

The Antarctic Sun



Published during the austral summer for the United States Antarctic Program at McMurdo Station, Antarctica.



Ministerial Conference Converges on Ross Island. Story on page 3.

Bill Gilmore, the remediation team leader, dumps a load of contaminated soil into a barrel destined for removal to McMurdo Station. Gilmore and his team of remediation specialists removed 21 barrels of diesel-contaminated soil and debris from a remote site in the Dry Valleys on the shores of Lake Vida. The team, in its first year of work, has focused on six sites of major environmental degradation.

Dedication to Remediation

Story and photos by Alexander Colhoun

McMurdo Station is a scientific, industrial site.

A walk through town reveals miles of permanent fuel lines and 16 bulk storage tanks capable of holding approximately 9,000,000 gallons of fuel. Front-end loaders, graders, 18-wheelers, bulldozers, tracked vehicles and machines of every description snake their way amongst 96 permanent structures that comprise this outpost village.

And with any major industrial complex there are industrial problems, chief among them: environmental degradation. Since December of 1955 when McMurdo was established, the station's once pristine grounds have endured countless fuel spills, both major and minor, and decades of accompanying environmental neglect.

It may be an uphill battle, but the challenge of cleaning some of McMurdo's most abused areas has not deterred Bill Gilmore and his team of environmental remediation experts who

descended on Ross Island in October with hopes of making-up for past mistakes.

The team came to Antarctica with a tightly-narrated task sheet that focuses on six primary areas of gross contamination. "The objective," said Kurt VanGelder, ASA's environmental engineer, "was to try and clean-up areas of significant impact." These sites were Hut Point, Marble Point, the helicopter pad, the 1997 Winfly fuel-spill site, Lake Vida in the Dry Valleys, and 700 drums of soil stockpiled near the hazardous waste yard.

While these particular sites still need attention, redressing environmental concerns is nothing new to the United States Antarctic Program. Since the mid-1980s the National Science Foundation has spent vast amounts of energy and resources toward McMurdo's clean-up.

It's no secret that for most of McMurdo's early life, the station's waste was burned or staged on the ice for it to fall through when the ice broke out in late summer. These practices are long

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Road Map to McMurdo's Future

by Frank Brier, National Science Foundation's facilities engineering projects manager

The road map to McMurdo's future, a plan devised by Antarctic Support Associates known as the McMurdo Long Range Development Plan, is guiding the National Science Foundation as it seeks to modernize and improve the overall efficiency of McMurdo Station.

The process began this season with the construction of two new 2 million gallon fuel tanks and the installation of the waste heat recovery piping system.

These two construction projects are the most noticeable activities in implementing the plan, which identifies and prioritizes major construction activities based on five factors including: improved environmental stewardship; improved safety; reduction in energy use; improved quality of life of station personnel; and greater operational efficiency of the station as a whole.

The construction of new fuel tanks and the waste heat recovery system were the direct result of environmental considerations. Most of the existing bulk fuel tanks are substandard and do not have secondary containment required to meet environmental standards.

Next summer two additional 2 million gallon tanks will be constructed, followed in 2001 by the construction of a much smaller tank for gasoline storage. Once completed these tanks will allow all fuel at McMurdo to be stored in properly constructed tanks with secondary containment.

Environmental stewardship has financial benefits as well. Consideration is also being given to construction of several additional fuel tanks to provide two years of fuel storage capacity for the station, thereby reducing the need for a yearly fuel tanker journey to McMurdo and sav-



Patrick Stevens, a pipefitter, works on a fuel line that shares space with the new heat recovery system running between buildings 165 and 155 in McMurdo.

ing the program over 1 million dollars a year.

Another fiscally sound environmental action is the waste heat recovery project that was started last winter with the installation of heat exchangers in the power plants' diesel generators. These exchangers capture heat exhausted from the radiators and uses it to heat liquid.

The piping system being installed this summer will carry this liquid to buildings 165 and 155, eliminating the need for burning fuel to heat them. In addition, this winter the Crary Lab will be added to the waste heat loop, and in future years dormitories and other buildings will be heated with this system. When complete this project is estimated to save 460,000 gallons of fuel per year.

New fuel tanks and exposed pipes are readily noticed in McMurdo, but some changes are less obvious. Last winter an extensive remodel of the food preparation area in Building 155 was carried out in preparation for an entirely new dining room facility complete with windows and multi-level seating. The redesigned facility

will be constructed in the winter of 2000 with a food service area that will include several islands to improve traffic flow and reduce waiting time.

Workers who return next summer will see major changes along Highway One, the hallway in front of the station store. This corridor will be remodeled this winter in conjunction with the overall plan to remodel the housing office, computer labs and laundry facilities in this area.

Other projects on the drawing board include the first phase of a new Science Support Center (SSC). The SSC will replace the aging Mechanical Equipment Center.

Construction of Phase I of the SSC will start next summer and will be completed in October 2001. Phase II of the SSC, to be constructed in the future, will consolidate the Berg Field Center, USAP Cargo, and Field Safety Training under one roof with the MEC.

And the list goes on. Other projects of community interest planned for the near future are the remodel of Dormitories 203, 204 and 205, replacement of the Carpenter Shop, modernization of the power plant, construction of a consolidated warehouse, and replacement of recreational facilities such as the bowling alley, weight room, aerobics room and gym.

By consolidating functions, replacing many existing buildings with larger modern facilities and eliminating remote buildings like those on Observation Hill the NSF hopes to reduce the overall footprint of McMurdo Station. As ever, funding considerations may limit the speedy implementation of these plans; but McMurdo residents can be certain the NSF is thinking ahead and making plans for a bright and efficient McMurdo Station. *

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Treaty Ministers Visit Ice

Story and photo by Alexander Colhoun

The meeting was a long time coming.

Forty years after signing the Antarctic Treaty, ministers of 24 nations gathered in Antarctica to discuss the political management of growing environmental concerns facing this distant, ice-covered continent.

"The meeting is designed to be a fact-finding and informal one," said Simon Upton, New Zealand's minister responsible for Antarctica. "It will achieve its primary goal if it focuses significant political attention on the continent and its dependent eco-systems."

Ambassadors and ministers traveled from the far corners of the globe, including India, Peru and Bulgaria, to experience the Antarctic environment and its logistical challenges first hand.

The meetings, held at McMurdo's Albert P. Crary Science and Engineering Center, focused on environmental issues ranging from the illegal exploitation of toothfish stocks in Antarctic waters to the growing influx of tourists, some 12,000 strong each year, across the continent.

"Antarctica's main defense has been its isolation. It has been 'out of sight, out of mind,'" said Upton. "But technological changes are rapidly diminishing that isolation. The recent expansion of illegal tooth-fishing has shown just how vulnerable this pristine environment is."

But the most important lessons came from the hands-on experience of traveling to and around the continent. The two-day meeting was highlighted by visits to the Dry Valleys, penguin rookeries and Scott's Hut - the wooden structure used by Scott



Dr. Abraham Muthunayagam of India prepares to clamber into a tracked vehicle that was used to travel across the ice and snow surrounding Scott Base. Dr. Muthunayagam joined ministers from 24 nations at an informal meeting of nations that are signatories to the Antarctic Treaty. The meeting was hosted by the New Zealand government.

during his 1911-12 expedition to the South Pole.

