



SANAE 47

**47TH SOUTH AFRICAN NATIONAL
ANTARCTIC EXPEDITION**

NEWS



JULY 2008

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Cover photo: Star trails over the HF Radio Antenna, © Morgan O'Kennedy 2008



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The Month in Focus

July has departed and left the gift of a returning sun, but the price was high. The highs and lows included...

...yet another big storm that left a few surprises...

...Ross going for a dip in the smelly to retrieve all the lost spades that were clogging the water filters with rust...



...cross-country skiing on the 4th....

...discovering that the HF radar had been destroyed by the storm on the 5th...

...the great fire of 6 July, against which we tested our training and emerged victorious - see Saz's article about screaming like a girl...

...Saziso's birthday on the 9th, the great braai, and sports-party in the gym (braaiing outside despite a temperature of -30-something)...

...the SANAE Super Sports Series, and especially the gripping finals on July 11 where Morgan claimed the ultimate title...

...the beautiful walk to Kleinbergie on the 16th and the lovely snow...

...Llewellyn's birthday on the 17th and the great kid's party and lots of revelry...

...HALFWAY DAY on 20 July, signifying that half of our expedition (from 4 December 2007 to the projected return on 5 March 2009) has been completed...

...traditional Indian cuisine on the 21st to kick off our International Food festival...

...Middle-Eastern food on the 22nd followed by a great aurora...



...traditional African food from Chad on the 23rd...

...a great spread of German food on the 24th...

...Llewellyn's snowbath (originally postponed due to horrible weather) on the 25th, and the first sunrise for more than 2 months as the sun starts to return...

...Greek food, music, dancing and even plate-breaking to celebrate on the evening of the 25th...

...the great Antarctic Open Day held at SANAP headquarters in Cape Town...

...Italian food on the 28th...

...Russian food and vodka on the 29th...

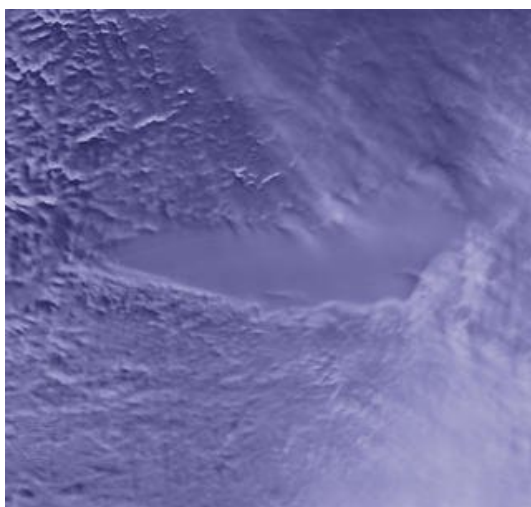
...Dutch cuisine on the 30th...

...Gerhard's great birthday dinner on the 31st...

Antarctic Phenomena - Lake Vostok

The icy wilderness of the Antarctic continent has fascinated explorers and scientists alike, since it was viewed for the first time in 1820 by the Russian Fabian Gottlieb von Bellingshausen, in his flagship *Vostok*. This winter wonderland has an incredible collection of cryospheric, geological and zoological marvels, seen nowhere else on the planet. One of the most interesting phenomena is Lake Vostok, located near the Russian Research station Vostok (78°27' S 106°52' E).

Lake Vostok is the largest subglacial liquid lake in the world. It has a surface area of approximately 15 690 km² and an estimated volume of 5 400 km³, where the depth ranges from 200m to 800m. The longest point is a whopping 250km, and the widest point is 50km. The existence of the lake was first suggested by a Russian, Andrei Kapitsa, in the late 1950's. The Vostok Research station was opened on 16 December 1957, during the International Geophysical Year, and ice core drilling was one of the main research sections. A British radar survey of the area in 1976 pointed to the possible existence of the lake, but full confirmation, using years of compiled data, only came in 1996.



