

The Antarctic Sun

Happy Holidays!
December 20, 1998



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Surveyors Bob Champoux, left, and Jeff Scanniello take the season's last ice temperature readings at the ice runway. "The ice deteriorates really, really fast when it gets warm," Scanniello said.

One Last Look at the Ice

Story and photo by Ginny Figlar

Water is never at a steady state.

In Antarctica, it spends most of its time as ice. But, come summer, even that changes, and the view of McMurdo Sound can become a different one entirely. Boondoggles to Cape Evans come to a halt, fish huts are pulled in and planes land and take-off from a new location.

It's that time of the season around McMurdo.

On Thursday, Dec. 10, surveyors Jeff Scanniello and Bob Champoux performed their last weekly monitoring of the sea ice for the season in preparation for the ice runway move to Williams Field, located on the permanent ice shelf.

"The numbers we get here are critical to whether the ice runway moves or not," Scanniello said as he drove up to the first temperature gauge along the road to the runway. In all, about two dozen points were measured along the road, on the runways

and out toward Williams Field.

After the first reading, he knew it was time. Two days later, the caravan of buildings and equipment made its way to Williams Field. While one year the runway operated through Christmas, Scanniello said, "This is about the average length of time that we keep things going."

The signs were easy to spot. A hole cut through the ice spouted dirty, brown water -- algae, signaling the beginning of life under the ice. The structure of the ice was also deteriorating. During Winfly, the walls of the hole were solid, and a weighted tape measure sank fast to the bottom. Now the ice was slushy, catching the weight along the sides of the hole as it dropped toward the water.

"The ice deteriorates really, really fast when it gets warm," Scanniello said.

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Military Hopes for Speedy Recovery of UpD Plane; IceTrek Passes Halfway Point to Pole

by Ginny Figlar

The LC-130 Hercules plane that became stuck in soft snow above a crevasse at the Upstream D field camp may be recovered and back in McMurdo as early as the first of the year, military officials said this week.

"With great luck and Godspeed, we will do that," said Maj. Ed Kinowski, 109th Air Lift Wing logistics officer, regarding a speedy recovery. "We have high hopes that recovery and repair, once the team is located at the camp site, should take no more than seven to 10 days."

A ski of the Air National Guard aircraft sank into a bridged crevasse as it taxied for take-off on Nov. 16 from the remote glaciology research site in West Antarctica. For the last few weeks mountaineers and plane-recovery experts have visited the site to find a safe landing spot for subsequent LC-130 missions, assess the damage to the plane and draft a recovery plan.

While Kinowski said the idea of a plane hanging over a crevasse may have dramatized the situation initially, the reality of the plane's recovery and repair is less sensational.

"It was perceived at first to be an extensive operation," Kinowski said, "and after further analysis the prognosis has improved greatly."

Once the recovery team is out at the site and the camp set up, heavy equipment operators will haul snow and fill the crevasse to "safety the site," Kinowski said. Then the plane will be air-bag lifted and will taxi itself to a safe spot, where it will be repaired.

Kinowski and Col. Rich Saburro, Commander of Operation Deep Freeze, said they could not comment on the specific damage to the plane because it would jeopardize a safety board investigation. But, Saburro said, U.S. Air Force experts at recovering aircraft in unusual situations performed a detailed assessment of the plane and returned with promising results.

"The engineers went out to assess any structural damage, and their assessment came back very positive, as well as the assessment of engine damage," Saburro said.

"It's not damaged beyond repair," Kinowski added.

Once repaired, the plane will head to McMurdo before flying back to Christchurch, New Zealand. With optimism and enthusiasm pulsating through the veins of everyone involved, Saburro said it shouldn't be long before the plane is out of the snow and into the air.

"It's a positive story," Saburro said smiling. "There's a lot of energy out there."

IceTrek on Track for New Year's Arrival

With spirits high and the wind cooperating, the IceTrek team is more than halfway to the South Pole and is on target to reach the southernmost landmark around New Year's Day.

"Despite a slower than expected start, the team is now going great guns having made up any lost time and with the Ross Ice Shelf now behind them -- only 620 kilometers to the South Pole,"



Map from IceTrek Web site, www.icetrek.org

said spokeswoman Rachel Bell.

The IceTrek team of Jon Muir, Erik Philips and Peter Hillary set out on skis Nov. 4 on an unassisted journey from New Zealand's Scott Base on Ross Island to the South Pole and back. Their 100-day itinerary called for a possible Christmas Day arrival at the Pole.

Approximately one week behind schedule, on Dec. 12 the skiers laid their fourth depot of supplies, crossed the International Date Line and passed the halfway point to the Pole.

"Great jubilation -- we know that our trip is now one quarter over," the team wrote in an online journal.

Muir, Philips and Hillary will now say goodbye to the flat Ross Ice Shelf and hello to the treacherous climb of the Shackleton Glacier. Even if they make it to the Pole late, Bell said they can still make it back to Scott Base within the planned 100 days.

"Remember," Bell said, "they will be assisted back across the Ross Ice Shelf by winds suitable for their kites so they may cover some great distances on the return journey." *

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Ice Streams Not a WAIS of Time

by Alexander Colhoun

It is the world's largest single amalgamation of frozen water. It contains 3.8 million cubic kilometers of ice and spreads over more than 1.5 million square kilometers. If it were to melt instantaneously, releasing all of its water to the world's oceans, sea levels would rise 6 meters, inundating all ports in existence, many heavily populated river deltas and huge portions of major cities across the planet.

"It" is the West Antarctic Ice Sheet, or WAIS, and the study of six ice streams that deliver this frozen mineral from WAIS's center to its margins that have brought Hermann Engelhardt to Antarctica.

With an ebullient and irrepressible smile and a dashing gray beard running across his face, Engelhardt describes what has become his life's work -- ice streams. "What we want to understand is: how is ice flowing and what is it doing? We are looking for the fastest ice."

Ice streams are literally rivers of ice within the ice sheet; but unlike rivers of water, ice sheets have no mountain valleys to contain them, their walls, too, are made of ice.

Running across the WAIS like roots of a tree are six of these ice streams, from Ice Stream A closest to the Transantarctic Mountains, all the way through to Ice Stream F closest to the coast.

Studying the dynamics of these ice streams is critical to understanding the past and the future of the West Antarctic Ice Sheet, yet the study of these features is a relatively new field. "Recognizing fast ice is a recent phenomenon, 20 years old," said Engelhardt. "Before we thought it was a fluke. Now we know ice-streaming is very important, especially if instability were to develop."

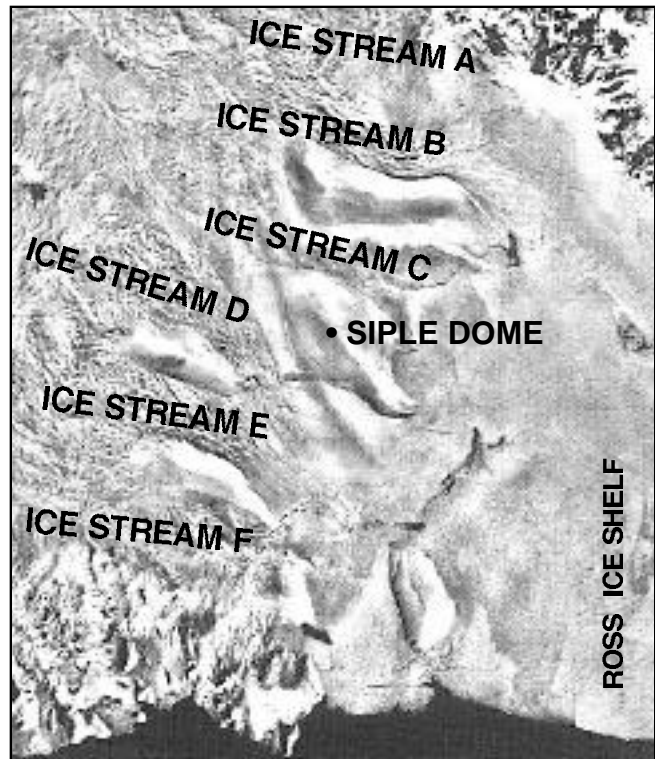
Considering that the WAIS is both the most glaciologically active region of the Antarctica its stability is far from assured. Today, half of WAIS is moving out into the floating Ross Ice Shelf while the second half is moving out to the Filchner-Ronne Ice Shelf. In addition there are two smaller outlets: the Pine Island glacier and the Thwaites Glacier toward the Amundsen Sea.