"It's beautiful here, beyond my dreams," said Katia Todorova, deputy director of Bulgaria's international law department, as she looked out over the Ross Ice Shelf. "My first impression is that society is quite established here."

"It's quite impressive," said Takayuki Kimura, Japan's ambassador of international trade and global environment. "They are doing lots of research and must have a very tough time working here, but they have a

good life as well -- if I were young, I'd have volunteered for a month or so."

Walking across the ice, watching penguins slip into the sea and riding helicopters above the Dry Valleys gave diplomats a fresh new perspective for their work, and set the tone for the next meeting in Peru. "This meeting creates the right atmosphere for the upcoming meeting in Lima," said Eduardo Airaldi Argentina's undersecretary of foreign policy. "Here we can talk informally about the issues." *

IceTrekkers Pack It In

Thinner perhaps than when they started, but in very good spirits, members of the IceTrek expedition to the South Pole: Peter Hillary, right, Eric Philips, center, and Jon Muir, adjust their sleds on a cargo palette for the trip back to New Zealand.

The team was flown back from the South Pole last week, having reached the Pole on Tuesday, Jan. 26, after 84 days of travel, dragging all their equipment behind them on sleds.

The team had hoped to make an unsupported round-trip journey to the South Pole and back, repeating the ill-fated journey of Robert F. Scott in 1911-12, but decided to abort the return leg to the ocean as they had been badly delayed due to terrible weather and a bout of food-poisoning. "It was an excellent trip," said an upbeat Hillary. "We pioneered a new route to the Pole over Shackleton's glacier and had a grand adventure." *



Photo by Alexander Colhoun



Adelie Penguin Populations Pose Questions

by Ginny Figlar

The antics of Adelie penguins provide endless entertainment.

They waddle, squawk, steal pebbles from each others' nests and approach humans with endearing curiosity. Their expressive displays could be watched for hours.

But, at capes Royds, Bird and Crozier, David Ainley and his team don't have to. Using a weigh bridge that monitors the feeding habits of about 60 penguins that nest within a fenced area, these scientists can track how long the parents are out finding food and how much of it they bring back to regurgitate to their chicks.

"It's really a nice, non-intrusive way to get that information," said Ian Gaffney, a field biologist on the research team.

The technology, in place the past few years from early December to late January, is simple -- the weight of the birds on their way out to find food is subtracted from the weight of the birds on their way back in. It's just one way Ainley is trying to understand how penguins forage for food and what factors impact their population size.

Most prominent among those factors is the ice. Field biologist Denise Hardesty explained that the penguins' ability to get food is "directly tied to the ice." Too much heavy ice makes it harder for the penguins to find food. Too little ice means a change in ecology in the water below and less food -- krill and fish.

"Ice is like a two-edge sword," Ainley said.

He has been studying Adelies in Antarctica for 30 years and is attempting to make a correlation between Adelie population size and ice conditions. Looking at satellite images dating back to 1973, he has already made some discoveries.

"We find that there's an inverse relationship," he said. "When there's heavy ice, penguins do poorly versus when there's loose ice or less extensive ice."

It is in this way that climate change may come into play in



Ian Gaffney and Denise Hardesty, field biologists at Cape Royds, stand inside the fenced area of the weigh bridge colony and monitor the health of the birds. Using binoculars, the researchers can read the identification number on bands attached to the birds' legs. Photo by Ginny Figlar.

his research. Rather than look at the penguins as indicators for climate change, Ainley said he's using climate change to understand how the birds respond to different environmental conditions.

For example, other species of penguins that don't like open water, such as chin-strap penguins, are moving south as the sea ice continuously retreats due to warmer temperatures. This may eventually have an effect on the Adelie populations as they start to compete with these different species for resources.

As far as differences between the Adelie colonies studied at Beaufort Island and capes Bird, Crozier and Royds, data on foraging habits seem to correlate pretty evenly between these disparately sized colonies.

Aside from monitoring the foraging time and amount of food brought back, the researchers band and weigh chicks, census the colonies, take weekly diet samples by pumping the stomachs of five birds and attach radio transmitters to several birds to track where they are feeding.

"It's pretty amazing the patterns you see out of it," Hardesty said.

One pattern they haven't been able to explain yet is the increase in Adelie populations in this area, especially at Cape Royds. "Over the past 20 years the populations in the Ross Sea have been increasing," Ainley said. "We're trying to figure out why they're increasing but also why Cape Royds is doing a lot better than Cape Crozier."

Ainley has no definitive answers yet but guessed that it may be that with such a small colony, less than 5,000 pairs of birds, competition for resources is not as fierce as at Cape Crozier, where there are 175,000 Adelie pairs.

Just as humans have migrated from dense areas to more open lands, penguins are also making some moves, which Ainley is keeping an eye on.

As he and his team leave the ice until next year, they look forward to being back among the Adelies. Aside from the technical data obtained, Hardesty said she became in tune with their facial expressions and behavior.

"When the ice broke out here there was such an incredible stream of penguins heading out there," she said. "It's really interesting to watch the changes that take place here." *



The weigh bridge, a technology designed three years ago, tracks the comings and goings of penguins and their eating habits. "It allows us to collect data that would be virtually impossible to collect," said David Ainley, principal investigator of the project. Photo by Ian Gaffney.



Best of times, Worst of Times at Russia's Vostok

by Julie Palais, National Science Foundation

The Russian, American and French international effort to drill an ice core at Vostok Station, Antarctica, was finally completed in late January 1998 and achieved both a technical and scientific success by reaching a depth of 3,623 meters below the surface at the Russian Vostok Station in East Antarctica.

The ice core that was recovered is both the longest ice core ever drilled and contains the oldest ice recovered in an ice sheet; representing over 400,000 years of Earth's climatic history and atmospheric conditions.

Ice-core drilling was stopped at a depth of 3,623 meters, 120 meters above the ice-water interface of Lake Vostok, a subglacial freshwater lake similar in size to Lake Ontario (about 200 by 50 kilometers). The depth of the water in this subglacial lake is believed to range from about 10 meters to as much as 500 meters. Sediments in the bottom of the lake may be as much as

300 meters thick, and both the water and the sediments in the lake may contain evidence of life that could be many millions of years old.

But this story is mainly about the Vostok ice core, which is a real saga of perseverance and achievement in the face of adversity. The Russians began ice core drilling in 1972 and completed a number of shallow and deep ice cores. Then in 1984 the French began collaborating with the Russians on the Vostok ice core program, with logistical assistance from the USAP.

In the late 1980s, the United States became equal partners in the program, with the scientific involvement of U.S. researchers on various aspects of ice core studies. There were many times over the almost 30-year effort that drilling had to be stopped for either technical or economic reasons.

In addition to the extreme working conditions (both low temperatures and high altitude), the Russians at Vostok Station faced one logistical hurdle after another -- a fire in their power station one year, problems getting their resupply ship into Mirny Station another year, not to mention the continual battle they faced with their traverse vehicles, which provided most of the fuel and supplies for the station.

