

## Director's Message



### Back in the saddle

As a young boy growing up in Victoria, Texas, during the late 1940s, cowboy action was the most popular fare at the local movie theaters. Roy Rogers, John Wayne and a host of other screen stars rode across the plains wearing white hats and fighting bad guys. I have a vivid memory of Gene Autry starring in his first movie after returning from serving in World War II. I can still see him riding down the trail on his faithful horse, Champion, singing "I'm Back in the Saddle Again." That was a great moment for all of us who thought he was the best of them all.

That same theme, "Back in the Saddle," was picked up by Naval Aviation organizations as a program to emphasize safety awareness following the annual holiday season. Analysis had proven that there was a traditional spike in both aircraft and ground accidents in the January/February time frame. The Back in the Saddle Program is usually a one- to two-day safety stand-down in which cockpit and maintenance procedures are reviewed and personnel tested. It has proven to be an effective way for Navy and Marine squadrons to get rid of the mental cobwebs and distractions that come with holiday festivities.

We need to get back in the saddle, too! Return to Flight activities, support of the International Space Station, spacewalk training, payloads planning, mission training, etc., are going to require all of us to be on the ball every hour of every working day if we are going to be safe and successful. There is too much at stake for the future of human space exploration for us to drop the ball.

The holidays are over. We must be top professionals and focus on the job at hand. I expect all hands to ensure that they and their teammates are on top of their game. Let's get back in the saddle and succeed!

Beak sends...



APPEARING THIS MONTH IN OUR

## Guest Space

### Dr. Steven A. Hawley

Associate Director, Office of Astromaterials Research and Exploration Science



We are entering a new and exciting time for planetary science here at the Johnson Space Center, specifically in the Astromaterials Research and Exploration Science (ARES) Office in the Space and Life Sciences Directorate, where scientists are working on projects ranging from Mars exploration to solar wind collection.

Beginning with Beagle 2 last month and two Mars Exploration Rover missions this month, three Martian landings will be attempted over a one-month period. Each one has significant participation by JSC scientists.

As part of the European Space Agency's Mars Express mission, Beagle 2 will search for signs of past and present life on Mars, marking the first time since Viking that a spacecraft sent there will probe for both. To search for signs of past life, soil and rock samples will be gathered from the Martian surface, subsurface and inside rocks and analyzed using the Beagle's unique laboratory. To look for current life on Mars, instruments will search for signs of methane in the atmosphere. ARES scientist Everett Gibson, NASA Planetary Geochemist, is the only American interdisciplinary scientist on the Beagle 2 international science team.

Due to land on Mars this month are two Mars Exploration Rovers, Spirit and Opportunity. During the course of their three-month missions, the vehicles will explore two regions of Mars. Two types of cameras, a color stereo panoramic camera and an infrared camera, will provide pictures of the landscape. The pictures are used for driving the rovers, for "remote-sensing" mineral analysis, and for selecting rocks and soils for detailed analysis by the instruments on each rover's robotic arm. The robotic-arm instruments perform chemical and mineralogical analyses of rocks and soil. The arm also has a tool to grind off rock surfaces and a microscope to look for small features, including fossil evidence for of life.

The golf-cart-sized rovers will seek evidence about whether the environment in the two regions might once have been capable of supporting life. Spirit will explore the Gusev Crater, which may have once held a lake. Opportunity will examine Meridiani Planum, which contains exposed deposits of a mineral that usually forms under watery conditions. ARES scientists helped select the two landing sites.

Two ARES scientists – Doug Ming, NASA Soil Mineralogist, and Dick Morris, NASA Physical Chemist – will help operate the two rovers. Each Mars day, they and other members of the science team determine the scientific observations and measurements that will be made and what driving will be done. Morris and Ming have specific responsibilities for developing the commands that will be uplinked to the rovers and for calibrating and doing preliminary analysis on downlinked data.

Morris and Ming are also involved in future missions to Mars. Morris is a co-investigator on the Compact Reconnaissance Imaging Spectrometer for Mars instrument, a component of the Mars Reconnaissance Orbiter mission slated for 2005. Both scientists are co-investigators on the 2007 Phoenix Scout Mission, which will search for ice that has been discovered by the Mars Odyssey science team. Ming is heavily involved in defining the science priorities and objectives and the science instrument suite for the Mars Science Laboratory mission set for 2009.

From the first Moon rocks of the late 1960s to today's Martian meteorites, JSC scientists have led the way in the study of fascinating rocks to better understand how our solar system, and perhaps life itself, came into being. The ARES Office, originally known as the Lunar Samples Office, was formed to investigate and curate Apollo lunar samples. New samples have been added over the years including meteorites – some from the Moon, some from Mars (as ARES scientist Don Bogard has demonstrated conclusively) – and cosmic dust from aircraft.

Soon solar wind and comet samples will be added to this collection. Benchmark facilities for payload cleaning and curation already await the return of these samples. The Genesis spacecraft will return samples of the solar wind to Earth in September, marking NASA's first return of extraterrestrial samples since Apollo 17 in 1972. The samples will be brought to JSC and stored in the Genesis Lab, where ARES scientists will first assess the condition of the sample collector and then remove the samples for further study. Research conducted on the samples may help scientists better understand how the solar system developed. In addition, this month the Stardust spacecraft will encounter Comet Wild 2. Once the Sample Return Capsule is recovered at the Utah Test and Training Range in January 2006, its contents will be transported to the Curation Laboratory at JSC.

From Mars exploration to sample return curation and study, ARES scientists will be busy conducting missions and analyzing data this year and in the years ahead, searching for clues as to how our solar system, and life itself, originated.