Running through these bulwarks of stable, grounded ice are fast-moving rivers of ice that are not frozen to the bedrock below. In fact, ice streams rest on a highly pressurized layer of water. More super-saturated earth than free-flowing stream of mountain water, this layer of wetness, combined with super-high pressure allows the ice stream to move -- up to two meters per day, as is the case for Ice Stream B.

"With a wet bed, a melted bed under high water pressure, the ice is almost at the floating point," explained Engelhardt. "If there was much more water it would take off." Fortunately, powerful friction at the shear margins on the outside edges of the ice streams hold this movement in check. In essence, the driving force and the resisting force are in balance.

To understand the science behind this theory, Engelhardt and his team have probed three of the six WAIS ice streams with a specially designed hot water drill. First engineered in 1988, the drill allows Engelhardt to study processes throughout the ice stream and their base.

Inserting temperature strings and pressure transducers into these bore holes and letting them freeze there, Engelhardt is building a database of information that he can use to draw analo-



The ice streams above are fast-moving rivers of ice that trace across half of the West Antarctic Ice Sheet. Much as rivers drain water to the valley below, these ice streams deliver ice to the Ross Ice Shelf and on the ocean.

gies between all of the WAIS streams. Last season Engelhardt's team drilled 43 bore holes for a total of 27 kilometers of drilling.

Another important ice stream structure Engelhardt studies is the composition of substrate the ice streams move across. This fine-ground material, glacial till, is generated and transported by the glacier as it moves over bedrock. Unlike till under slow moving glaciers, till under ice streams is too weak to act as a restrictive force for the ice stream. In fact, in some cases the till is so fine, as it is under Ice Stream B, it actually contributes to the lubrication of the stream, allowing it to move more quickly.

Speed of these ice streams is another important aspect of Engelhardt's research. Ice Stream B is the fastest WAIS ice stream, moving at two meters per day -- a phenomenal rate of flow considering its size, which is 50 kilometers across and one kilometer deep.

Total ice stream speed is controlled by three variables: internal deformation of the ice, basal sliding and deformation of the substrate below [See box]. By far the most important of these in Antarctic ice streams is basal sliding, accounting for 80 to 100 percent of the ice stream's speed.

And with that speed comes the prospect of danger. "If we have a mechanism that can move large ice masses rapidly, this could move ice off the ice sheet also," said Engelhardt, emphasizing that these changes would come over time, not instantaneously. "To build an extreme scenario would be wrong," he said. "We don't have the basis for a wild extrapolation, but some changes will happen for sure and have indeed already begun."

Engelhardt and his team will conduct research on Ice Stream D later this season when the camp can be safely opened. *



GPS Plays Many Positions in Antarctica

Story and photo by Ginny Figlar

Global Positioning System equipment has become so advanced in recent years that someday soon it may guide hikers along trails, provide local weather reports and have fresh-brewed coffee waiting back at the trailhead.

Maybe not. But GPS, which harnesses satellite information to pinpoint positions on the globe, goes beyond giving precise coordinates. In Antarctica, GPS transcends departments and disciplines. It is used to stake out runways, map ground-penetrating radar data, measure the velocity of ice streams, track Weddell seals and locate dive holes.

"It's a totally complete technology," said Bjorn Johns, a GPS engineer with University NAVSTAR Consortium, or UNAVCO, which provides GPS technical support for the National Science Foundation Office of Polar Programs.

UNAVCO helps support between 15 and 20 projects, primarily for geology and glacial research. Its support is boosted by a new differential GPS base station located in the McMurdo Ground Station building, with differential corrections broadcast from a radio transmitter at Crater Hill. The corrections greatly improve the real-time accuracy of GPS readings.

Differential GPS is the comparison of data from one known GPS location to a remote receiver. The McMurdo base station provides these corrections for people out in the field, transmitting signals to users as far away as the Dry Valleys. Because the Crater Hill site is a known point, data transmitted from it is more accurate than what comes directly from satellites -- corrected for such noise as interference from particles in the atmosphere and satellites that are off-orbit.

The accuracy of this new system is an order of magnitude better than non-differential GPS capabilities -- offering meter-level accuracy in real-time with hand-held receivers as opposed to 10s of meters previously.

Speed is also a big enhancement. For very precise readings, those in the field used to have to wait until they got back to McMurdo to review data. Now corrected readings pop up on their screens immediately.

A lot of improvements in the system have to do with the technology of GPS itself. Resembling the boom in computers, GPS receiver and processing technology comes out with more advancements every year. One recent innovation is the measurement of satellite-signal interference for answers about the electronic make-up of the atmosphere.

"Those measurements are starting to become important," said Carol Raymond, a scientist using GPS to study crustal motion in the Transantarctic Mountains. "It's an area where GPS is starting to make a valuable contribution." While Raymond doesn't use those particular measurements for her tectonics research, she said, "GPS has turned out to be an incredibly diverse and useful tool."

ASAsurveyor Jeff Scanniello agreed. "It's come in real handy for us," he said. "The technology has finally become refined enough for accurate measurements, so we're using it."

Surveyors are experts at measuring land, and Scanniello and fellow surveyor Bob Champoux spend much of the day staking construction areas and runways, and topographically mapping areas around McMurdo and the Dry Valleys. Using advanced GPS equipment, they are able to get the accuracy they need.

"Most of what we do we're talking within a 16th of an inch," Champoux said.



Surveyor Jeff Scanniello uses GPS to mark spots for parked planes at Williams Field.

The survey team uses GPS to enhance traditional surveying. It is especially helpful for jobs that cover large areas or long distances, speeding up the amount of time it normally takes them to do their work.

"It makes it a lot less time-consuming for us," Scanniello said. "What we did one day with GPS would have taken four days using traditional methods."

Consider the ice runway, which is often inundated with fog and blowing snow early in the season, for example. Where line-of-sight surveying would have brought the survey crew to a standstill, differential GPS allowed the surveyors to navigate by instrument rather than vision to lay out runway flags in a day -- a process that usually takes two to three days.