To celebrate the success of the deep-drilling program and to share with the international sci-

ence community the results of the program, the paleoclimatic record from the Vostok ice core was the subject of a recent special session at the American Geophysical Union meeting in San Francisco from Dec. 6 to 10, 1998.

Twelve oral presentations and 24 posters were presented at the meeting. In addition, there was a press conference held in order to brief the media on the latest discoveries from the ice core. Results were presented on the stable isotopes, major chemical impurities, gases and microorganisms found in the ice. There were also presentations comparing the Vostok results with other proxies from both marine and land sediments.

As for Lake Vostok, an NSF-sponsored workshop was held in Washington in early November to bring together U.S. scientists who are interested in pursuing research there. The purpose of the meeting was to gauge U.S. scientific interest in this topic.

Scientists from a variety of disciplines attended this meeting and are preparing a workshop report which will summarize the interests of U.S. scientists in doing research at Lake Vostok. Nevertheless, there are still many hurdles to cross before a program is actually started at Lake Vostok. In addition to developing some sort of international program, since it is unlikely that the United States would do a project like this on its own, there are technical challenges related to developing environmentally sound procedures for accessing and sampling the lake. And, last but not least, scientific proposals would have to be submitted, peer reviewed and accepted for funding.

Lake Vostok has attracted a lot of attention from the media, both because of the possibility of finding life in this extreme environment and because NASA would like to use Lake Vostok as an analog for exploring Europa, the icy moon of Jupiter which is thought to have an ice covered ocean that could contain life.

But don't be fooled, because some of the most interesting science has already come from the results of analyses on the deep ice core. For the time being, the work continues on the Vostok ice core, and the Lake Vostok activities are gaining momentum but are still only in the planning stages.

Vostok Station lies at 78S, 106E at an elevation of 3,488 meters.



Vostok Station is reached by land traverses and by both Navy and New York Air National Guard flights. Photo by Eddie Martens, Navy photographer.

Did You Know...

by Brenda Joyce

Fuel exhaustion forced explorer

Lincoln Ellsworth and pilot Herbert Hollick-Kenyon to land 25 miles short of Little America on Dec. 5, 1935. The camp had been abandoned by Richard E. Byrd several years earlier. They walked six days to the camp and were rescued by the British Research Society ship *Discovery II* a month later. Their plane, the Northrup 2B Polar Star was later recovered by Hollick-Kenyon.

The ice sheet at the South Pole is nearly two miles thick and is constantly shifting, carrying the facilities along with it at a rate of about 30 feet per year.

The highest mountains of Antarctica reach over 14,000 feet, about the height of the U.S. Rocky Mountains.

Capt. John Symmes contended that the earth was hollow and open at both poles. He surmised a 4,000-mile opening at the North Pole and a 6,000-mile opening at the South Pole with five hollow, concentric spheres comprising the mass of the Earth. He petitioned Congress in 1823 to send an exploring expedition to test his theory and received 25 affirmative votes.

Lt. Charles Wilkes was given the command of the U.S. Exploring Expedition in 1838 for America's first official expedition to include Antarctica. During his expedition 62 men were discharged as unsuitable, 42 deserted and 15 died.

If completely melted, the present Antarctic ice sheet houses enough water to raise the global sea level by 200 feet.

Antarctica is depressed more than half a mile to near sea level under the weight of ice.



A FNG Guide to Kiwi Country: Exploring the South Island

by Ginny Figlar

To Hike or Kayak Abel Tasman? That is the Question.

Can't decide between hiking and kayaking the popular Abel Tasman National Park. Why not do both?

"The park itself isn't particularly big," said Mike Bannock of the Ocean River Adventure Company. "There's plenty of time to kayak and tramp."

Indeed, Abel Tasman is New Zealand's smallest national park, but summer crowds flock there to hike the 51-kilometer coastal track. Meandering where sand meets surf, the track gives kayakers the opportunity to park onshore and get their legs moving.

And their supplies aren't limited by what they can carry on their backs. Kayaks have plenty of storage space.

"You can really use a kayak as a packhorse," he said. "What a lot of people do is indulge themselves," often packing a case of beer and lots of food into the kayak.

With no big, open-ocean waves here, relative beginners can kayak with ease along the national park coastline, camping at beaches or staying in huts or a lodge on the way. Guided trips of one to five days take the pressure of planning out of your hands. All you need to do is show up. For the water-confident explorer, freedom rentals allow you to get off on your own at around \$25 per day.

If you go, start planning now. There are openings in the middle of February, but the end of the month is booked. Eventually everything through mid April will be booked solid, Bannock said, so give yourself some lead time.

Online bookings can be made and additional information can be found at <http://seakayaking.co.nz>.

Alternative Plan: Head east to the Marlborough Sounds area for rivaling beauty and an abundance of nooks and crannies to investigate along the coast. The Marlborough Sounds Adventure Company offers guided trips and freedom rentals. Go to <http://webnz.com/msadventure> for rates and other information.

Taking the Scenic Route

- The Milford Road, between Te Anau and Milford Sound
- The stretch of road between Franz Josef and Fox glaciers
- Skirting the coast from Hamilton to New Plymouth
- Marlborough Sounds drive from Picton to Nelson
- From Wanaka north along lakes Wanaka and Hawaia

Don't Expect a Wilderness Experience

Hiking in New Zealand is highly regulated and is not like hiking in the United States, said McMurdo dentist Dr. Scott Jones, who traveled in New Zealand for three months after getting off the Ice last summer.

Expect to pay somewhat hefty fees to hike the popular Milford and Routeburn tracks. Even camping, which is about half the price of staying in the huts, requires a paid pass on any track. Reservations can usually be made a few days in advance at DOC offices.

Not only should you expect to pay to hike, also expect to see a lot of people. One way to avoid the crowds, Jones said, is to stick to the east

coast of the island. The Otago area offers New Zealand hospitality and more quiet time.

If your stay in New Zealand is only for a week or so, however, Jones recommends heading straight for the Fiordlands or Queenstown. You won't beat the crowds, but this unique area can't be missed, he said.

Queenstown Quandary

With two raftable rivers, one of the highest bungy jumps in the world and a party-town atmosphere, Queenstown is a hub of adventure. The biggest drawback is having to decide which activities to do.

Karla College, central supply materials person, lived in the Queenstown area for six months and offers some insight into the thrills of this resort town.

Queenstown has two main rivers that are raftable -- the Kawarau, which is rated as a class III trip with one high class III/class IV rapid on it, and the

Shotover, which is a class IV trip.

At press time, the Shotover was too low to run. Queenstown rafters are praying for rain, College said, which could change the status of the river in just a few days time. The Kawarau, however, is able to take trips.

Experienced kayakers may prefer to run the Kawarau on kayak, with its pool-drop-type rapids and lots of play spots. Meanwhile, the Shotover offers more short, technical rapids and involves more skill.