RADARSAT image of Lake Vostok
Source:<http://svs.gsfc.nasa.gov>

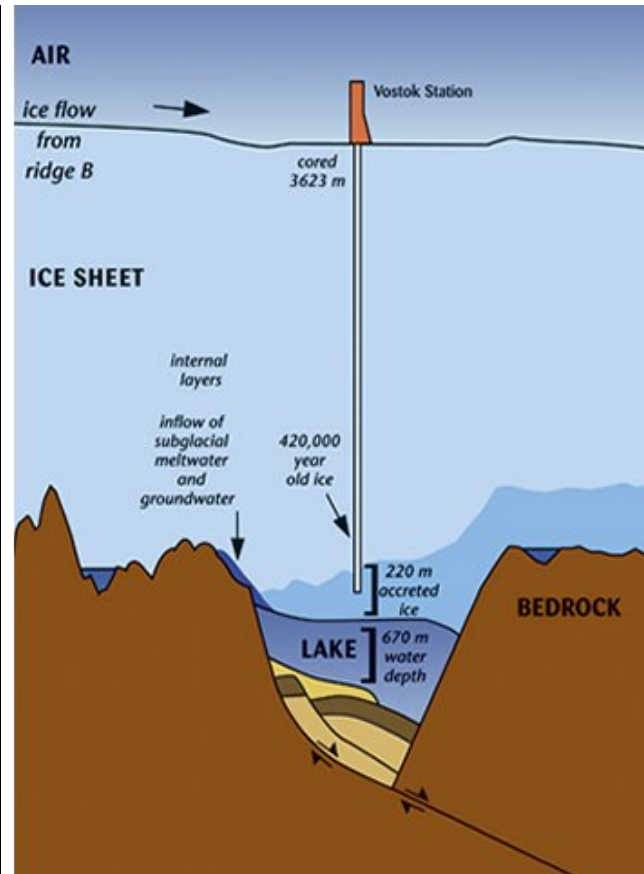
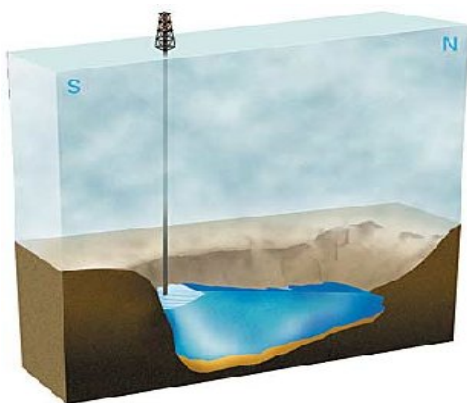
The lake theoretically contains the oldest water in the world, estimated to have residence time (the time it takes for the water to move through a system in equilibrium) of probably millions of years, as it lay unspoiled under the ice cap. This water mass is unfrozen at a temperature of -3°C, defying the classic law of the freezing point for water. The existence of liquid in this region of Antarctica is made even more spectacular by its geographical location. The coldest official recorded temperature on Earth was here in this area, at Vostok station, in 1983, almost breaking through the -90°C barrier at -89.2°C. The liquid state is made possible by mainly two contributing factors:

It is believed that the geothermal heat, originating from the Earth's interior, serves as a heat source from the bottom. The ice, 3.7km thick, serves as an insulating layer, and, more importantly, provides an incredible pressure of more than 360 times that of the Earth's atmosphere at sea level. This is the driving factor for its existence. The position where the temperature gradient for freezing intersects the pressure melting point, is where the lake freezes up, thus serving as the upper boundary.

It is not, however, only the existence of the subglacial lake that makes Vostok a science wonderland. Ice core drilling at Vostok proved extremely fruitful when, the last 85m of an ice core revealed traces of DNA, containing the genetic signature of thermophilic bacteria. The core was taken 220m above the ice/water interface. Counter-intuitively, these bacteria are adapted for high temperature environments, and found in volcanic chimneys and near hot underwater springs. It is yet unknown to man what adaptations of species is needed to sustain life in frigid, dark waters, isolated from air and sunlight and any other source of energy necessary to sustain life as we know it. The lake contains 50 times more oxygen than any other fresh water lake in the world, thus organisms must be equipped with protective enzymes to overcome the super-saturation.

No water samples have been taken up to date. Again the reason is twofold. In order to preserve the lake from external contamination, no drilling takes place lower than 100m above the roof of the lake. The compressed oxygen and other gases can prove dangerous if the situation is created where it can escape from the lake, as in any case where compressed liquid and gas are compressed together. Some researchers have warned against pathogens hazardous for humankind.

