

Around the Continent—Research Station Updates

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South Pole Station





Tis the season for science upgrades at South Pole


By Jeffrey Donenfeld, South Pole correspondent


Posted January 4, 2013

December continues another epic summer season here at the [Amundsen-Scott South Pole Station](#) , filled with a variety of science and support operations.

This year at Pole, new experiments are being set up everywhere, and existing experiments are actively being worked on, calibrated and upgraded.

Scientists on the [Small Polarimeter Upgrade for DASI \(SPUD\)](#)  team, from both [Caltech](#)  and [Harvard](#) , are working this summer on troubleshooting, calibrating and preparing their five-sensor strong [cosmic microwave background \(CMB\)](#)  telescope for the upcoming winter observing season.

In November, the team did a few initial tests on SPUD (also known as the Keck Array), and then warmed up, dismantled and disassembled two of the five sensor-housing cryostats. Once disassembled, the main focal planes were carefully removed by physicist Grant Teply in the Dark Sector Laboratory's clean room, and then transported back to [NASA's Jet Propulsion Lab](#)  at Caltech by physicist Zachary Staniszewski.

Starting in December, the team continued to test and calibrate the assembled cryostats. Additionally, near the end of December, the main focal plane removed from its sister experiment, the [BICEP2 telescope](#) , was transferred to the SPUD array and put back into service.

Speaking of BICEP2, the CMB telescope, which has been used to investigate the theory of inflation after the Big Bang (like SPUD), was officially decommissioned in December after final calibrations earlier in the season by physicist Jonathan Kaufman. [See previous article — [Inflation at South Pole: New telescopes search universe for signs of rapid expansion after the Big Bang](#).]

The end of BICEP2 also means the end of liquid helium at the South Pole. Liquid

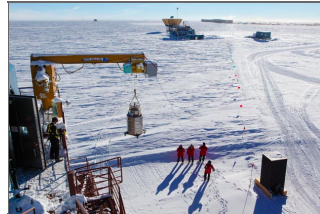


Photo Credit: Jeffrey Donenfeld

The BICEP2 telescope was officially decommissioned and removed from its space at the Dark Sector Lab.




Photo Credit: Jeffrey Donenfeld

Physicist Grant Teply works on a telescope focal plane in the Dark Sector Lab clean room.





Photo Credit: Jeffrey Donenfeld

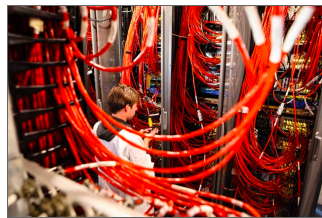
helium has been used to super-cool the sensors used by some of the experiments during their scans of the CMB. New instruments like SPUD and the [South Pole Telescope](#)  now use closed-loop refrigeration systems.

Cryo tech Flint Hamblin handles liquid helium, which will no longer be used after this season.

The final liquid helium fill up for the Cryogenics Laboratory happened in December by cryogenics technician Flint Hamblin. Previously, Hamblin would make intermittent trips on his snowmobile to the Dark Sector Lab (DSL) where BICEP2 was housed to deliver liquid helium, towing a sled with the stainless steel liquid helium dewar strapped to it. [See previous article — [Full of cold air: South Pole Station makes the most of liquid helium supply](#).]

It's been a busy season for a team installing the initial phase of the [Askaryan Radio Array \(ARA\)](#) , an experiment designed to study high-energy cosmic neutrinos. In November, they worked hard on engineering, building and testing their deep-ice drilling rig. The completed rig consists of a train of three main equipment platform sleds, which are dragged out into the field to each drilling location.

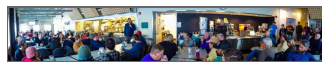
The ARA team has set up their workshop adjacent to the [IceCube](#)  Laboratory. Their main challenges for November included mounting the large drilling hose reel to the rig, and integrating the rig's sensor network with engineer James Roth's Drill Information Center — a field-hardened electronics box that integrates data from all sensors and allows for both local and remote drill monitoring and control.



*Photo Credit: Jeffrey Donenfeld
Inside the IceCube Laboratory computer server room.*



*Photo Credit: Jeffrey Donenfeld
South Pole Station manager Bill Coughran plays guitar for an audience in the gym.*



*Photo Credit: Jeffrey Donenfeld
South Pole Station personnel gather in the galley for a meeting.*

In December, the ARA team deployed their drilling rig to the field, and is currently hard at work drilling the first holes of the array. Daily drilling operations continue to go smoothly, as the team overcomes challenges involved with drilling into the soft firn layer of ice.