Beginning kayakers can head over to the upper section of the Shotover for class II rapids to work on technique. The ride entails about two and a half hours of endo spots and surfing, and a trip under the 340-foot Pipeline bungy jump. (The catch, College said, is that the drive to the Upper Shotover is scarier than the boat ride itself. But it's well worth it as there are no commercial outfitters up there and few Yahoos dare to make the drive.) If the drive seems too treacherous to attempt, College said to take a short drive to the Queenstown Rafting base for some great Class II moonlit kayaking.

Other river activities offered in Queenstown are river sledging (on a buoyant sledge) or river surfing (on a boogie board). It's all guts and no skill as you ride the rapids face first. "With fins on your feet and the board in your hands, they are excellent for cruisin' down the river or surfing a hole," College said.

The biggest head-first thrill is bungy jumping, and Queenstown has three heart-stopping jumps to choose from. Those who have done all three love The Ledge, which is at the top of the gondola. For about \$80, you get a ride up the gondola and then jump out toward town.

At the end of the day, the nightlife of Queenstown comes alive. This party town has many bars and great cafes and restaurants, College said.

"If you are into that, it's a blast," she said.

Virtual Vacation Planning

<http://webnz.com/outside/directory/index.html>

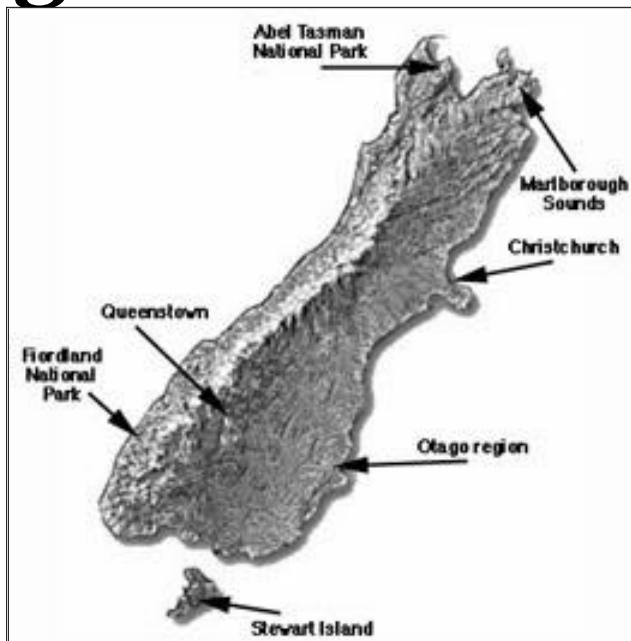
<http://www.nzta.govt.nz>

<http://www.new-zealand.com>

<http://www.nz.com>

New Zealand Exchange Rate

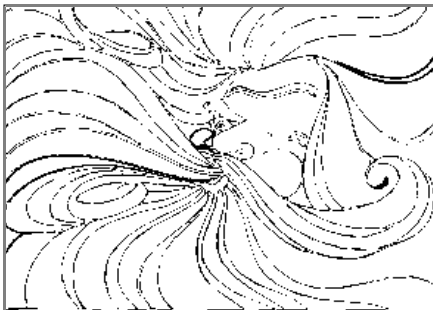
As of Saturday, Jan. 30, the exchange rate of U.S. dollars to New Zealand dollars is .5387.





Wild Turkey and mohawks spread through McMurdo's barber shop last week when South Pole winter-over workers visited town on their rest and relaxation visit. Besides a sporty new haircut, Big John, center, got a permanent marker tattoo from Steve Cooper while Tom Carlson, left, Heidi Shernthanner, center and Paul Kindl, with fresh new haircuts of their own, look on. Photo by Alexander Colhoun.

Weather Central



by George Howard

As the end of the austral summer draws near, it's a good time to review this season's weather.

The chance of finding any single year that closely duplicates average conditions is pretty small. In most years, we see some sort of dramatic departure from what is considered "normal" weather. This year's summer season has been no different.

To start things off, October was much warmer than normal. The other months were considerably closer to their averages.

The entire season was quite dry, with only November and January reaching even half of normal snowfall.

While October experienced "poor flying weather" on par with an average year, we were lucky enough to have noticeably less poor weather in the other months, particularly December.

It's difficult to say exactly how February's weather will pan out, but the chances of the weather being poor enough to delay the takeoff of your northbound flight are pretty slim.

Temperature (degrees F)

	October	November	December	January
Average High (1999)	10.4	20.1	33.1	34.7
Average High (all years)	3.9	19.9	30.0	30.9
Departure from Normal	+6.5	+0.2	+3.1	+3.8
Average Low (1999)	-4.0	12.2	21.6	24.3
Average Low (all years)	-9.0	9.0	21.0	21.9
Departure from Normal	+5.0	+3.2	+0.6	+2.4

Ruben and the Bohemian Painters' Top 10 Reasons for Returning to the Ice Next Summer:

10. The extended "boomerang vacation" in Christchurch
9. To see the wife and kids
8. Frequent-flyer miles
7. Still haven't seen a Polar bear
6. Free condoms
5. Free gas
4. No jail, no cops
3. The endless summer -- I love wearing sunglasses
2. Thinking about opening up a Starbucks

and the NUMBER ONE reason for returning to the Ice next summer...

To organize the 500-Man March for Fresh Veggies



remediation

...cont. from page 1

gone, replaced by complex and effective recycling efforts that reuse everything from waste oil to excess heat generated by the power plant.

But the fact remains, McMurdo's clean-up still has a long way to go.

A recent soil sample study of the station's grounds, one that targeted but was not limited to suspect areas, revealed that the soil had an average total petroleum hydrocarbon (TPH) level of 235 milligrams per kilogram (mg/kg) with 'hot spots' ranging up to 24,000 mg/kg. To put that number in perspective, a tree-lined street in Ohio might have a zero TPH level, while the cement surface of a popular gas station might have a 100 to 1,000 TPH level.

McMurdo, however, is not a normal city. "Fuel makes everything run," said Bill Gilmore of the station. "With that much fuel, the potential for spillage is probably greater [than other locations] in the United States."

Gilmore is right. The steel pipelines at McMurdo, connected by steel flanges fitted with neoprene gaskets, date to the mid 1950s and are prone to separation at joints, causing leaks. A series of welded expansion loops were recently installed in the steel pipeline to reduce the risk of leaks. This effort is another step in a long-running program to upgrade and strengthen the pipeline, with the ultimate goal of welding the majority of the flanges together.

Even with all the best intentions and precautions, however, accidents happen.

In the early summer of 1997, more than 2,000 gallons of AN-8 fuel was released as a result of a worn gasket in a fuel pipeline. Despite brutal winter conditions, a massive effort was mounted by the spill response team to contain and control the release in the early stages of the event. Later attempts were made to remove the impacted soil in the vicinity of the spill, but the final remediations fall to Gilmore and his team.

It's a pick-and-shovel battle with hard scrabble ground. Most of Gilmore's work, like the 2,000-gallon spill, involves days of shoveling debris into barrels. Once collected, the contaminated dirt is moved to a specially lined containment cell where it is isolated from the clean earth. In time, this



Cassandra Graber, ASA's environmental technician, takes soil samples from the clean-up site on the shores of Lake Vida.

material will be used to create berms that lie between fuel storage containers, or the rock may be cooked in an environmentally friendly "thermal desorption" unit, to remove the fuel and essentially clean the rock.