One of the main reasons for not breaching the surface is the possibility of introducing freon and aviation fuel. The bore hole, drilled by the Russian researchers, was filled with the liquids to prevent the drilled tunnel from freezing over. Other sources of contamination are microbes and lubrication fluids from inserted samplers. Scientists and engineers worldwide are considering various possibilities to sample the precious, unspoilt water of Lake Vostok. A robotic probe, similar in design to the one under development to explore Ganymede and Europa, is a possible option. Another design is a bullet-shaped probe, which refreezes the entry path to prevent contamination, or submersibles equipped with analysing equipment on board. Also a possibility is to develop and deploy a cryobot, an autonomous robot whose purpose would be to melt through the ice, deploying a communications and power cable as it goes, then deploying a hydrobot upon reaching the lake, which would then search it for life. No solution to this problem has been found up to date.



Vostok also serves as a study for Neoproterozoic science as well as space discovery. It is a terrestrial analogue to Jupiter's 6th moon, Europa. Evidence exists of subglacial lakes on Europa. This raises the question that, if organisms can survive in Vostok, what prevents survival on Europa? It is also theorised that the Earth was covered in snow during parts of the Cryogenian period, from 790 to 630 million years ago, known as the Snowball Earth. Research on Vostok can provide insight into the history and development of Earth, as well as answer questions on evolution. Vostok has provided a treasure trove of science research, and as soon as one question is answered, its multidimensional aspects bring up many more. It will open doors for science collaboration in a wide variety of fields, and may even one day provide the answer to life, love and everything else.

Sources for this article include Wikipedia, 70south.com, AntarcticConnection.com and the US Antarctic Program archive

– Daleen Koch

Disaster Strikes HF Radar Research Programme



The recent winds did more than just topple weather records - we discovered the wind had also flattened all but one of the towers which support the HF radar antenna.

SANAE IV's HF radar (pictured in the photo above, taken last summer) is the largest of the scientific research installations at Vesleskarvet. 16 T-shaped towers stood 15m high in an east-west line more than 200m long, supporting a grid of aluminium antenna elements which collectively transmit and receive signals allowing scientists to study the upper atmosphere over the South Pole. Our radar is part of a network of similar stations all around Antarctica which contribute data to create three-dimensional images (eg. of the ionosphere over the Pole) which is then fed to collaborative groups of scientists around the world (the SHARE and SuperDARN projects).

The hurricane-force winds caused failure of one of the anchors of the radar, causing 15 of the 16 towers to fall like dominoes. The damage is beyond our facilities and supplies to repair; a full-blown reconstruction will have to take place in summer. Still, there is a silver lining: reconstructing the radar allows changes and upgrades to the design to be implemented.

Antarctica might be the most challenging earth-bound location to conduct scientific investigation, but she is still an awesome laboratory and window on the universe. Besides - if it were easy, it wouldn't be fun.



Antarctic Open Day

The Open Day at SANAP headquarters in Cape Town on 26 July was an unqualified success. The event, managed by the MTN Sciencentre as part of 'Antarctica Month', featured interactive and static displays, science-themed activities for participants through the age spectrum, a live broadcast from Bush Radio, and the very popular tours of the SA Agulhas. We were also there - virtually - via a video-conferencing set up, allowing the team here at SANAE to answer questions and talk to Open Day participants from all walks of life. We also had a camera connected to give a live feed of the area outside the base, and a direct weather feed.



Fire in the Hole!

Antarctica is an environment at the very margin of man's ability to survive, and in winter, that margin becomes a knife-edge. Unaided and without shelter we would not last more than a few hours in a winter storm; indeed, to survive any length of time on this continent requires hard work, good equipment and plentiful supplies. I remain in awe of the early explorers who survived in near-subsistence on the coast by hunting seals and sea-birds; in the interior of the continent there is no possibility whatsoever.

The parallel between Antarctic and space exploration is often made, but no less valid for its repetition. Other than air and water, we must bring each item necessary for survival with us, and live (for the most part) isolated from the environment in which we are immersed. In the darkness of a winter storm the comparison is even more astute; we can venture briefly outside but must be completely isolated from the ambient conditions in multiple protective layers. Gloved and goggled we breath through face-masks that rapidly become crusted with ice; we must light our path with headlamps; the ice and snow make weird sounds as we walk with massive insulated boots; the most basic tasks become a challenge with thick mittens. Trapped in my own tiny world by the clothes, goggles, wind noise and decreased visibility it is an odd isolation that immediately leads me to imagine I am walking on the surface of a harsh distant planet - the only other times I've experienced this other-worldly sensation were when undertaking deep scuba-dives at night.

