew training. System testing with multiple radios in various configurations was performed on site at the Engineering Systems Test Laboratory. ■

Conservationscape: *Keeping our water clean*

For more information on conservationscapes, call Dr. John Jacob at 281-291-9252.

YOU MAY HAVE NOTICED a new look on the south side of Bldg. 30. The old holly hedges are gone and in their place is what is termed a conservation landscape or "conservationscape." Conservationscapes make use of resource efficient plants (REPs) that require relatively little in terms of chemical inputs or water. REPs are native and adapted plants that are well suited to local extremes of wet and dry weather. According to Dr. John Jacobs, Texas Agricultural Extension Service, "we have so many native and adapted landscaping plants available to us in this area that a true conservationscape does not have to have the gravel and cactus look, but can actually be quite lush."

The conservationscape at Bldg. 30 is the result of a partnership between Clean Water for Armand Bayou and JSC. It is intended to be a high profile demonstration that can show employees and the local community that conservationscapes can be an important tool for water quality and conservation in our own backyards. In the Bldg. 30 conservation demonstration project, native and adaptive plants and a new irrigation system were used. Soon, there will be signs and pamphlets available to provide information that individuals can use to learn about the conservationscape concept and get more information for using this technique at home. Guided tours of the Bldg.30 conservationscape will be offered on the hour from 10 a.m. - 1 p. m. on Earth Day, April 22.

The conservation demonstration also makes an important statement about JSC's commitment to the local environment. Inappropriate landscaping is a major contributor to impaired water quality in the lower Galveston Bay Watershed. Most common landscaping plants are inefficient and require fertilizers and pesticides. These chemicals frequently end up in rainfall runoff and pollute local bayous, bays and estuaries.

JSC Photo S99-04384 by James Blair

The newly planted "conservationscape" on the south side of Bldg. 30 features resource efficient plants that require relatively little in terms of chemical inputs or water.

As anyone with a yard in Texas can attest, typical landscapes are also major water users and can account for well over half the residential water consumption during summer months. By providing a demonstration conservationscape, JSC and Clean Water for Armand Bayou hope to increase awareness of residents in the Houston and Clear Lake area of alternate landscape options and their beneficial effect on local water bodies.

Clean Water for Armand Bayou is a federally funded program administered by the Texas Agricultural Extension Service to demonstrate clean water practices in both residential and agricultural settings. The Texas State Soil and Water Conservation Board and the Armand Bayou Nature Center join TAES in this cooperative effort. Clean Water for Armand Bayou is building several demonstration conservationscapes throughout the Armand Bayou watershed, most notably the Hanson House Conservationscape at the Armand Bayou Nature Center.

The team of Dr. John Jacobs (TAES) and Colin Shackleford (Texas A&M) with Clean Water for Armand Bayou, Ivy Alexander, project manager for JSC's Tolman Grounds, Pat Kolkmeier of JJ2's Mechanical Operations Office, and Sandy Parker of JJ12's Environmental Services Office all worked closely with Mark Fox Landscaping (who provided the final design and installed the plants) on the conceptual design. The low flow irrigation system was designed, provided and installed by the TAEService.

For details on the Bldg. 30 project, call or e-mail Sandra Parker, JSC's Environmental Services Office. ■