It isn't just fuel that litters the ground. At Marble Point, 40 miles northwest of McMurdo, remnants of an abandoned

"Ten, 15, 20 percent [of a clean-up] is still a lot better than zero," Gilmore said. "This is our first crack at not only attempting this clean up, but it gives us a better sense of how to proceed with performing these clean-ups in the future."

Navy camp that was razed and bulldozed into pits litters the ground. Gilmore's team spent the better part of a week "picking daises" -- an Antarctic euphemism for collecting stray garbage -- all around Marble point. More than 6,000 pounds of debris was collected including scores of steel rods, bamboo flags, wooden crates, batteries and camp items such as canned eggs, canvass tent material, coffee creamer, pepper shakers and tins of cabbage.

But most of the remediation team's work fails to catch the eye as a discarded wooden box might. One such remediation destination was an isolated corner of the Dry Valleys on the shores of Lake Vida -- one of the most remote, untouched and beautiful sites in all of Antarctica, according to Robin Abbott, who manages the helicopter operations out of McMurdo.

In December 1973, as part of the Dry Valleys Drilling Project (DVDP) a borehole was advanced 1,004 ft deep and encased with a 14 cm diameter pipe throughout its length. This borehole was filled with 584 gallons of diesel fuel to ensure that ice would not form within the metal casing and that the borehole would be available for future investigations.

Unfortunately, these scientists had not anticipated that Lake Vida would rise. As the lake rose its ice swept over the borehole's steel casing and with little effort snapped the top two feet entirely off, releasing unknown quantities of diesel from the hole. Gilmore's job was to remove as much of the contaminated soil from around the site as possible.

In three days the team filled 21 barrels of diesel-contaminated sand, rock and debris. When the digging was completed, a small pit around the spill site was the only noticeable change in the environment, unless you got down on hands and knees to smell the earth. Preliminary efforts made it impossible to tell how deep the contamination stretches. Without power tools, the use of which are discouraged in the Dry Valleys, the permafrost is nearly impossible to chop through.

"Ten, 15, 20 percent [of a clean-up] is still a lot better than zero," Gilmore said. "This is our first crack at not only attempting this clean up, but it gives us a better sense of how to proceed with performing these clean-ups in the future."

And there is certainly more work for the remediation team in the future. In their first season the team has proven their value and has underscored the time and energy required to return the environment to its natural state. "The remediation team is a manifestation of ASA's concern," said Gilmore. "It shows that the National Science Foundation is aware and ready to put forth the effort to lead the way." *



Learning about Life in the Extreme

Story and photo by Ginny Figlar

The extreme environment of Antarctica is a complex ecosystem to study but is made simple by spending a few seconds submerged in 28 F water.

"The Polar plunge is a good way to go into cardiovascular shock," said Antarctic biology course director Donal Manahan of the annual jump into the frigid waters of McMurdo Sound. "Why would you die when you're thrown in seawater, and a fish doesn't?"

The "why" of that scenario is the field of biological adaptation, the foundation of study for 24 advanced graduate students from nine different countries spending a month in McMurdo Station. The biology course explores the "exciting frontier of science" of life in extreme environments, with field work at the ice edge, Cape Evans, Ross Ice Shelf transition and Bratina Island.

"A big question down here is that lots of organisms are cold and hungry," Manahan said. "Obviously they adapt and do fine. We don't understand how they do it."

Armed with 30 projects aimed at explaining this phenomenon, the students, under the guidance of four teaching assistants and 10 professors, are addressing questions never answered before. Entitled "A Training Program in Interactive Biology and Adaptation of Antarctic Marine Organisms," the course is divided into four modules: biodiversity, ultraviolet radiation, invertebrates and biochemical adaptations.

"To say it is a complex course is definitely accurate," Manahan said. "It might even be an understatement."

Studying biology on the coldest continent on Earth is no easy task in itself, which is why Manahan values bringing some of the brightest minds in biology to the Ice. Those chosen from a competitive field of applicants receive travel scholarships from the National Science Foundation to attend the course. Half of this year's students have PhDs while the other half are working on theirs.

"By coming here and studying this environment, it expands their view on how this environment works," Manahan said, adding that studying the Antarctic ecosystem from the States or elsewhere wouldn't come close to yielding the same results.

"It would be a dry course, not a wet lab course," Manahan said. "It's very different to be here and get to study live organisms."

Not only does Manahan have a scientific objective with holding the class in Antarctica, he said he also hopes that the course will plant a seed in the minds of these young scientists. "The hope is you get more and more people interested in coming back as pro-



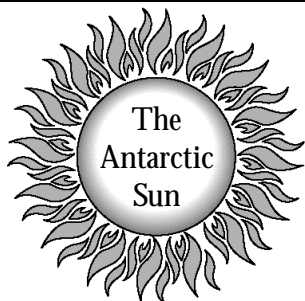
Biology course students Lara Hansen, left, and Jose de la Torre lower an instrument that collects water samples below the McMurdo Sound sea ice near the Ross Ice Shelf.

fessional scientists," he said.

The month-long course opens the students' eyes to all the science opportunities on the continent and, more importantly, how to go about initiating a research project.

"Science can be logistically constraining in Antarctica," he said, pointing out that just knowing where to find certain organisms can be crucial knowledge.

Student Jose de la Torre agreed. "That aspect of it is incredibly valuable," he said. "You learn what it takes to be able to put together a project down here. And that's not trivial at all." *



Sun Sites of the Week

Web sites for the inside scoop on ice life:

<http://www.compuquill.com>

<http://ohba.online.co.jp/ohba/o-frm.htm>

<http://knowingnature.com/index.html>

<http://www.nsf.gov/od/opp/antarct/image/set/start.htm>



UPDATES

McMurdo Station

by Hope Stout

McMurdo Station is preparing for vessel offload. The first evolution, the fuel tanker offload arrived on station and successfully resupplied the fuel for the station. Pegasus Airfield opened for wheeled aircraft and the first C-141 arrived on station.

Official delegates from the countries of the Antarctic Treaty arrived in Antarctica. Twenty-two official delegates were housed at McMurdo. The rest were housed at Scott Base. The intent of the trip was to bring together delegates from all the countries of the Antarctic Treaty to give the participants an understanding of the global importance of Antarctica and the significance of achievements. The participants were shown many sites at the stations and surrounding areas. The director of the Office of Polar Programs was on station as well.

Field camps are beginning to close for the season and should be completely pulled out by Feb. 5.

South Pole

by David Fischer

On Jan. 21, South Pole's weather set three daily records: a maximum temperature of minus 2.6 F, a peak wind gust of 32 knots and an average wind speed of 20.8 knots.

The five French skiers were picked up by Adventure Network late in the reporting period, after a 14-day stay at South Pole. South Pole hosted a representative from the NSF inspector general's office and a representative from Antarctica New Zealand during the week. The NSF representative and the NSF SPSE/SM Engineering Manager presented a lecture on the SPSE and SPSM projects.

Science groups continue to prepare instruments for the winter, and a liquid helium supply arrived. The winter supply of gaseous helium also arrived this past week.

