PISCES had a very productive month with the unveiling of our new lunar landing pad site and the completion of a major milestone in October!

The project, part of the Additive Construction for Mobile Emplacement endeavor, which also includes the lunar sidewalk project in downtown Hilo, Hawaii, aims to robotically build the state’s first basalt landing pad.

The major milestone we accomplished includes the grading, leveling and compacting of the inner area of the bullseye on the landing pad.

“The federal government asked us to complete it by last year’s fiscal year, Sept. 30. With a very aggressive schedule and a lot of team work, we were able to do that,” said PISCES’ Executive Director Rob Kelso.

PISCES’ robotic rover named “Helelani,” outfitted with a robotic arm, demonstrated how the landing pad would be built using basalt concrete during a press event at the site held on Oct. 28.

During the event, PISCES welcomed Hawaii County Department of Research Development Deputy Director Donn Mende, along with NASA Swamp Works Engineer Jason Schuler and Magnus Hedlund, a Systems Engineer from Honeybee Robotics. Continue reading on Pg. 2
PISCES completed a major milestone in robotic construction by September 30th per NASA’s schedule. NASA had requested to conduct a series of robotic construction demonstrations before the end of the federal fiscal year.

Technical Milestone Number 1 was identified in NASA’s Task Plan for the Vertical Take-off / Vertical (VTVL) Landing pad as the first phase of the complex construction project. In preparation for the project, PISCES completed a “moon-scape” in Hawaii in early September for testing these robotic construction methods for eventual use on the Moon and Mars.

After completing the “moon-scape,” PISCES performed laser-measurements on the site to determine the slope of the terrain and identify areas in the pad where leveling was required. PISCES then used robotic construction operations to level the landscape, perform grading operations, and then compact a ‘3 meter by 3 meter’ bullseye of the landing pad. As a comparison when doing earth construction projects, a heavy-equipment operator would normally sit on a large construction bulldozer or grader to physically drive the machines. In this case, PISCES wanted to simulate construction on the Moon by using a planetary rover driven by an operator on Earth. So, all construction operations were performed tele-robotically by the PISCES team with the rover. How Amazing!

PISCES is preparing to begin laying down baked basalt pavers for the center-part of the landing pad. This next phase will start early this month. PISCES is producing 4-5 pavers per day in manufacturing 100 pavers for the landing pad. The 100 pavers will then be robotically deployed by a mechanical robot arm from the rover.

As Executive Director, I am extremely proud and amazed by the professional engineering staff in PISCES and the dedicated jobs that they miraculously perform.

Stay tuned for more exciting news on this innovative basalt landing pad!

-Rob Kelso
PISCES’ Executive Director
ISRAELI TEAM FIRST TO SIGN LAUNCH AGREEMENT IN GOOGLE LUNAR XPRIZE CHALLENGE

Last month, an Israeli team participating in the Google Lunar XPRIZE competition became the first team to produce a verified launch contract.

According to a press release, Israeli President Reuven Rivlin, and Bob Weiss, vice chairman and president of XPRIZE, SpaceIL announced the SpaceX Falcon 9 launcher has a mission scheduled for the second half of 2017.

With this, SpaceIL became the first team to produce a verified launch contract in the $30 million competition to put a privately-funded rover on the moon.

At least one team was expected to have a launch contract in place by the end of the year for the competition to continue.

Bob Weiss made the following statement in a press release:

“We are proud to officially confirm receipt and verification of SpaceIL’s launch contract, positioning them as the first and only Google Lunar XPRIZE team to demonstrate this important achievement, thus far. The magnitude of this achievement cannot be overstated, representing an unprecedented and monumental commitment for a privately-funded organization, and kicks off an exciting phase of the competition in which the other 15 teams now have until the end of 2016 to produce their own verified launch contracts. It gives all of us at XPRIZE and Google the great pride to say, ‘the new space race is on!’”

To win the Google Lunar XPRIZE, a privately funded team must successfully place an unmanned spacecraft on the moon’s surface that explores at least 500 meters and transmits high-definition video and images back to Earth before the mission deadline of December 31, 2017.

SpaceIL has purchased launch services from Spaceflight Industries; an American space company who recently purchased a SpaceX Falcon 9 launcher and will manifest SpaceIL’s spacecraft as a co-lead spot, which will sit in a designated capsule inside the launcher, among a cluster of secondary payloads. Once the capsule separates from the launcher, it will automatically release the spacecraft, which will use advanced navigation sensors to guide it to the lunar surface, with engineers in a mission control room standing by to remotely send commands and corrections as needed.

SpaceIL also announced a new and improved design of its spacecraft, completed by SpaceIL engineers with consultation from world-renowned Israeli industrial designer, Alex Padwa, regarding the spacecraft’s exterior. The first physical components of the new model are already starting to arrive at the SpaceIL integration lab.

The annual “Walk a Mile in Her Shoes” event to raise awareness about domestic violence victims kicked off Oct. 24, 2015 in Hilo, Hawaii.

Our director, Rob Kelso, along with Project Manager Rodrigo Romo and Operations Manager Christian Andersen swapped their tennis shoes for high heels and joined the dozens of other men in a march around town.

The walk started at the YWCA of Hawaii Island in Hilo and began at the Kona International Market on the west side of the island.

The event is an International Men’s March to stop rape, sexual assault and gender violence, and is an opportunity for men to raise awareness in their community about the serious causes, effects and remediations to men’s sexualized violence against women.

PISCES Staff at the “Walk a Mile in Her Shoes” event in downtown Hilo, Hawaii.
Our Executive Director participated in the 2015 LEAG annual meeting held Oct. 20-22 in Columbia, Maryland.

The event brought together scientists, engineers, and commercial sector entrepreneurs to focus on issues involving science, exploration, and utilization of the Moon.

The purpose of the meeting was to integrate the perspectives and interests of the different stakeholders (science, engineering, government, and private sector) to explore common goals of lunar exploration. According to their website, the meeting also focused around the identification, evaluation, extraction, and use of lunar resources.

During the event PISCES’ Executive Director, Mr. Rob Kelso updated the crowd about our Moon RIDERS program based on the Big Island of Hawaii. The project, short for Research Investigating Dust Expulsion Removal Systems, brings in local students to test dust shields on a student-built lunar lander.

The project is a joint effort by NASA, PISCES, teams from Google Lunar XPRIZE and local schools 'Iolani and Kealakehe.

PISCES’ is one of several organizations selected to participate in the $4.2 million Mars research project titled “Biological Analog Science Associated with Lava Terrains,” or “BASALT.”

The project is a four-year endeavor and includes teams of scientists, operations experts and astronauts who will be investigating volcanic terrains and lava flows on the Big Island and Idaho. Part of their investigation is to compare terrestrial rocks and terrain to those on Mars to determine the habitability of the Red Planet.

Last month some of the BASALT crewmembers visited the Big Island to check out lava flow fields near the Kilauea Volcano. More scientists will be returning to the island next year for further investigation.