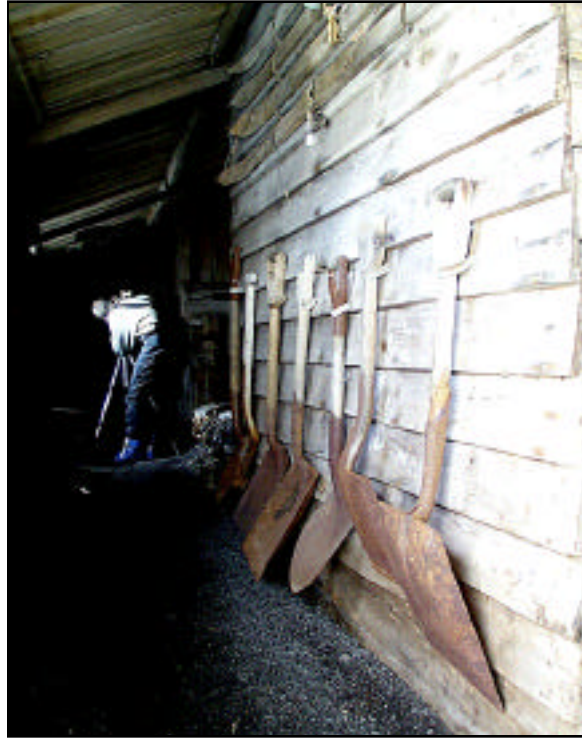
"I had to go to the end of the runway and I couldn't see the hood of the truck," Scanniello said.

GPS can pinpoint location with unrivaled precision, but it has a weakness: determining accurate elevations. Champoux and Scanniello still turn to their classic survey techniques when performing vertical measurements.

"When it comes to elevation, this stuff is the way to go still," Champoux said, pointing to his traditional surveying equipment.

Despite the imperfection, Oivind Ruud, also a GPS engineer with UNAVCO, said he is excited about the potential for GPS. It may be used to forecast weather over oceans. At McMurdo, the installation of differential radios aboard sea-ice vehicles will improve search and rescue situations. As Ruud put it, "Thirty meters can be a lot in a white out."

The possibilities are plentiful. But, for now, hold on to your coffee maker. *



With the sea ice of McMurdo Sound becoming less stable by the day, McMurdo residents took advantage of one of the final trips of the season to Cape Evans. Chris Martin tries to capture the horse stables at Scott's Hut on film. Photo by Ginny Figlar.

Ice

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The strength of the ice mainly depends on two factors, thickness and temperature. But, Champoux said, ice temperature is more important than thickness. In one spot, the temperature of the ice had risen but its thickness had grown nine to 10 inches.

Scanniello said, "We still have pretty good thickness, but it's going to start getting slushy."

As he and Champoux took readings at the end of the main runway, a truck full of workers pulled up to inquire about the thickness of the ice. After the truck drove away, Scanniello said, "The question everybody should be asking is what is the ice temperature, not what's the ice thickness. During Winfly you can ask about thickness because we know it's cold enough."

At that time the ice is considered mature. But, between the end of November and the beginning of December, the ice enters the aging stage. And that's when its structure starts to break down. Temperature gradients revealed that the middle of the ice was warming, and, Scanniello said, that's where it needs to be the coldest for structural strength.

North of McMurdo, sea-ice instructor Ted Dettmar noticed similar changes. His latest monitoring revealed no change in thickness, but he said the ice looked like a "slurpie" at the bottom of the drilled hole.

"What changed about the ice wasn't the thickness, it was the quality of the ice," Dettmar said.

Indeed, the ice is more than thick enough to hold vehicles. At more than 50 inches, the ice thickness is well above the 30 inches the National Science Foundation requires for safe transport. Tracked vehicles could continue to go out on the sea ice, if, that is, they could get there. Pools of water 4-feet deep can accumulate in the transition area. If a spryte attempted to traverse that, "there would be water coming in through the doors," Dettmar said.

Those pools could be the extent of water seen from the base this year, Dettmar predicted. With the ice edge eight miles north of Cape Royds, he said, "This year I would not count on seeing open water."

The warm temperatures of the season aren't enough to clear the ice out. Herbies, large storms from the south, also need to move through the area. So far this season there haven't been any.

Dettmar, Scanniello and Champoux are waiting to see what the ice will do as the temperatures continue to rise, because what happens this year will determine what the ice will look like next year. It will either all float away, and new ice will grow over the winter, or it will refreeze.

And then another season of monitoring will ensue.

"Kind of tearful isn't it?" Scanniello asked as they were putting away the ice drill until next year.

"The end of an era," Champoux replied. *

Did You Know...

by Brenda Joyce

The Russian base Novolazarevskaya was opened in February 1961 on the edge of the Lazarev Ice Shelf. A crevasse developed beneath the station the following year, forcing its relocation farther inland to the eastern end of the Schirmacher Oasis.

Admiral Byrd made five Antarctic expeditions. His statue which stands before the Chalet was dedicated on his birthday, Oct. 25, 1965, and is a replica of his memorial which stands on the "Avenue of Heroes" in Washington, D.C. Both Byrd memorials were donated by the National Geographic Society and were sculpted by Felix de Weldon, famous for his Iwo Jima war memorial in Arlington, Va.

Both Scott and Shackleton ballooned in Antarctica. Scott made the brief initial flight, descending to allow Shackleton, trained by the British ballooning department at Aldershot, to photograph the ephemeral morphology of the Balloon Bight-Bay of Whales area. Along with his many other "firsts," Sir Ernest was also the first Antarctic aerial photographer. Erich von Drygalski independently made similar aerial photos from a captive balloon near Wilhelm II Coast on the eastern coast less than two months later.

Sir Douglas Mawson of Australia brought the first airplane to Antarctica in 1911, but it was used on the ground, not flown in the air. The Vickers monoplane, with an undercarriage of sledge runners, lost its wings as a result of an accident in Australia. The wingless plane was converted to an air tractor sledge and taken to the Antarctic for surface transportation.

In 1921, Shackleton procured an Avro seaplane to bring to the continent. It was to be loaded on the expedition ship in Cape Town, South Africa. Maintenance and logistics problems caused the ship to be rerouted from South America directly to Antarctica. Even though the pilot was on board, the airplane was left behind!

McMurdo Workers Head for the Foray

Story and photo by Alexander Colhoun

Dressed in hooded, white Tyvek suits, rubber gloves and a respirator masks that envelop their heads, the team of workers resemble an Ebola virus containment team as they move through warehouse 174 in McMurdo.

Fortunately, the enemy these workers are fending off is a benign fire-suppressant powder chemical called Foray.

"This chemical has the toxicity of Talcum powder," said Dave Nold, an environmental engineer with ASA. "It's biologically inert and does not react with anything in our body." That's good news for 20 workers who've put in a total of 1,500 hours cleaning the dusty aftermath of this winter's accidental release of the automatic extinguisher system in the storage facility.

This wasn't the first time building 174's fire suppressant system has deployed. Just last summer the heated storage building suffered a similar release when fire inspectors accidentally triggered one quarter of the system, or 8 full cylinders of Foray, during a routine check.

The fire suppression system hurtled all 32 cylinders of Foray, totaling 1,600 pounds of chemical, at this winter's mishap, leaving up to a quarter of an inch of chemical across every square inch of the facility.

"The compound is designed to disperse over everything," said Greg Roes, supply operation manager and supervisor of the clean-up effort. "It functions quite well."

Maybe too well, at least for the likes of Alice Orlich, who managed the day-to-day operations of the clean-up. "I had the advantage of knowing it had once been cleaned before," said Orlich, referring to last summer's clean-up.

Even so, the site of an entire warehouse of boxed items coated in a powder-like chemical was enough to leave even the most optimistic souls discouraged. "The first-stage feeling is disheartening, that you'll be wedded to this project, a meticulous task," Orlich said. "But once you get over the shock and the gear and the slow pace, eventually a great dynamic of hard work shines through."