ASA continues on schedule with completion of the Garage Shops and the Fuel Storage projects. Fuel is now being taken into the Fuel Arch, a welcome sign for winterover.

R/V Nathaniel B. Palmer

by Tim Bjorkne

Ice, birds and foosball.

These topics dominate the conversations aboard the Nathaniel B. Palmer as it begins its final full week of science operations.

With the Palmer steaming south toward a McMurdo port call, ice operations continue unabated, with the biologists striking "pay dirt" when a dark brown and luminous green goo began oozing up into every crack in the ice.

Janet Barnes said she was almost forced to have the ship's officers physically remove the scientists from the ice as they were completely overcome by their scientific avarice. However, all parties eventually returned to the ship voluntarily.

The Palmer arrives in McMurdo on Feb. 7 to prepare for the John Anderson Geology and Geophysics Cruise in the Ross and Bellingshausen Seas. Anderson will be collecting multibeam bathymetry, high resolution seismic and side-scan sonar data as he continues to study glacial movements around Antarctica. The Nathaniel B. Palmer will be spending five days in McMurdo, sailing on Feb. 12. The Palmer will be spending the next several months on the other side of the world doing several back-to-back cruises in the Antarctic Peninsula areas.

R/V Laurence M. Gould

by Tim Bjorkne

Well into the second half of the LMG 99-1 LTER cruise, the Laurence M. Gould continues science operations. This week's operations include redeploying a sediment trap mooring recovered earlier in the trip as well as continued water sampling and towed sonar measurements.

Wind and sea state have forced some shuffling of the science schedule, but operations are progressing on time, albeit in a somewhat improvised sequence to the original plan. Improvisation is more the exception than the rule, especially when dealing with the weather patterns in that part of the Southern Ocean.

LTER science operations continue through Feb. 12 when the Gould will make a brief stop at Palmer Station. The ship heads north to Punta Arenas, Chile, on Feb. 14. Arriving on the 18th, the Gould crew will then begin gearing up for the Ken Smith fishing cruise. LMG 99-2 will work the Deception Island area and also support the Palmer Station summer/winter turnover.

Palmer Station

by Ron Nugent

The pace at Palmer Station has picked up considerably in the last few weeks. The R/V Laurence M. Gould called on the station last week during the Palmer Long Term Ecological Research cruise. There were two tour ship visits this week, one by the M/V Akademik Shuleykin with 45 passengers, and the M/V Clipper Adventurer with 107 passengers. The British Royal Navy vessel HMS Endurance was operating in the area and landed a Lynx helicopter near the station to drop off a writer who was visiting the ship.

Station projects and research activities are proceeding well. The members of T-537 are making significant progress on the old dumpsite clean up, and the secondary containment liner installation in Bulk Tank #2 is ahead of schedule. One important project going on this

season is work being done by the United States Geological Survey, BP-013, and the British Antarctic Survey. They are providing the groundwork to produce working maps of the local islands that will be used as a tool for present and future research.

Christchurch, New Zealand

by Brian Stone

The M/V Green Wave arrived on Jan. 27 at Port Lyttelton. The vessel did require a tow into the harbor, but this was due to a minor maintenance issue which was corrected shortly after arrival. Loading in New Zealand has proceeded well, and without incident.

The C-141 Starlifter has returned and will be flying 10 missions to the ice during January and February.

ASA, Denver

by Ron Koger

Jules Uberuaga and Rob Robbins are the first recipients of a new NSF Recognition Certificate for 20 years consecutive service to USAP. In addition, ASA is nominating Uberuaga and Robbins to have an Antarctic geographic feature named for each of them. At headquarters the TQM Steering Committee is reviewing nominations for ASA's Quality Service Award. This is an individual award presented to up to 40 employees each year. ASA's second-ever Team Award will be presented to 12 employees who assisted in the recovery of Skier 95. ASA is proud of the contributions its employees make to scientific discovery in Antarctica.

Man Flown Cross-Continent in Collaborative Rescue Effort

by Ginny Figlar

Following an S.O.S. message sent to numerous Antarctic stations via e-mail, the United States and several other countries are working together to transport a seriously ill member of the Indian Antarctic Program cross-continent for immediate medical attention.

About 3:47 p.m. Friday, a request for help was sent from the Indian Maitri Station in northern Queen Maud Land regarding one of their members who had a "sudden attack of pain on the entire left side of his body," said Dave Bresnahan, National Science Foundation representative in Antarctica.

The man was onboard the M/V Polar Bird, which was 55 miles from the Indian station. After some deliberation as to the best way to retrieve the victim, it was decided that he would be flown by helicopter to the South African station, Sanae, picked up by the Germans and flown by Dornier aircraft to the South Pole, where a U.S. LC-130 would bring him to McMurdo and then on to Christchurch, New Zealand.

"It is a good example of international cooperation," Bresnahan said. *



BEAKER NEWS • BEAKER VIEWS

The Voice of Antarctic Researchers

Two young researchers, Robert Dudley and Joshua Rosenthal, in McMurdo with an advanced biology course (see page 9 for related story), share the basic context of their Ice research.

Pteropods Swimming in Molasses

by Robert Dudley, University of Texas at Austin

Although frozen over for most of the year, the waters of McMurdo Sound harbor a remarkable diversity of life. Seals, whales, fish and penguins are the most obvious of underwater marine life, but an equally impressive set of smaller swimming animals can be seen among the marine invertebrates.

One of the basic biological problems posed by swimming in the polar seas is not merely the low water temperature, but also the high viscosity or the "stickiness" of water. For physical reasons related to molecular chemistry, the viscosity of water increases at lower temperatures, making it much harder for smaller animals to swim and move around.

Swimming in molasses is the best analogy for moving in high-viscosity fluid, and marine invertebrates in Antarctica must correspondingly spend more energy and alter their biomechanics of motion in order to get where they want to go.

As a biologist specializing in animal flight, the last thing I expected to see here in the waters of McMurdo was a small animal flapping winglike structures and hovering in the water - the aquatic analog of a hummingbird suspended in mid-air at a feeder.

Yet this was exactly what we found in the first plankton tows after arriving here in McMurdo. Numerous small molluscs called pteropods inhabit McMurdo Sound. These animals either rest on the bottom of the sound or float in the water column, and through use of their muscularized fleshy wings can flap vigorously to move up, down or sideways at will.

My questions then were: How much energy does it cost to do this? How does the stickiness of water interfere with wing motion? In water of different temperatures and different viscosities, how do these animals change their wing motions? Does adaptation to polar water require special biomechanical innovations or evolutionary novelties?

To answer these questions, we set up a small experimental chamber in which pteropods could flap their wings and simultaneously be filmed with a video camera. By changing the temperature of the seawater and simultaneously manipulating the viscosity of the water (by adding polymer molecules to make it more sticky), we were able to document how these animals changed their frequency of wing motions in response to temperature and viscosity.

Frame-by-frame playback of the video tapes revealed exactly how these animals moved their wings. At lower temperatures and higher viscosities, the animals increased their frequency of wing flapping - it's simply harder to move upwards in stickier water and requires greater effort.