Our base certainly holds up to comparison with a space-craft as it stands on its stilts on the frozen rock. A half-metre thick insulating shell with small triple-layered windows (featuring an insulating xenon-filled space) is breached only by a few portals, with each entrance having inner and outer doors with an 'airlock' in between. Summer visitors might see the base as a comfortable home, but after experiencing winter here it a subtle mental shift occurs, and one realises that we are desperately and nearly

completely dependant thereupon for safety. We have backup plans - the cabooses, the small radar hut, and two underground freezers that can be used as shelter in an emergency, but none of these options would be any fun at all, euphemistically speaking.

With the base's integrity so vital to our survival, it is obvious that we take every precaution to protect it. Like a ship at sea or in space, the most terrifying emergency is a fire. At SANAE, we have a very sophisticated fire-alarm system which includes an inert-gas system to flood the generator-room and associated areas, and all manner of heat, flame and smoke detectors in every ares. The team also undergoes intense fire-fighting training before the expedition, which includes the use of breathing apparatus and all nature for extinguishers.

Unfortunately, like any other complicated system, the fire alarm is prone to occasional malfunction. We have become used to intermittent false alarms (usually early in the morning, obviously due to the system's cruel sense of humour) and 'true-negative' alarms due to team-members forgetting to turn on the kitchen extractor fans or leaving toast in the toaster too long. When the alarm went off on Sunday, I grudgingly got out of bed to do the requisite check and switch it off. By the time I reached the lower hallway, however, my pace accelerated from brisk walk to run: the passage was smoke-filled and I could hear Saz yelling 'FIRE!'



A small electrical fire had broken out in the crawlspace under the link between A and B-blocks. All of our power and communications cables run through these spaces, as well as water and sewerage pipes; this protects them from the elements and allows access even in very foul weather. Unfortunately, these spaces are not ideal for fire-fighting! Luckily, we had been into this particular area to work on a water pipe about 10 days prior to the fire, and one wall panel was still loose to allow inspection. The team's training and drills kicked in impressively and the fire was quickly under control. We slithered in with a BA to make certain it was thoroughly extinguished and remove the burnt insulation. Fortunately, there was no significant damage to the base, but from the jokes and nervous laughter that followed it was obvious that the team had felt the threat. Houston, we had a problem...



Top: Ross in the crawlspace with breathing apparatus

Above: The culprit – a burnt-out heating unit

I Screamed Like A Girl!

It was an early Sunday morning and I was relaxing, going through my daily thoughts in my room, which just above the base's dining area. I smelt something burning and I thought of the continuous burning of toast, which recently has become a habit. I quickly dismissed the idea of an open flame fire.

After a few minutes of smelling this, I said to myself: "It's more like a fire than the smell of toast smoke." I started searching in my room and there was nothing. I could see that my room is somehow becoming misty and I decided to go down to the dining area. As I walked in, I saw flame reflecting on the water fountain. I wasn't sure whether it was real fire or just a reflection of something else. I then decided to go and check. At the same time my doubts were being backed by the fire alarm that came on. As I remove the panels, there was this blaze of fire and my immediate reaction was to make everybody aware as I was not sure how big and how far does it go.

I then started shouting at the top of my voice FIRE, FIRE (*Ed- he means screaming like a girl*) and at that time Richard was in the kitchen and he responded immediately. We used CO2 but didn't seem to be working, then a dry powder fire extinguisher saved us from what could have been a cold winter in the caboose. At that time the fire alarm helped me in alerting other team members.

Some say my nose is average, other say it's the largest size but I know that I probably breathe 1/3 more than other people and smell twice much. Above all it has done a tremendous job. I have stopped arguing about my nose as I know for a fact that its big but believe it saved people's lives. So if you have one as big as mine just use it effectively.

– Saziso Nginda
Electrical Engineer

The Outdoor Work-horses at SANAE IV

At the SANAE base in Antarctica three different vehicles are used to perform outside work. As you can imagine with the extremely cold temperatures and adverse weather conditions these have to be very special machines. I would like to take this opportunity to introduce you to the babies that I am responsible for.

The Alpine Skidoo:

These old, but tough and reliable snowmobiles are a true wonder. They are powered by a 500cc twin cylinder two-stroke rotax engine, have dual belt driven drive tracks and have direct steering to a single ski which is particularly useful in these conditions as there are no unnecessary linkages that can freeze up. These amazing machines are capable of towing both passenger and cargo sledges. Four people can be towed with ease and cargo weighing up to 500 kg can also be towed. Comfortable cruising speed of 40kph is easily achieved.