Working with high-efficiency particulate vacuums, the same model used in asbestos abatement, Orlich's crew made their way through every nook and cranny of the warehouse, cleaning endless shelves of paints, adhesives, cleaning supplies, medical sup-



Alice Orlich eyes 16 cylinders of Foray, one of two bays of the fire-suppressing chemical that accidentally deployed in building 174 last winter.

plies and caulks. For many of the workers, spending days cooped up in an airtight suit, vacuuming a large warehouse somehow defined the idea of a thankless job.

The hard work didn't go unnoticed. "It's certainly not a glamorous job," said a thankful Roes, who lavished praise on the clean-up team.

While Roes and other investigators are still uncertain exactly what caused the accident on June 29th this past winter, the probable cause was a power surge that resulted from a scheduled power-outage for the station. "It's not proven yet," said Roes. "At this point we'll probably never know for sure."

Now that the latest clean-up effort is completed, Roes is looking for new ways to prevent future problems with the system. "Our next phase is to go in and reclassify all the chemicals in the warehouse," Roes said. In time the goal is to amend the system and limit the Foray extinguishers to a portion of the facility.

For now, however, there is one thing Roes is sure of. "Bottom line: we don't want this to happen again," he said. *



Views From Antarctica's Main Street

Q: How do you feel about the United States bombing Iraq?



Dave Denny,
Construction
Coordinator

"It took me by surprise. I haven't been paying a lot of attention to worldwide news."



Romayne Ketcha,
Service
Attendant

"I have really mixed feelings feelings on it. It could have a lot to do with political timing."



Terri Hess,
Service
Attendant

"I haven't really watched it. I don't know how I feel about it."



John Smith,
FMC
General
Assistant

"We should've done it a long time ago and continued it."



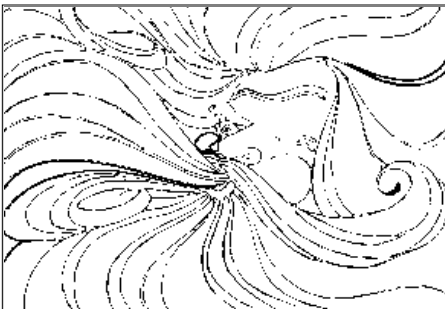
Brothers Zim, Robert, left, and David Zimmerman, brought a mixture of holiday cheer and self-composed acoustic tunes to the Coffeehouse Friday night. Audience favorites included "The Hanukkah song," written by Adam Sandler, and "A Little Boy Called Smiley," a tribute to McMurdo's Smiley Dave.

"What can I say," said Dave Green, aka Smiley Dave. "It gives you that warm, fuzzy feeling having quality friends like that."

Susie Heyob, also in the audience Friday night, said, "I think when someone writes a story about you or for you, that's the ultimate compliment."

Photo by Alexander Colhoun.

Weather Central



by George Howard

Just a phone call away

So there you are, once again, on your way out to Williams Field on the shuttle. Suddenly the vehicle slows, shudders, and sinks up to its axles in the snow. As if that's not bad enough, an unseasonable Herbie blows in from Minna Bluff and White Island, enveloping you and the rest of Ross Island. Getting curious

about how long you'll be in stuck in Condition I? Normally, a call to Mac Weather at x2523 or x2524 would do the trick, but you've left your Iridium back at the room. What will you do?

Have no fear. You can reach Mac Weather by radio. Get that shuttle driver to tune up channel 1* and you can find out the latest storm information as you watch the flags at the roadside disappear. Mac Weather monitors the frequency 24 hours a day.

But what if you find yourself in dire weather straits and aren't a regular I-net listener? Take heart, Mac Weather now monitors channels 5 (Public Works Net) and 10 (U.S. Crater Hill) too.

After you get the information you need from Mac Weather, be sure to share what weather wisdom you can with them. When formulating Antarctic weather forecasts, the forecaster can always use another set of eyes. Letting Mac Weather know things like which landmarks or how many flags you can see when a fog back rolls in over Pegasus can help forecaster immensely.

* Radio transmissions on all channels should be confined to emergency, operational, scientific, and official traffic.

Ruben and the Antarctic Elves' Top 10 Gifts to Get Your McMurdo Sweetie for Christmas

10. Masticator-scented eau de toilette
9. Bunny-boot keychain
8. Homemade loincloth made of seal fur
7. Three words: king-sized bed
6. Stocking stuffed with Erebus volcanic coal
5. A fine bottle of sealnog
4. Wreath made of steel and electrical cable
3. Tickle-me Terrabus
2. A collection of holiday recordings by Eddie the Emperor and the Adelies

and the NUMBER ONE gift to get your McMurdo Sweetie for Christmas is...

Four calling cards, three scott tents, two turtlenecks....and a skua in a pear tree.



Deep Field Troubles at AGO5

Antarctic McGuyver helps put an Air Guard LC-130 back in the air

by Alexander Colhoun

At 4:30 a.m. last Tuesday the parachutes deployed. Hurling below each of the 13 chutes were four drums of jet fuel. Sandwiched between cushioning layers of cardboard, the barrels plummeted to the aide of an Air National Guard LC-130 Hercules temporarily stranded at AGO5 -- a high-altitude, deep field camp on the East Antarctic ice sheet.

The Hercules aircraft had landed with plans to pick-up a team of engineers and a field camp manager maintaining an Automatic Geophysical Observatory station [See sidebar, this page]. The aircraft ran low on fuel after several aborted take-off efforts, forcing the crew to shut-down the plane.

Located at six different sites across the Antarctic continent, AGO sites are notori-

ously difficult to take-off from due to their locations at high altitude. AGO5 rests at 10,118 feet where the air is 36 percent thinner than at sea level.

"It looked like D-day," said Ron Rainbow, project manager for the Automatic Geophysical Observatory (AGO) project, of the barrels falling from above. Auguring deep into the snow, up to their rims, the barrels held a total of 2,800 gallons of fuel needed for the return flight to McMurdo.

Unfortunately, lack of gas wasn't the only problem -- a major concern was altitude.

Resting above 10,000 feet and close to the South Pole, the effective altitude is closer to 11,500 feet, taking its toll on both man and aircraft.

"Field altitude, rather than proximity

to McMurdo, is what makes the AGO sites particularly challenging," said JD Dickinson, the Executive Officer of VXE-6, the Naval detachment in McMurdo. "Aircraft systems, specifically the turboprop powerplant, simply do not perform as efficiently during takeoff when the air is that thin."

As one Herc crewman sucked on a bottle of oxygen, the remaining staff and AGO engineers considered their situation. "There was never any sense of danger," said Remy Fourre, the lead AGO design engineer. "With McMurdo behind us we knew nothing was going to happen."

Fourre was right. Back in McMurdo, an after-hours rescue effort was in full swing. One stroke of good fortune: 52 barrels of fuel, packaged and ready for parachute deployment to the Pensacola Range,

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AGOs, Auroras and Engineers

by Alexander Colhoun

Automatic Geophysical Observatories, or AGO's for short, are located at six different sites across the Antarctic continent. These 8-by-8-by-16-foot, elevated orange stations are designed to gather data 12 months a year, with just one yearly service visit.

There are six experiments housed in each AGO unit, all of which fall under the PENGUIn project -- short for Polar Experiment Network for Geophysical Upper Atmosphere Investigations. While the acronym is complex, the science is deceptively simple: researchers hope to measure variations in the electromagnetic spectrum. Among many uses of this information, the data may one day help communications companies better understand what generates blackouts and static noises that inhibit different forms of worldwide communications.

Each AGO unit employs an array of equipment in this effort including a fisheye lens on a camera -- to view the auroras; two magnetometers and three passive antennas. In combination, these devices each take in a range of frequency that will help researchers dissect the magnetic spectrum.