At very high viscosities, the animals couldn't move upwards at all - it was simply too energetically costly to generate the forces necessary to move the wings. This finding suggests that very specific adaptations are necessary to effect locomotion in cold water. Stickiness of water is potentially a limiting factor on mobility, and this limit applies not only to pteropods but also to all small animals (i.e., the zooplankton) swimming in the oceans.

Low temperatures are the most obvious physical barrier to life in polar waters (as anyone who has contemplated skinny-dipping at McMurdo will know), but it's also informative to realize that changes in the physical properties of water itself may have influenced biomechanical strategies of locomotion.

McMurdo's Ice cream Headache

by Joshua J. Rosenthal, UCLA School of Medicine

How does a brain work below zero degrees? This question is particularly intriguing for a comparative neurophysiologist such as myself, and the answer lies with the multitude of organisms that live below the sea ice in front of McMurdo.

Nerve cells function by communicating with each other using very fast voltage signals called action potentials. In an organism that lives in temperate seas, such as a squid in California, these action potentials last for milliseconds and travel down the nerve fast, at about 15 meters per second.

However, if this squid were plopped into McMurdo sound these processes would slow down drastically. It would also die. So how have the Antarctic organisms adapted their nervous system to the extreme cold?

Because of its rapid swimming behavior, *Clione antarctica*, a small mollusk living below the ice, attracted my attention. My specialty is studying ion channels, a class of proteins which make action potentials in every organism from jellyfish to man.

Channel proteins, which span the nerve's outer membrane, do two things- they open and close. An open channel allows electrical current to flow across the membrane. Sodium channels turn the action potential on, and potassium channels turn it off. So how do they work in *Clione*?

Using a technique called patch-clamp, I have been able to move a microelectrode up to individual *Clione* neurons and measure the activity of both sodium and potassium channels. Preliminary results indicate that the *Clione* sodium channels have some very interesting modifications.

First of all, they are unusually fast at opening. Secondly, their probability of opening is significantly reduced. So how does all this tie into how a nerve cell works in the cold? Well that will take a few more seasons at McMurdo and a few action potentials of my own. *



Letters to the Editors

Dear Antarctic Sun editor:s,

I read every issue of The Antarctic Sun from cover to cover. However, The Perspectives column in the Jan. 17, 1999, issue was an extra pleasant surprise for me. I have not seen or thought of Dave Peterson since I saw him following my last winter-over during DF-75.

Dave was on the Ice each time I wintered over. First we wintered together during DF-63, with him at the Pole and me at McMurdo. During my next three tours in winter-over (DF-67, 71 and 75) Dave was always there, but he was in the summer support unit. We were both in the communications department -- Dave was in the Electronics Division, and I was in the Radio Division.

I best remember Dave, or Pete as many of us called him, as a very pleasant individual. Always cheerful and helpful. I have attached two photos of Pete from our DF-63 Cruise Book. The photographs numbered 262 shows Pete in the Radio Shack at South Pole flanked by the two Radiomen. They are displaying the hardcopy and teletype tapes that made up the annual station resupply message(s). And I believe that it was a single humungeous message divided into transmission sections. The photograph numbered 274 shows Pete tuning communications equipment at the Pole.

Pete may not have mentioned it in his letter, but he has a piece of Antarctica named after him. Peterson Hills (75 50S, 67 55W) located in Ellsworth Land was named in his honor by the U.S. Advisory Committee on Antarctic Names for his participation at South Pole Station during 1963.

The New Zealander, Colin Fearon was a biologist at McMurdo during the DF-63 (62-63) summer season. The other names in the article are not familiar to me and they are not listed in the roster for DF-63 Winter Over, so I assume that they were in one of the other summer support units.

Sincerely,
RMC Billy ace Baker, USN (Ret)
Pensacola, Fla.

Correction:

In the last issue, in an article entitled "A Golden Treasure in Every Way," by Kristy Carney, *The Antarctic Sun* referred to Siple Station as Siple Dome. Siple Station and Siple Dome are different places and the names should not be used interchangeably. Siple Dome is the name of a summer field camp currently used by the USAP. Siple Station, named after Dr. Paul Siple, was closed in 1989 after use as a both a year-round and summer camp. For more information on this subject see: *The Antarctic Sun*, Jan. 10, 1998.

Around Mactown

Dry Station Time. All McMurdo bars and clubs will be closed during ship offload -- scheduled for Feb. 5-12.

Multimedia Antarctica. Sandy Colhoun displays "Antarctica: Summer on Ice," 8:15 p.m. Sunday, e-side galley.

Sail Away. Morale cruises will be from 1 to 5 p.m. today and 8 a.m. to noon Wednesday. Check the manifest on the bulletin board across from the galley and show up to the ship 45 minutes before your scheduled departure.

The Last Frontier. Slide Show on Alaska, 8:30 p.m. Monday, e-side galley.

Art Show. Creativity and coffee beans will be the highlights of an art show, 6 to 8 p.m. Tuesday, in the library.

Rock on. A fun-oriented climbing competition, for beginning and advanced climbers, will be at 7:30 p.m. Tuesday, in the gym.

Dig out those skis. Return all rented recreation equipment to gear issue before redeployment.



Views From Antarctica's Main Street

Q: What will you miss most about McMurdo?



Stephanie Mohr,
Housing
Coordinator

"The closeness of the people, our little society."



Steve Perry,
Painter

"The morning walk and occasional run to Scott Base. I go from 4:30 to 5. I like the solitude of that walk."



Katy Burke,
Air Services
Rep.

"Karaoke night."



Jim 'Red Dog' Hathaway,
Fire Dept.
Captain

"The people. You meet the most interesting people in the world down here."



Perspectives

Changing of the Guards

What to Expect During a Winter at McMurdo

McMurdo in the winter is a cold, dark and blustery place.

It starts with the mass exodus of your summer friends and co-workers, which causes the town to feel smaller and smaller everyday. You start to relax and settle in to your new room, and then it happens -- a loud roar high in the sky, the buildings begin to shake and everyone runs outside to see what all the commotion is.

It's the last plane out. There is no changing your mind now. It buzzes the town as its last farewell and dips its wings to say goodbye.

"Oh my god," you think, "what have I got myself into now? Am I nuts or what?" But there's also a sense of excitement for the adventure you hope lies ahead.

You roam the town doing what used to be your normal routine and are amazed at how quiet it is. It's almost as though you are the only one living in a ghost town, a town in which the population goes from 1,100 in the summer to approximately 160 in the winter. Just think, no lines in the galley or the store. At the burger bar, it only takes five minutes to get that hot, steaming burger.

The sun begins to rise and set again, and some amazing colors start to appear in the sky. I have seen few sunsets that compare with the ones here in Antarctica. The colors start out as bright yellow, then shift to fire orange and glowing reds. As the date of the last sunset in April approaches, the sunsets last longer and longer. I can remember one particular day standing in the cold and wind witnessing a truly beautiful sunset. Only after it set did I realize I had been standing there for more than two hours.