Principal investigator [Albrecht Karle](#)  arrived on site in mid-December, and has been working with his field team to deploy the array. Currently, sensor and calibration strings are being lowered into the ice, and the team is waiting on delivery of power and data acquisition electronics that will run the sensor strings.

Meanwhile, the South Pole's most famous ongoing neutrino experiment, the IceCube Neutrino Observatory, focused on network upgrades by its two winter-over scientists Blaise Kuo Tiong and Nils Irland. In December, the team completed system monitoring software upgrades, and continues to prepare the lab for upcoming detector operations in January.

Research keeps everyone incredibly busy at the station, so we value those moments when we're allowed to relax a bit.

In November, the big moment was Thanksgiving, and by the time it ended, everyone was stuffed. The evening kicked off with an introduction by executive chef James Brown, who shared a bit of South Pole Thanksgiving history. The meal consisted of turkey prepared multiple ways — including smoked turkey prepared by Brown in the South Pole's very own meat smoker bolted to the Destination Zulu deck. Delicious fixings and sides were also served.

After the meal, people relaxed with holiday drinks in the galley, and then escaped down to the supply arches for a late night dance party. DJ Mouse spun MP3s on the iPad while a movie was projected on the wall and the disco ball sparkled.

By mid-December, the South Pole Station was decked out in full holiday decorations, and the traditional Christmas Dinner wasn't far behind it. Tenderloin steak and lobster tail was served, and the station crew broke out into an impromptu holiday dance in the galley immediately following dinner. As is holiday tradition, the after-party rocked down in the logistics arch.

[South Pole Station Archives](#)



Palmer Station

Palmer Station hosts visitors large and small in December

By Sean Bonnette, Palmer correspondent

Posted January 4, 2013

December was full of visitors at [Palmer Station](#) 🇺🇸, from cruise ships and small yachts to humpback and minke whales. The [U.S. Antarctic Program's](#) 🇺🇸 research vessel the [Laurence M. Gould](#) 🇺🇸 also made an appearance.

The month started off with a short, two-day visit from the *Gould*. Aboard the ship was a team that heads the company charged with running the logistics contract for the [National Science Foundation \(NSF\)](#) 🇺🇸, which manages the U.S. Antarctic Program. Among the group was [Scott Parazynski](#) 🇺🇸, the chief medical officer and medical director for the contractor organization.

Parazynski is a former [NASA](#) 🇺🇸 astronaut who flew on five shuttle missions and conducted seven spacewalks, spending more than eight weeks in space and 47 hours outside the vehicle. He also became the first astronaut to successfully climb Mount Everest.

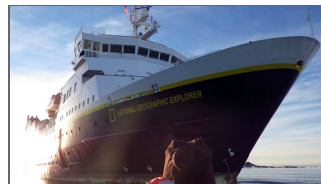


Photo Credit: Sean Bonnette

The NATIONAL GEOGRAPHIC EXPLORER visits Palmer Station.

Shortly after the departure of the *Gould*, Palmer had its first cruise ship visit with the *National Geographic Explorer*. There are only a limited number of such tourist ships that can visit the research station each year. In order to visit, the ship needs to put a request in through the NSF. This keeps station services from being constantly interrupted by a continued stream of visitors.

Cruise ships with less than 200 passengers are able to visit Palmer directly. Station personnel guide the visitors on a walking tour, talking about everything from how fresh water is made to the research under way and recreational opportunities. And, of course, we talk up the famous Palmer brownies that wait in the station dining hall (referred to as the galley), which is turned into a temporary visitor center where guests can interact with station science and support personnel.

If a cruise ship has more than 200 passengers aboard, Palmer personnel will visit the vessel via Zodiac. The passengers are treated to a presentation about the station activities, along with a meet and greet with the station staff and scientists.

The only other cruise ship to visit Palmer during December was the *Le Boreal*. This is part of a special yearly visit when the guests on the cruise donate a gift to the scientists of the [Palmer Long Term Ecological Research \(LTER\)](#) 🇺🇸 program.

The gift this year was for a Penguin-Cam that will be installed on Torgersen Island. Once the camera is set up, people from around the world will be able to view the Adélie penguin population online. The camera will also allow for scientists to give talks in real-time with classrooms back in the United States and other locations worldwide.

There was also a visit from the ice patrol ship the HMS *Protector*, formerly the MV *Polarbjorn*. The visit from the *Protector* was not just a friendly visit but also an official one. A group from the ship came to station to perform an official [Antarctic Treaty](#) inspection, Palmer's first since the late 1990s. The international team also inspected a visiting yacht. Both the station and the ships passed the inspections.

Shortly after the *Protector* departed station, a ship from the Chilean navy paid an informal, friendly visit. About 30 crewmen came ashore for a tour of the station. The crew left us several gifts, including a book about the Chilean navy, an updated picture of their ship, and several other items from their homeland.