Collecting data in these remote sites is an engineering feat analogous to a space mission. Temperatures rarely rise above 20 C, and with highly sensitive computer hardware and scientific instrumentation at work, maintaining an even temperature is critical.

Over the last few years Remy Fourre, Joe Kujawski and Ron Rainbow, ASA engineers on the project, have developed

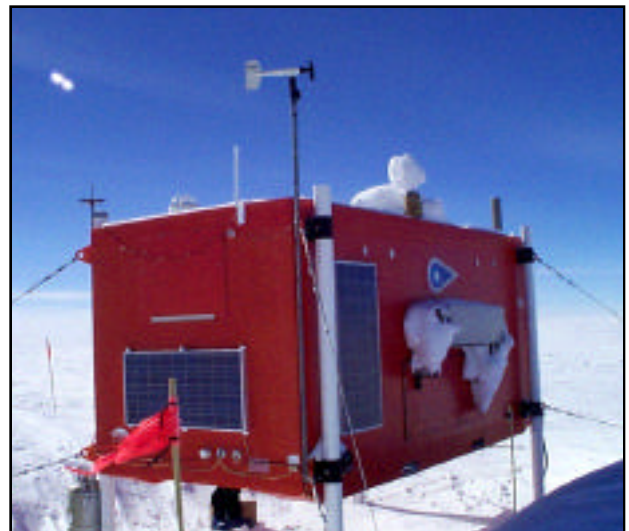


Photo by Anna Stegemoeller

new technologies to safeguard the equipment, including this year's installation: a pressurized, altitude-resistant three-giga-byte computer hard drive.

"Our main problem is keeping [the stations] going all year long," said Rainbow, who hopes to employ the new Iridium satellite communications system as early as next November to remotely operate the system.

Even when the engineers arrive at an AGO site, however, they are far away from any hope of assistance. "You're on your own out there," said Fourre. "There is an absolute sense of being alone -- no hardware store, no hospital. You have to learn to solve problems on your own." *



Ago5

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were sequestered for the rescue mission.

As the fuel barrels dropped, a lightweight Twin Otter aircraft took off from McMurdo with a fresh air crew and eight cylinders of Jet Assisted Take-Off rockets to replace cartridges used in the first take-off effort.

The new crew arrived at AGO5 to find a field camp hard at work. Rainbow and camp manager Steve Zebroski busied themselves recovering fuel barrels with a single ski-doo, having already groomed a fresh runway as best they could. The new pilot, seeking any information that would help them get away safely, walked the new runway from start to finish.

The conditions were far from ideal.

"We had nine inches of hard snow sitting on top of three feet of powder," said Fourre, now on his third Antarctic deployment. "These are the worst Herc snow conditions I've ever seen."

At last, nearly 24 hours after the first aborted efforts, the team was ready to try again. With the crew and passengers secured, the pilot attempted to start the engines. Now a new problem emerged: engine three wouldn't start. The plane shut-down, again.

"I never realized this," said Anna Stegemoeller, an AGO service engineer on site. "But every hour a plane sits there in that cold environment it is that much harder to start, that much easier for failures to occur."

Within three hours the Twin Otter was back, returning with the plane's original flight engineer, to fix the engine. Then, as if things weren't rough enough already, for a brief period of time the

aircraft lost communications with McMurdo.

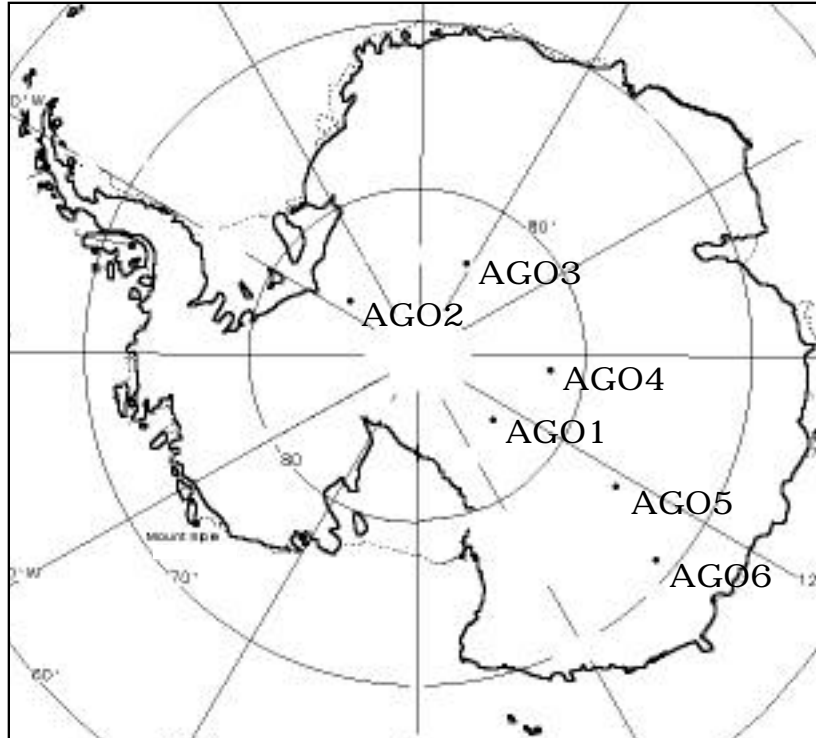
Resolving the communications problem was simple: the AGO field team simply donated one of their two High Frequency radios to the effort, and soon enough, McMurdo was back in the loop.

Trouble-shooting the engine problem proved to be more difficult. Over the radio a mechanic in McMurdo guided the engineer through a series of checks. In time the problem was isolated in the engine's ignition system. To the engineer's dismay, however, there was no replacement part.

Crisis often has a powerful impact on small groups -- it can pull them together or tear them apart. With a common goal, the AGO field team and the Air guard crew gelled. Tapping all the skills at their disposal, the group sought out Fourre, a Frenchman with McGuyver-like survival skills, to build a new part. Digging into his kit of electronics paraphernalia, Fourre cobbled together a replacement, and soon enough the AGO5 site was little more than a spec on the horizon behind an airborne Herc.

Safe and sound back in McMurdo, the AGO team reflected on the project they carry out and the most recent events. "There have been several incidents of trouble [departing] AGO sites," said Fourre. "[AGO sites are] at the very limit of what we can support operationally."

Col. Richard Saburro, the Commander of Operation Deep Freeze, agreed. "It's challenging and costly to operate in Antarctica, but we do just that," he said. "I was very pleased with their professionalism, perseverance, determination and resourcefulness. They stuck to it until the job was done." *



Located all across the continent, Automatic Geophysical Observatories, or AGO's, are notoriously difficult to depart from due to their locations at high altitude. The AGO5 site, where the Air National Guard plane had problems, rests at 10,118 feet, challenging both man and machine alike.



The
Antarctic
Sun

Sun Sites of the Week

Check out these Web sites for the inside scoop on ice life:

<http://unavco.ucar.edu>

<http://www.navy.mil/homepages/vxe6>

<http://www.iceberg.co.uz>

<http://www.antdiv.gov.au>



UPDATES

McMurdo Station

by Hope Stout

McMurdo Station is gearing up for the holiday season. The Christmas party is planned for Dec. 24 at the Vehicle Maintenance Shop. The Chapel of the Snows has full services planned complete with the Community Choir and the Brass Quintet.