If you are lucky, the winter will be one where the sea ice in front of the station will breakup and float away. In the winter of '97, the ice broke out all the way to the pressure ridges past Scott Base, and we saw whales and penguins galore around what was now the ice edge. It is quite a thrill to see blue water where once stood solid ice.

In a matter of a couple of months the temperature goes from 30 F to minus 30 F, and it snows more and more. It will take you a little while to acclimate to this change in temperature. Last April, we had several days of less than minus 40 F temperatures, with wind chills in excess of minus 100 F.

After the sun has set for the last time, McMurdo is still bathed in twilight for several weeks, treating us to colors of lavender and soft pinks in the midday sky. Of course, we get a little less twilight

Story and photo by Alan Stone,
winter-over '96, '97 and '98

everyday until total darkness covers the station. Between mid May and early August the station remains dark 24 hours a day. It's not all work during the darkness, however. You will still find time to hike the Castle Rock Loop and may even have the opportunity to spend the weekend camping out at silver city or the Kiwi A-frame. During these trips out of town you can see the Milky Way as you have never seen it before. If you're really lucky you may also see some auroras, the light show that makes the sky come alive.

Then there are the storms, sometimes terrifying in their intensity. Winds of hurricane force have been



A time exposure of McMurdo seen in mid-winter shows a town aglow with lights - the only light winter-overs will see for many months.

known to rip through McMurdo causing damage and one hell of a mess. Imagine a force so strong that it puts a piece of plywood through a wall in a dorm, sticks a piece of sheet metal 1 and a half inches into a telephone pole and throws a 400-pound Air Force pallet 90 feet into a pipe rack. This is why you don't go out in a condition one.

As Winfly approaches and the sunlight starts to return, you may begin to see nacreous clouds. They can be extremely colorful and bright, as if someone has painted pastel colors in the sky. They are tough to photograph but one of the most spectacular things you will see in Antarctica.

The winterovers also look forward to the arrival of mail and freshies -- the first delivery since winter began. God help the Winfly person who puts a piece of fruit on their plate. "Hey tan boy, I think you have my banana" has been spoken more than once. Technically the winter is over then, although you will remain here until mainbody, witnessing another two months of great sunrises and sunsets.

The winter can be tough and push some to the edge of their limits. Most survive it well and achieve a new sense of accomplishment in themselves. It is not like the days of Scott and his men, but it does give a sense of how courageous and tough those men had to be.

You will never forget a winter on the ice, the things you have seen and the friends you have made. Most of you will only winter once. But for some, like myself, once is not enough. The only suggestion I can make to those of you wintering for the first time is don't be a hermit. Get out and enjoy the winter and take tons of pictures.

Remember, film is cheap, but the memories will last a lifetime.



Fifty-five knot winds shredded the ocean, blowing the sea into a tempest of 35-foot growlers. The snow was falling 'like hell' and the Peter and Alice Kelly, a Maine-based fishing vessel, was in serious trouble.

On that January day in 1977, a third class Boatswain Mate, Steve Wheeler, aboard the Coast Guard Cutter BIBB, was called to duty. "She was a knock-out," Wheeler said of the Bibb. "For a military vessel she could take incredibly high seas." The question, however, was whether Wheeler's 28-foot motor-surf boat could handle the same water.

"The primary reason I was chosen for that mission was because I was single," said Wheeler with a chuckle, who rescued all four crewmembers from the Peter and Alice Kelly. "That was outstanding," he exclaimed, the memory as tangible today as it was 20 years ago. "That's the kick-ass kind of stuff."

Standing at the edge of a gravel covered ice pier at McMurdo Station, coaxing a 12,000-ton icebreaker forward foot by foot, it is clear things haven't changed very much.

The massive red bow of the ship fills his field of view as he speaks into his radio. "That's it. You've got 10 feet, now 8, now 5 feet. You're there," he said.

Steve Wheeler is there, too. In the thick of the action and loving every minute of it. In a career that began as the lowest recruit, Wheeler's rise through the ranks is a story book tale of a life spent at sea.

It's a rare thing. To find a man who so thoroughly embodies his work, and it is impossible to separate this man from the sea -- a bond that took hold as a young boy and never let go. "I was always a beach rat in the summer time," said Wheeler, a Medford, Mass., native, in his gravely Boston accent. "I joined the Coast Guard because it was an honorable field of endeavor and because I always felt comfortable in small boats."

Small boats led to big boats and Wheeler discovered his calling. "It agreed with me, definitely," said Wheeler of his early days on search and rescue ships and buoy-tenders. Moving with his assignments up and down America's east coast, then to Alaska and California, Wheeler thrived on the variety of work and the time at sea.

"Every day was different," he said. "With buoy-tending and search and rescue, there is an immediate feedback. At the end of the day you failed or you succeeded."

Failure and success took new meaning when the Coast Guard accepted a new mission: drug trafficking enforcement. Boarding

Coasting



Commander Steve Wheeler, a 23-year veteran of the Coast Guard, coordinates ship movements on McMurdo's ice pier.

ships with weapons drawn, Wheeler made hundreds of busts, mostly marijuana seizures, developing new strategies as he went. "It's nuts, absolutely nuts," Wheeler said. "Back then the Coast Guard was new at [drug interdiction]. We wrote the book as we went along."

By the summer of '82, with six years of service under his belt, Wheeler faced a dilemma. "I was getting too senior to drive the small boats but too junior to drive a ship," he said, pushing him to officer candidate school (OCS) where he graduated third in his class. "The only problem with OCS," said Wheeler, "was adjusting to the fact that I had more experience than most of my instructors."

His experience combined with officer candidate school opened new horizons for Wheeler. Within two years he took command of his own ship, the USCGC Point Brower, an 82-foot patrol boat, leading to a high-profile position as the commanding officer of the Coast Guard's law enforcement school, with two additional operational units under his command.

It's a long way from the Caribbean, where Wheeler carried out much of his law enforcement work, to McMurdo Sound and life aboard a Coast Guard ice breaker. The transition, however, was a natural one. "I was burned out," said Wheeler.

"Fried. I needed a change of pace."

Putting the heady days of open-sea boarding and search and rescue missions behind him, Wheeler reported to the ice breaker Polar Star. That was 10 years ago. "It's that wanderlust thing," he said of 23 years in the Coast Guard. "I still have not been able to get past it."

Sipping coffee from a stainless steel mug in his McMurdo office, his silver oak clusters -- those of a commander -- shining in the morning light, Wheeler looks every bit the old salt he is. But it is a closer look, at the words etched on his cup, that reveals a yarn.

In the spring of 1994 Wheeler deployed as an ice pilot on the Polar Sea, along with a Canadian ship, the Louis S. St. Laurent, and sailed to the North Pole. It was the first time any ship had sailed from the Pacific to the North Pole, breaking through 1,200 miles of ice en route. "It was one of the high points of my career," said Wheeler of the journey.

And for Wheeler, his Coast Guard journey is what life is all about. "I've busted my hump," he said. "I've spent a lot of time offshore and picked up a lot of bodies - that gets rugged after awhile, but it's an honorable profession. I've seen every continent, sailed every ocean, and I saw Elvis two years ago in Antarctica." *

to the Top Profile

Story and photo by Alexander Colhoun