

Star Trek Inspires NSBE Space Project

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At left NSBE Tricorder Team members inspect component hardware.

longtime supporter of the Space SIG, Walker has spoken at the group's 2006 African Americans in Space mini-conference and 2010 Aerospace Systems Conference, and hosted student outreach at the AMAN Center during the 2012 Aerospace Systems Conference.

The NSBE tricorders will play a role in the Space SIG's larger project, which is a return to the Mars Desert Research Station (MDRS) in the Utah desert. The Space SIG expects to send a six-person NSBE crew on a two-week expedition to the station in 2014 or 2015, using the tricorders as one of the science experiments. The

tricorders can be used to record environmental data as the crew performs Extra Vehicular Activities (EVAs) from the Mars habitat. The GPS signals in the tricorder can be used to cache tag samples and locate the science experiments from previous EVAs. In addition, the Space SIG hopes to create standard environmental monitoring protocols that provide better prediction capabilities for science field experiments performed during the expedition.

Data from the tricorders can be transmitted in real time to NSBE collegiate and Jr. chapters around the world

Nothing is more iconic than the sight of Lt. Cmdr. Geordi La Forge of *Star Trek: The Next Generation* operating a tricorder during surface missions. Whether he was determining oxygen content, analyzing wind patterns or detecting biological life, the chief engineer of the starship Enterprise invariably relied upon the ever-present tricorder as he discovered new planets and civilizations throughout the galaxy.

The NSBE Space Special Interest Group (SIG) responded to the charm of the tricorder when they took on their newest project: creating remote sensor handheld devices for environmental measurements. This project was the brainchild of the Space SIG 2012 Leadership Retreat held in Las Vegas, Nev., where the Space SIG participants expressed a desire to get more hands-on building experience. Tricorders were suggested from the open source design space called the Tricorder Project, and the project was funded with revenue generated by the NSBE Aerospace Systems Conference. The design is based upon another environmental sensor suite developed by Peter Jansen, Ph.D. and packaged in his tricorder Mark 2 design. This design combines 12 different electromagnetic, atmospheric and spatial sensors to give a complete environmental picture.

Space SIG members are building six tricorders in the Los Angeles area at the AMAN International Center. The AMAN Center is operated by Hal Walker, a scientist and African American who led the Apollo 11 laser range-finding experiment to measure the distance from the Earth to the Moon. His historic experiment is now on permanent exhibit at the Smithsonian National Museum of American History. A



Above Conducting electrical testing of tricorder sensors

who are remotely monitoring the expedition, allowing them to conduct analyses similar to those of science teams on Earth during space missions. Participating chapters may even be able to use the sensor data to recommend mission direction to the research station crew for subsequent EVAs, bringing NSBE members even closer to the space experience.

Several other experiments are also under development for the NSBE MDRS expedition, including robotic teleoperations, habitable volume assessments, and human factors evaluations. Additional experiment proposals may be submitted to the Space SIG. ■