The first phase of the season came to completion with the movement of the Ice Runway to Willy Field, beginning the use of skied aircraft. Many grantees have left the ice for the season, completing their work. The second half will bring a Biology Class as well as the other grantees whose work is complete during this evolution of the season.

Palmer Station

by Ron Nugent

For the past few months the ocean around Palmer Station has been locked in sea ice. A steady wind from the southwest packed brash ice tight against the south end of Anvers Island. Scientists that conduct their research in the waters near the station have had their work severely impacted due to the ice. On a recent evening there was a strong wind from the east that moved most of the ice away. It looked hopeful, but the ice moved back a few days later.

At this time the station is preparing for the busy month of January. The R/V Lawrence M. Gould arrives on Dec. 21 with new personnel, cargo and fresh food. The Gould returns on Jan. 6 for the beginning of the Long Term Ecological Research cruise. At this time the station population will jump from 30 to 39. On Dec. 31, the tourist season begins when the first of 12 tour ships and a handful of sailing yachts will visit the station.

Happy holidays to all from Palmer Station!

South Pole

by David Fischer

South Pole hosted its first party of the season in the Garage, featuring the "christening" of the new Challenger, and the first appearance of the South Pole Band.

SOAR (GS-098) continued its work during the past week with successful Twin Otter-based radar mapping sorties.

ASAbegan the Old South Pole Station timber recovery project this week. We expect to retrieve about \$40,000 worth of timbers still stored at the station. After this recovery, everything identified four years ago, including weather balloons, the timber and 10,000 gal-

lons of fuel, will have been recovered.

ASA continued with the Garage/Shops and Fuel Storage projects this week. To date 33 of the 45 fuel tanks have been received, as well as 23 of the 27 containment boats. On Dec. 11, construction workers completed the assembly and placement of Module A in the arch and began Module B, which is scheduled for completion on Dec. 19.

R/V Nathaniel B. Palmer

by Robert Dunbar

Researchers aboard the R/V Nathaniel B. Palmer completed the last of three ROAVERRS field campaigns that began in December 1996. During the three cruises, scientists, with the help of the NBP and ASA crew, occupied nearly 360 stations within the Ross Sea for water column, benthic, and sea ice sampling. In addition, 20 mooring operations were conducted. All three cruises were tremendous scientific successes, and the work was done safely and efficiently.

Thanks go to the members of the science parties, the skilled support staff provided by ASA, and the Captain and crew of the NBP. As of this writing, the NBP was scheduled to arrive in Lyttleton, New Zealand on Sunday, Dec. 20.

ASA, Denver

by Jim Chambers

The Denver staff remains busy expediting materials for vessel delivery to McMurdo. We have also developed a plan to remove the rock in front of the pier at Palmer Station thus making it easier to dock the vessel. We are busily procuring materials for additional upgrades of the Palmer laboratories, boathouse and GWR.

The Denver office has consolidated the input for the design of a replacement MEC at McMurdo Station and provided such to the design engineer. Y2k compliance testing remains on track under a Denver-based ASA Project Manager. The Denver-based ASA support staff wishes all of our deployed counterparts a very merry Christmas.

National Science Foundation

by Guy Guthridge

GPRA-the Government Performance and Results Act of 1993-has NSF's attention just now. We are doing a mock evaluation of the Foundation's performance in fiscal 1998 (which ended Sept. 30) so that the agency can be ready for 1999. Fiscal 1999 will be the first year, under the new law, after which agencies will be evaluated according to how well they integrate strategic planning, budgeting and performance measurement. NSF will have to show, for example, how awards have led to important discoveries, education, or policy

development; whether construction and upgrades are done within budget and on time; and whether operations have excessive unscheduled downtime. U.S. Antarctic Program participants will hear more about this new assignment as the year passes and are encouraged to think about how they might help the Foundation document recent successes so that the Congress can better know the results of its investment. See the GPRASec-tion of the NSF home page, www.nsf.gov.

Christchurch, New Zealand

by Brian Stone

The USCG Polar Sea port call at Hobart, Tasmania, went well, although cargo operations were delayed slightly due to problems with one of the ship's cranes. A total of 70,000 pounds of cargo for McMurdo Station was loaded; the majority of cargo being for the R/V Nathaniel B. Palmer port call in February. An additional 40-foot sled for McMurdo Station was also loaded so that the sled would be available to support the heavy airlift to South Pole station after the M/V Green Wave arrival.

U.S. Coast Guard Polar Sea

by Steve Wheeler

The U.S. Coast Guard Cutter Polar Sea and sister ship Polar Star alternate years supporting operations at McMurdo Station; this year, Polar Sea sailed from Seattle on Nov. 12 and headed for Antarctica.

After a brief stop in Hawaii, Polar Sea sailed for Sydney, Australia, arriving on Dec. 7 for a few days off and a load of fuel. Fueling this ship is no small task. The icebreakers carry a little less than 1.4 million gallons of fuel, ensuring that they have the endurance to handle lengthy jobs in remote areas. After their Sydney stop, they made the hop over to Hobart, Tasmania, to load 30 tons of ASA and Kiwi cargo. While in Hobart, they will pick up several research parties before heading south.

The icebreaker will embark K-305 (Kiwi exchange program), OO-283-M (Automatic Weather Station Program), OO-263-O (Ocean & Climate study) K-030 (Kiwi Biology), K-024 (Kiwi Cape Hallett Operation) and BO-031-O (Penguin Study). Supporting these events will allow the icebreaker to take the "scenic route" into McMurdo. Starting at Dumont D'Urville Station on the Adelie Coast, they will work east out to the Balleny Islands, then south into the Ross Sea; coast crawling from Cape Adare along the Victoria Coast until they reach McMurdo. The ship will stop at 17 different sites, repairing weather stations, studying the outlying rookeries and supporting atmospheric and sea ice studies concurrently.

Polar Sea is expected to start the break-in to McMurdo on New Year's day. *

BEAKER NEWS • BEAKER VIEWS

The Voice of Antarctic Researchers

by Andrew Lange, co-Principal Investigator, AB-145

An international team of physicists has been working out at Williams Field since early November, preparing a new experiment that will test our basic ideas of how the universe began.

The experiment, BOOMERanG, is a balloon-borne telescope designed to capture a detailed image of faint patterns in the Cosmic Microwave Background (CMB). The CMB is a uniform glow that fills the entire sky at microwave frequencies.

The existence of the CMB, discovered in 1964, convinced scientists that the universe must have begun in a "Hot Big Bang" - an initial state of extremely high temperature and density - from which it has expanded ever since. The CMB is a relic of this primeval fireball. As the universe expanded over more than 10 billion years, the radiation cooled from white hot to the faint microwave glow that we observe today.

As a fossil relic of the early universe, the CMB has been the subject of intense scrutiny ever since its discovery. Remarkably, we now know that this "first light" from the Big Bang travels to us virtually undisturbed from the most distant edges of the universe. Observing the CMB with specialized instruments allows us to take a snapshot of what the universe was like when it was just a few hundred thousand years old, long before the first stars or galaxies formed. At this age, the universe was a thousand times smaller than it is now, and contained an almost homogenous soup of light and ionized hydrogen and helium.

The brightness of the CMB is remarkably uniform, reflecting the homogeneity of the early universe. Over 25 years passed before the first faint structure in the CMB was detected by NASA's COBE satellite in 1990. These variations in brightness correspond to differences in temperature of only a few 10 millionths of a degree, and require extraordinary efforts to measure precisely. Scientists believe that much of the detailed nature and history of the universe is imprinted in the fine-scale patterns of these faint structures. Unfortunately, the COBE satellite lacked the angular resolution to resolve these patterns.