The alpine is a very stable machine on the ice and has 2 forward gears and a reverse gear. It is also equipped with an electric and pull start system. After a major storm all one has to do is clear the snow from under the bonnet and around the drive belt, start and warm the engine, shake the tracks loose from the ice and away you go. Fuel is brought pre mixed from South Africa in 220L drums. These skidoos are used for quick

trips around the base (to the depot or radar installation) and also for short field trips. During the winter months one skidoo is left outside for winter work and the rest are brought into the hanger for service and maintenance.

The Caterpillar 'Challenger':

Powered by a six cylinder turbocharged diesel engine with a power shift transmission consisting of 10 forward gears and 2 reverse gears, these beauties are our long haul machines. The challenger has rubber drive tracks and is essentially used for transporting supplies and personnel between the base and the ship during the take-over period. It is also used for long field trips. With a top speed of 20 kph (empty), a loaded cruising speed of 15 kph, and a fuel tank capacity of 800L these machines are perfect for the job. The Challenger can tow up to 4 loaded sledges and normally the caboose and mobile diesel bunker accompany it. The Challenger is fitted with a 3-berth sleeper cab so drivers can alternate while on long trips. Prior to their departure to Antarctica all teams undergo intensive training at Barlowworld in Cape Town in order to familiarize themselves with the cold weather starting procedures of these machines. During the winter months these machines are brought into the hanger for service and maintenance.



The Caterpillar D6H Bulldozer

These powerful machines are powered by the all reliable Cat 6 cylinder turbocharged engine. At SANAE we have two different dozers which

have been designed to work at SANAE.

The blade dozer is a conventional bulldozer without the ripper attachment. In its place is a powerful winch. These machines are basically used for clearing snow build up from around the base and for clearing the ice road. They are also used for building the winter depot and for moving sledges around. Maintenance of the runway is also done with these machines.



The bucket cat is a dozer with a difference. Instead of a blade the bucket cat is fitted with a front end loader type bucket. It is also fitted with a 5 ton Palfinger crane.

The bucket attachment is essentially used for making a stockpile of snow at the smelly and for throwing snow into the smelly during take over when plenty water needs to be made. However the bucket attachment can be used to assist with many other tasks.



The Palfinger crane is used for the loading and offloading of containers and during take over is in constant demand. It is also used to assist the scientist with the erecting and removal of different projects. A man-basket can also be fitted in order to work safely at heights. These machines are without a doubt the hardest worked and great care is taken to ensure their reliability. Once again the team receives training on the cold weather starting procedures prior to leaving South Africa.

Due to the steel tracks it is not possible to bring these machines into the hanger and they are sealed and parked outside for the winter. One bucket cat is kept on standby for smelly work, when the weather permits during winter. Maintenance and service is carried out outdoors and great care is needed to prevent pollution of the area.

Fuel and oil:

Special polar diesel is used for all the diesel engines so as to avoid freezing. All the Caterpillars use 5W40 grade engine oil and 0W20 grade hydraulic oil. Antifreeze at a 60% antifreeze 40% water mix is used for the cooling system.

All done and said one can only have the most utmost respect for machinery that is able to operate so efficiently in such extreme conditions and together with my trusty assistant Sanki we do our best to keep the wheels (or the tracks in this case) rolling.

It is very easy to see why CAT RULES and all the others attempt to follow

– **Richard Duncan
Diesel Mechanic**

Bumper Birthday Month!

Birthday #1

On the 9th we awoke to a hearty breakfast of scrambled eggs, bacon, pork sausages, boerewors and toast, made by the birthday-boy Sazi himself. Llewellyn added his “two-cent's worth” with fudge, biscuit fudge, meringue AND waffles (I just loooooove the insomniacs on the team!). In this terrific way we kicked-off the day that Saziso Nginda turned 28. He took his traditional, record-breaking* snow bath like a REAL MAN with lots of woo-hoo's and laughter. Later the evening, in -27°C we had a nice party in the “Sports Pub” (OK, OK! The gym, which I cleaned very nicely beforehand...). But, the highlight of the evening (apart from the call from his mum) must have been when Bafana Bafana goalkeeper, Rowan Fernandez phoned Sazi from Germany to wish him a happy birthday. Sazi is SO famous!

*He now holds the record for the shortest snow bath EVER!



Birthday #2

Picture this:

It's the 17th.