December was also a big month for wildlife. The Adélie eggs on Torgersen have started to hatch, filling the air with chirps from the little chicks. The krill in the waters near Palmer have just exploded, feasting on the phytoplankton blooms.

The abundance of krill has drawn many whales to feed in the area. So far, we have spotted mostly humpback and minke whales. On Christmas day, many of us had an opportunity to observe a pair of humpbacks feeding around Bonaparte Point. The next day, possibly the same two whales were seen feeding just off of the seawater intake pump house, right next to the station.

The holiday celebrations at Palmer were fairly laid back, with a gift exchange and a family style meal. Most people took advantage of the down time to call home and talk to family and friends. It was a quiet and reserved end to a fairly busy month, but it is looking like January will be an even busier month.

[Palmer Station Archives](#)



Photo Credit: Sean Bonnette

A newly hatched Adélie penguin chick with its parent.



Photo Credit: Sean Bonnette


Humpback whales play near Palmer Station.

McMurdo Station

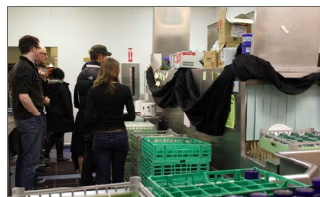
McMurdo Station's infamous dishwasher receives proper sendoff

By Beth Jennings, McMurdo correspondent

Posted December 7, 2012

The kitchen at [McMurdo Station](#)  is staffed with highly skilled cooks and chefs who produce hearty meals for the thousand people that make up the summer field season population.

Also in the galley are the blue-shirted stewards who deliver the prepared food to the hot food line, scrub the pots, run the dishwasher, mop the floors and maintain cleanliness of the area, amongst a myriad of other duties.



The position was changed this year to include food-service responsibilities on some days and janitorial services throughout the station on others. It's one of the toughest jobs on station, usually filled by those just seeking the excitement of getting to Antarctica. Most have bachelor's degrees, and more than a few have

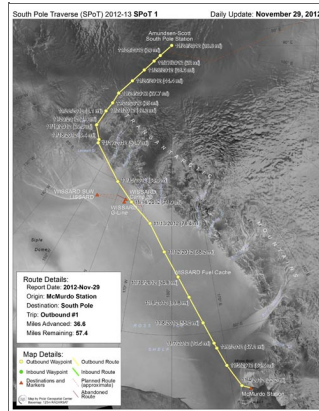
Photo Credit: Beth Jennings

McMurdo Station personnel pay their last respects to Bertha the dishwashing machine.



Photo Credit: Ryan Wallace

A South Pole Traverse tractor pulls a sled of fuel bladders.



Graphic courtesy: Paul Thur

Map of the traverse route between McMurdo and South Pole stations.

graduate degrees.

They endure thankless hours of smelling like food and dealing with impatient diners. They commiserate with each other, and through the long hours, your coworkers become your family. And when they lose a member of this family, they mourn together.

Bertha had difficulty maintaining her pH, and she was inconsistently performing at work. Measures were taken to improve her performance, and experts were called in, but finally it was decided that Bertha the dishwashing machine was to be replaced.


She may not have been flesh and bone, but Bertha was indeed part of the family — love her or hate her. And hate her some of the kitchen staff did, for she was not always kind to her attendants. She would unexpectedly spew slime on them or cover them in disgusting film from having to clean her. The stewards saw it to memorialize her before she was removed from the dish room.

So, on one bright Antarctic evening in October, mourners came and went, dressed for the occasion: the wake for Bertha the dish machine. One by one, each mourner went into the dish room to say goodbye. Notes were written and attached to her about the staff's favorite memories.

Words of kindness were sent in from afar, via Facebook, for the event. Eulogies were read, her favorite songs played, and there was even a group dance performed in her honor.

Finally, “Amazing Grace” was sung and the group turned to Gallagher’s, the local pub, for further reflections on her life. It was a fitting goodbye.

Elsewhere on station, the more serious activities of scientific research are in full swing, with more than 50 science groups on station by mid-November. Helicopters are seen overhead delivering workers and supplies to camps. Dive huts are active with divers gathering research from the frosty depths of the Ross Sea. The airfields continue to be abuzz with flights.

Farther afield from McMurdo Station, the first South Pole Traverse tractor train arrived at the [South Pole Station](#)  at the end of November, the earliest arrival ever. It had made excellent progress across the Ross Ice Shelf and up the Leverett Glacier. Travel had slowed on the polar plateau, as the tractors, pulling fuel sleds and cargo, rumbled through Sastrugi National Forest, a region of rough, sculpted snow.

[McMurdo Station Archives](#)