Enter the scientists out at Williams Field. Seven years ago, immediately in the wake of the discovery of structure by COBE, researchers in California, Italy and the United Kingdom began a collaboration to build a telescope that would be capable of reading the "fine print" in the CMB that COBE had missed. The result is BOOMERanG (Balloon-born Observations of Millimeter-wave Extragalactic Radiation and Geomagnetism), which is about to be launched on its maiden voyage from the Antarctic.

The experiment contains a sophisticated detector system cooled to just 0.3 degrees above absolute zero (cold even by McMurdo standards) at the focus of a 1.3-meter telescope. Carried to over 120,000 feet by a high-altitude balloon as big as a football field, BOOMERanG will map a roughly 45-by-30-degree region of the sky as it circumnavigates the Antarctic continent and returns, with luck, close to McMurdo some 10 to 14 days later.



Launching a 30-million-cubic-foot balloon takes great care, patience and timing. Last year's balloon launch, seen in this image, went off without a hitch. Photo by Alexander Colhoun.

The experiment is arguably the most complex balloon payload ever flown from the Antarctic, yet the preparations have gone smoothly and the experiment will soon be ready for flight. In between periods of round-the-clock work, the team members have found time to liven up the Williams Field galley with homemade pasta and live music, and are looking forward to a much-promised expedition in search of the elusive penguin.

Sadly, if the penguins do not materialize soon the principal investigator may have to go home and tell his children that he went all the way to the Antarctic and never saw anything more exotic than a skua. The team includes researchers from Rome, Florence and Frascati in Italy, and from Caltech, JPL, UC Berkeley, UC Santa Barbara and University of Massachusetts in the United States. It is funded by NASA and the NSF, in the United States, and by the Italian Antarctic Program, in Italy.

Balloon Update, by Steven Peterzen

Last week the members of the National Science Balloon Foundation team launched a small Pathfinder balloon into the stratosphere to relay data on wind speed and direction. This data shows the normal anti-cyclone pattern has yet to set-up over the continent. A second Pathfinder will be released next week. If this balloon shows the required stratospheric winds are moving, the main experiment will be launched. Looking at the calendar and current weather forecasts, this event may take place on Christmas eve.



Dear Aunt Arctica,

My family celebrates Christmas better than they do anything else. My mother always has a ton of food prepared for that evening and we stay awake half the night catching up with each other, playing scrabble and singing corny holiday tunes. My dad gets the tallest Christmas tree he can find, and the house smells like pine and burning firewood.

This is the first Christmas in my life that I've been away, and I miss everything these days: the sound of my mother's voice, the smell of the two golden retrievers after they've been out in the snow and my niece's sweet 3-year-old smile. It hardly feels like Christmas here, and I wish I could just go home for those few days. I don't even want to celebrate this year, because I know it will make me too sad for the things I'm longing for. Do you think it's cowardly of me just to sleep through this holiday season?

Sincerely,
Crying at Christmas

Dear CAC,

Yes, you're being a coward. Not that I wouldn't be one also in this circumstance, if all my Christmas associations weren't with acrylic-scented shopping malls and bartering for visitation times with my parents. My fondest holiday memories are of the smoke I

would sneak in the drive across town from my father's house to my mother's. There would be, virtually, no traffic on the road, and I would roll down all the windows in my Nissan Sentra to keep things ventilated. Then I would crank up the heater to ward off the December nip in the air, put a little Cure on the tape deck, crack a diet Pepsi and fire up a Camel Light. Now that's what I call holiday enjoyment; just like heaven.

What I suggest is this, to quote a song, "If you can't be with the one you love, love the one you're with." Create a gathering with friends over dinner, movies, wine, whatever. Ask everyone to share their best Christmas memory, and when your turn comes, regale them with the most nauseatingly loving relic you can think of from your past. Then go around the group again, and ask everyone to share what they are most thankful for this season in McMurdo.

It may seem as if this holiday is a bleak occasion, but there is a lifetime of Christmases ahead of you, and this one may serve as a good contrast to all that you are blessed with. It is an exercise in resourcefulness, in creating a happy, enjoyable environment for yourself despite what you feel you are lacking in the way of outside factors. Sadness is good sometimes, especially when it is caused by the longing for what your memory holds sweet.

Good luck to you, CAC, and happy holidays to all my dear readers. I hope that each of you is snuggling cozily upon your sheets of fond memories from home, and warmly beneath your blankets of friendships and harmony in McMurdo. Gifts of Camel Lights and Diet Pepsi can be left to me in the Sun office any time between now and Dec. 25.

Peace on Earth, including Baghdad,
Aunt Arctica

You can send your questions for the preceptress of Antarctic advice to sun_news@asa.org.

Around Mactown

Christmas Eve service at the Chapel of the Snows will be at 11 p.m., Dec. 24, followed by midnight mass. Christmas services are as follows: Latter Day Saints, 8 a.m.; Catholic, 9:30 a.m.; and Protestant, 11 a.m. No services will be held Sunday.

Want to be a part of McMurdo's supreme social event? Everyone interested in helping at IceStock '99 is invited to attend a meeting at 8 p.m., Tuesday, Dec. 22, on the o-side of the galley.

Hiking/Skiing update. The ice runway closed Dec. 12, and the sea ice is now off-limits for recreational travel. The Cape Armitage route is closed for the season. Shuttles run every half hour to Williams Field, and pedestrian traffic on Willy Road is also permitted. Single travelers need to check out with the firehouse.

Also, remember, black flags mean danger. A small crevasse on the Castle Rock loop, between Silver City and Willy Road, has been marked off with black flags and the trail has been safely rerouted. Stick to the marked trail and stay on the slope-side of the flags.

Calendar

Dec. 20
Art Show
1:30-3 p.m., Galley

Dec. 22
Contra dancing, live music
7-9 p.m., Gallagher's

Dec. 23
Christmas Bingo
8 p.m., Gallagher's

Dec. 24
Christmas Party
7 p.m., Heavy Shop

Dec. 25
DJ Dance Party
9 p.m., Gallagher's

Dec. 26
Ping-Pong Tournament
coffeehouse

Dec. 28
Slide show on MacTown in 1972
8:30 p.m., e-side Galley

Dec. 31
New Year's Eve DJ Dance Party
9 p.m.-1 a.m., Gallagher's

Jan. 1
Ice Stock/Chili Cook-off

Correction: In our article, 'Night Shift' (Dec. 6, 1998) we reported four names incorrectly. The correct name spellings are: Victoria Landgraf, Wendy Raver, Stephanie Brackin and Sandi Terry. Also, a statement attributed to Stephanie Brackin on paragraph 10 was in fact made by Annie Lowery. *The Antarctic Sun* regrets these errors.



Perspectives

Taking it One Week at a Time

by Sarah Ohlson

As performed at the Soiree at the Chalet Dec. 10

Slack-jawed and sore-chested, you board a plane to the beginning phase of what HE has now taken to calling your "penance, job, adventure."

You share an airport shuttle with a woman whom you will later recognize for the next three months as the prettiest girl in any room. She comments that you're both heading to the same destination. "You can always spot 'em in a crowd" she says, and you begin to wonder if you should have packed differently, because she doesn't look anything like you.

The air smells like K-Mart in your hotel room. You sit on the extra-marital lovemaking and human dander-soiled bedspread and sort through your bag of belongings in search of some comfort. You berate yourself for not establishing your new image long enough before leaving your old life

to have acquired a new favorite piece of clothing. You leave your room and look for something to eat. The clothes you changed into are too warm for the weather, and you reluctantly start to break a sweat, even though you're not really wearing the right shoes for it.