It's morning and there's breakfast.

Again.

Made by the “Man of the Day”.

Again.

Lekker!

Anyway, this is the way that we started the day that Llewellyn turned 26. Due to bad weather the poor guy couldn't have his snow bath but we made up for this fact by honouring him to have his snow bath on the 25th, the first day that we saw the sun! We also threw him a children's party with clowns, balloons, a legend cake, chocolate éclairs, cupcakes, cheese straws, Jannie-verjaar-koeldrank, marshmallow men, rice crispy balls, hamburgers and chips. We played chubby-bunny (DON'T ask) and with cool model balloons. FYI: Ross can make a poodle in just 20 seconds...



Birthday #3

Having your birthday in Antarctica is cool (literally and figuratively) but having your 47th birthday as part of the 47th National Antarctic Expedition is even better! This is exactly what Gerhard did on 31 July this year. The morning that he woke up, he walked into the biggest birthday card that you will find on this continent, courtesy of Neels and Anton. He spent a

relaxing day and got treated to his favourite food that evening: chicken pie, peas and mielies, sweet potatoes and malva pudding. Ross made a short speech and we all enjoyed champagne. Again, due to weather conditions, Gerhard only had his snow bath on 11 August. This didn't damp his spirit and he had lots of fun!

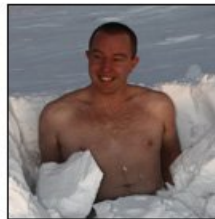
Regarding snow-baths and safety: Concerned family and friends should note that we specifically wait for good weather to undertake this old and chilly tradition. Exposure times are short and the doctor is always on standby to monitor proceeding. Participation is always entirely voluntary, but the best evidence of the fun and spirit of the occasion are the smiles on the faces of the participants!



SNOW BATH STATS - JULY 2008



Wind speed: 16.1 km/h
Temperature: -25.2^{degC}
Apparent temperature:
 -31.0^{degC}



Wind speed: 41.4 km/h
Temperature: -22.2^{degC}
Apparent temperature:
 -31.6^{degC}



Wind speed: 9.7 km/h
Temperature: -26.3^{degC}
Apparent temperature:
 -30.7^{degC}

**AND THE WINNER IS:
LLEWELLYN**

(BY A VERY SMALL MARGIN)

The Greatest Wonder of the World – Ever!

Most of you know that here at SANAE we are allowed fresh fruits and vegetables (unlike Marion and Gough - shame). Unfortunately the fruit don't last all that long. They go off before we can use all of them. (There are *other* things that we do with them – but that's a story for another day!) The potatoes and onions are doing pretty well for themselves. But in my opinion, the heroes of the year must be the eggs.

Bear in mind that these eggs were purchased BEFORE we left Cape Town on 4 December 2007. By the time that you read this article, the eggs will be about 9 MONTHS OLD! At the moment we have a hit rate of one bad egg for every six that we open. Pretty good hey?

Some of the bad eggs can be spotted (and smelled!) from a mile away. For the others, I recommend that you use **Santjie's Simple Seven Step Plan** to make sure that you never get a rotten egg exploding in your face (ask the still-traumatised Llewellyn).



1. **Look At It:** Does it look funny? Is it green? Is half the shell still stuck to the tray even though you're holding the egg

in your hand? Is there yolk oozing through tiny (or big) cracks? (Here you must differentiate between oozing yolk from a DIFFERENT egg dripping onto yours and YOUR egg doing the oozing). IS IT TALKING TO YOU?

2. **Feel It:** If the egg feels as light as a feather, chances are you've got a bad one. All that Hydrogen Sulphide is NOT a good thing!
3. **Smell It:** Before you even think about breaking the egg, get your nose nice and close and give a good whiff. You'll know when something is wrong.
4. **The Break:** Now, this part must be followed eggs-actly. The egg must be held at arms length, preferably over the kitchen sink. Take a steak knife and give the egg one sharp tap – on the OTHER SIDE of the egg. This will ensure that any exploding bits and pieces will be aimed away from yourself. You must make only a small hole.
5. **Smell Again:** Step five is not for the faint-hearted (like Richard). This will be the final step in determining the state of the egg. If it smells only marginally weird, then you're good to go!
6. **The Real Break:** Now you can completely break open your egg with confidence!
7. **Use It!** Mmmmm, enjoy your omelette, French toast or cake!



Waste-water Management at SANAE IV Base

Ever wondered what happens if you flush the loo? Well, “where does all the goo and gaga go?” you will ask, “Down the pipe!” you say. Where does it all end up? Not many people like to think about this subject but here at SANAE we cannot ignore it - we have to deal with it.

As many of you may or may not know SANAE base is like a very little city or town. We generate our own water, power, mail, news, food, waste, etc... ...As we are very remote with no physical links to other cities or towns we have to process our own waste. Because people live here waste is also one of our by-products which cannot be helped but has to be managed to have very little or no impact on the environment and surroundings. Today we are looking at our sewerage system here at SANAE IV.

The base is 175 meters long with three blocks - A B C - each with its own ablution and laundry facilities. The waste water from each block runs into tanks located under the floors at the two links, hospital and dining room. A well designed pumping system pumps the waste water from the AB link to the BC link (links are what joins the A, B and C blocks with one another). From the BC link the raw sewage is pumped at timed intervals controlled by a PLC to the water treatment plant located in C block close to the power generation room. Each under-floor sewage tank has an alarm to warn us if it is over-full or if the pump is not functioning correctly.

The raw sewage enters the first holding tank called the primary settling tank, which is interconnected to the second tank called the secondary settling tank. In these two tanks there are enzymes and bacteria which starts to break down the solids into liquid. Enzymes and bacteria are added when required to maintain a good and healthy system which ensures that the whole sewerage system functions at its best. In

the first two tanks sludge is formed and stays behind in these tanks and gets drained out at take-over, and yes, you guessed it, goes back to South Africa with the ship.

Only the “water” passes on to the next stage which is the aeration tank. In this tank air (as the name indicates) is pumped through the water by pumping the air in from the bottom via a honey comb structure and making millions of bubbles on the surface of the water. The oxygen in the air feeds the bacteria which in turn break down the harmful elements (ammonium and nitrates) in the water and so the waste water starts to get cleaner and less polluted.



Anton at work in the waste-water processing room

From the aeration tank the water flows by gravity to the next tank called the clarifying tank. In this tank, shaped like an inverted pyramid with a flat top, the water is almost stagnant with very little or no turbulence, which allows all of the sediment and sludge still in the water to sink to the bottom of the tank. At the bottom of the clarifying tank is a submersible pump which pumps the sludge and sediment back to the primary and secondary tanks.

As the clarifying tank fills up with water it spills over into another tank called the ozone tank and from there it spills over to the holding tank. In the ozone tank, ozone (ozone is an O₃ molecule) gets pumped through the water almost in the same way as the air in the aeration tank is pumped. Ozone is generated by an ozone

generator on-site and its main use in this system is to bleach, to disinfect and to take most of the bad odours away from the water. The water in the holding tank has now been treated with ozone and is now ready for the final stage of its route out of the base, which is the filtration stage.

Two big biofilters are used with sand and activated carbon as filter medium. The water is pumped from the holding tank through the two filters and a UV light into a holding tank in the hanger. The UV light is the last effort to kill all harmful germs and bacteria before the water flows by gravity over the side of the mountain and forms an ice waterfall (called the “lolly” by all SANAE inhabitants).



The 'Lolly' at SANAE IV

At this or any other stage is the water never safe to drink but can be released into the environment at the end of the day. We adhere to what is called the 'South African River Standard' of waste-water treatment and by that standard the water is safe to be released into the environment. Finally some of the clean treated water in the hanger holding tank gets reused to reduce our water consumption by using it to back-wash the two biofilters every couple of days. This ensures that they function at optimum performance.

Once a month a sample of the treated sewage is tested to see at what level are we maintaining the plant and to rectify any problems before its gets out of hand. So next time you flush think for a second whether it all ends here, or if this is just the beginning of something else.

Anton van Zyl
Mechanical Engineer

THE AMAZING ADVENTURES OF

SASTRUCIANA, GABOOSE, ARNOLD AND MAYA



*They had to
fight back
their tears as
they said
goodbye to
the giants of
Vesles*



©2008

My Sunglasses

One of sponsored items for SANAE 47 was a pair of **Bondi-Blu** sunglasses for each member. On receiving them we were all happy that we'll have our eyes well protected by one of the best brands in leisure eye-wear. We didn't worry any more about snow-blindness or any effect that could be the result of the snow in our eyes.