When you take off your new jacket, though, the breeze makes you chilly, so you put it back on and just walk slow. It's the closest option available, and so you settle on a steak-house in which a line of waiters will ring a cow-bell if a patron sits down to eat with a necktie on. You dine conspicuously alone, watching women in sweatsuits slow dance with men wearing Wrangler jeans and Nike cross-trainers to a band called The Lazy Eights. While you eat your medium-well, prime-cut-of-something, you wonder, if HE was there, would he too dance to a Dwight Yokham song with you? When The Lazy Eights start covering Garth Brooks, you flag down the waiter for your check.

Sixteen days pass from the night when the two of you toasted, with yeasty, icy champagne, his compassion and your bravery, before you actually make it to your point of destination. Sixteen days past your last chance to inhale his womb-swoon scent of baking bread, full moon and glacier lakes you arrive, fetid, damp and queasy inside your extreme-cold-weather clothing. As you are herded through the chow line for the first time, filling your plastic prison tray with rehydrated mashed potatoes and previously frozen, mixed vegetables, you know for certain that you are not brave. You leave a message on his machine that night: "It's huge here," you say. "So big that I'm afraid I could lose myself." As it turns out, all you really lose is your favorite hat and a pair of sunglasses, but the first couple of days still leave you ducking into the bathroom regularly to weep.

After the first two weeks, the cold to no longer frightens you. In the first two weeks, you learn that nobody really observes the three-minute shower rule. You learn what a boondoggle is, and that you may never get one. You learn that it's impossible to call home on Sundays, and that people will steal your clothes right out of the laundry machines. You learn that you hate spending your days

cleaning bathrooms, and that the sound of progress in MacTown never stops. At night in bed, while listening to the repetitive beeps of heavy machinery in reverse and the guys

drinking beer down the hall, you realize that you're not even sure what you're here in support of. You fantasize that this is all an elaborate hoax for the real purpose of alien research and germ warfare. You convince yourself that you are scrubbing toilets in the name of governmental victory in the face of armageddon.

In the second two weeks, work has you inventing terms like "beer-shit Monday," and "hairy shower." You joke that you're going to start a pubic-hair collection with what you find on the urinals, just like Jeremy Reynolds did with boogers in the second grade. You will line them up in rows on a paper towel and put them in your

desk for safekeeping. It's been almost 21 days since you last tasted fresh food, and your uterus is asking you where the moon went. You learn that the energy flow of the earth is magnetized from the South Pole to the north, and you swear you can feel your life force being sucked from the nucleus of your cells. You think that your will to live might now be residing somewhere in Iceland.

There is a man who lives in one of the dorms that you clean who shows up sometimes and sits on the bathroom floor while you scrub showers. He reads you Neruda poems during these times, some of which in espanol, and you start to notice that he has very nice eyes. You remember reading once, in Cosmopolitan magazine, that in a poll of most daring places where people had made love, one woman, amidst the responses of boss' offices and hotel elevators, had said Antarctica.

On the fifth week, you call to check in with your previous life. He's just returned from work and tells you about the three different offers he's received from women that night to go home with them. He tells you about the rain storm that's been going on for a week so far and holds the phone to an open window so you can hear it beat against the pavement. You close your eyes and see the magnolia tree in front of his house. You see darkness, and the streetlight being refracted off his car in Puget Sound droplets. He tells you about the antique Japanese table he's just bought and the weave of the new rug which sits beneath it. He tells you he's heating up some fresh, braised beets and describes their ruby flavor. Your memory can smell their fecund dirt scent mixed with the Tibetan incense he burns. He says he's researched where you are on his new computer, and warns you that there might be lead in the water. You talk for three hours, and wake up the next morning worried that you might not make it here to the end of your contract.

But a flight the night before has brought with it fresh fruit. At breakfast, you hold an orange slice on your tongue, glad that the past is where it is and that you don't have to relive it. *

As it turns out, all you really lose is your favorite hat and a pair of sunglasses, but the first couple of days still leave you ducking into the bathroom regularly to weep.



Enjoying the Ride

Any Beverly Hills valet parking attendant would whimper like a toy-deprived toddler at the distinguished registry of classic automobiles that Liz Sutter has had the opportunity to take out for a spin.

And not just around the block. She has her fun racing across 4,000 miles of scenic North American countryside. In more ways than one, Sutter is a woman on the move.

"It is called the Great Race," she explained as a warm smile curled up the corners of her mouth, "and it is a part of my life."

Considered to be the world's premier vintage car event, the History Channel-sponsored Great Race showcases 100 pre-World War II vehicles. "It is like a traveling museum," Sutter said.

The 14-day course, which changes every year, winds through the back roads and small towns that make up the heart of America. But, Sutter said, "This is no leisurely drive across the States."

Best explained as a controlled speed and distance endurance rally race, vehicles are not simply scored on speed of course completion. Rather, detailed driving instructions highlight ideal times associated with each segment of the race and the goal is to perfectly match them. It is a race that requires more technical skill from the drivers and navigators than from the vehicles. Four regional rallies lead up to the Great Race, which takes place in May and June.

Having had an interest in cars and racing for as long as she could remember, this silver-haired maternal figure found inspiration in 1987 when she was given the opportunity to finish the race with an old friend on Main Street in Walt Disney World. Sitting at center stage of the excitement, Sutter simply stated, "I was hooked."

A resident of Florida for more than 25 years, Sutter is experiencing the Ice for the first time. She interviewed for her position as a service attendant with ASA during a rest day from last year's event as it passed through Englewood, Colo. Sutter sees parallels between being a rookie driver and a FNG in Antarctica. "Your first year you just walk around in a wide-eyed stupor," she said, but



Liz Sutter followed Route 66 all the way to Antarctica and is pictured here on the road to the Pegasus runway near McMurdo Station.

quickly added, "It is an honor to be a first timer because you can only be one once."

Experience has shown that Sutter is not only a race participant, but also a competitor to be reckoned with. In 1991, shortly after making the transition from groupie to driver, Sutter and a close friend fielded the only all woman team in the California regional. Behind the wheel of a 1936 Chrysler Airflow Imperial, the two unexpectedly took the checkered flag. With a wistful chuckle she confided that the Airflow is "a car that I wish I owned and could drive every day."

There are other gems that have caught Sutter's fancy. She rattled off the names and years of antique autos like a museum curator. Some of her favorites include a 1916 Hudson Cabriolet, 1932 Ford Roadster and 1940 Buick Roadmaster. "Seriously though," she said, "To have the honor to drive any of these vehicles is very

special to me." When questioned about her ultimate drive Sutter's entire face lighted up as she uttered in a definitive tone, "I have been lusting to drive the 1925 Hispano Suiza."

Although she admits to her competitive nature, there is more to this event than just

beautiful cars and a desire to win. For Sutter it is about the experience. "Every day is like the Fourth of July," she said of pit stops in towns off the beaten path.

Participation in the event has also given way to defining moments in Sutter's life. She described one in particular that left warm tears streaming down her cheeks. "We were crossing the plains of Texas and had not seen any signs of civilization for some time when we came across an elderly man and a young child who were waving the largest American flags that I had ever seen," explained Sutter.

Coming to Antarctica is just one more example of how Sutter has followed her dreams. "In 1987 I knew that I wanted to drive in the Great Race, but I never thought it would really happen," she explained. "I proved that I can do whatever I set my mind to.

"You just have to make time for your fun." *

Profile

Story and photo by Ty Milford