Saz styling his Bondi-Blu bril to protect his peepers

On the 4th of December 2007 we boarded the vessel on our way to the South. It was a sunny day and we all started to appreciate the presence of our sunglasses. We were at sea for almost a month and finally we got to put our feet on Ice, heading to our new home for the next 14 months. We got to test them on real Antarctic conditions as we travelled on ice to the base and guess what - they didn't disappoint us.

On arrival at the base, one of the things that you get to do is making water and we take turns in doing that. I anxiously sat waiting for my turn and it finally arrived on 3 February 2008 - the weather was good, and I said to myself there's no need for snow goggles, let me show off my nice pair of sunglasses. The job seemed to be challenging with lots of sweat, so I then decided to put my sunglasses safe in my pocket and get the job done.

Maybe if they indicated that they are leaving or

at least say goodbye I wouldn't have worried, or even carried on feeling lonely. The thing is I fell in love with them, they brought out the best in me, the style, the design... the list is endless. To my surprise, when I put them in my pocket was the last time I felt their well designed and nicely decorated frame. As I was busy throwing snow, my body movement allowed them to sneak out and fall into the depths of the cold water tank of the smelly.

I kept on saying to myself only if they said goodbye maybe I would've been fine with it.

I was sad, felt betrayed and lonely but I had hope that one day I'll smile again.

On the first Friday of July, which was just few day before my birthday, Ross, Anton and Sanki decided to go spade fishing in the cold water tank. They brought me the best pre-birthday gift I've ever asked for in SANAE – feeling around in the water Ross found something small and beautiful - MY BONDIBLU SUNGLASSES!

After 5 months of pain and misery I was finally re-united with stylish sunglasses, which is just in time as summer is approaching.

Together at last! Hurray...hurray ...hurray!



Happy together on the ice

Antarctic History

Looking back on the month of July

1872, July 16

Roald Amundsen was born



Roald Amundsen

Roald Engelbregt Grauning Amundsen, (Ross' personal hero) who led the first team to reach the South Pole, was born in Borge, Norway, in 1872. He initially trained to become a medical doctor before choosing a life of exploration. He was a member of the Belgian Antarctic Expedition of 1897-9 which was the first to winter in Antarctica, and went on to captain the first ship to traverse the North-West Passage in 1903. While spending two Arctic winters on this expedition he learned traditional techniques (such as the use of animal skins and sled-dogs) from the local Netsilik, to which his later success in Antarctica over Scott's expedition has been attributed. Amundsen famously believed that preparation and fortitude were the most important properties of an explorer, stating that "Obstacles are merely things we overcome." He went missing in 1925 during a rescue mission in the Arctic and was never found.

1983, July 21

Vostok station records coldest temperature

The Russian station Vostok, located above the Lake Vostok, was completed in 1957, and is located at 78°27'51"S 106°51'57"E. The primary research activity has been ice core drilling, and the Russians achieved a drill depth of 3650m. The coldest official recorded temperature was -89.2 °C, and an unconfirmed low of -91°C was reached during the winter of 1997.

1810, July 11

Sub-Antarctic Macquarie Islands discovered

Lying between Tasmania and the Antarctic continent, it was discovered by Frederick Hasselborough and named after the Governor of New South Wales. It plays habitat to elephant, New Zealand, sub-Antarctic and Antarctic seals, as well as Gentoo, Rockhopper, Royal and King penguin. The island consists only of rocks from deep within the Earth's mantle and oceanic crust, and rises 0.8mm each year.

1867, July 15

Jean-Baptiste Charcot was born

Charcot, a French physician (son of the famous neurologist and 'Napoleon of Neuroses, Jean-Martin Charcot), is one of the lesser known Antarctic Explorers. He focussed on exploration of the Antarctic Peninsula, and discovered Adelaide Island and Charcot Land. He contributed many maps and drawings of his voyages, and led the first French Antarctic Expedition to gather botanical, zoological, meteorological and hydrographic data as far as he went. He died off the coast of Iceland, in a storm at sea.



A 1921 sketch of Charcot Island

Sources: Wikipedia (en.wikipedia.org)

www.70south.com

– Daleen Koch

How Can I Find Out More About the Expedition?

The Antarctic Expedition is full of interesting aspects, encompassing the scientific work we do, the logistics of working in such a distant and isolated location, and the human factors of being alone for so long. We love to hear from you and grow public awareness of the projects, and for you to be involved. Here are some ideas to learn more:

- Visit the official SANAE website at www.sanap.org.za and learn more about the base, the logistics, the science and the people.
- Email the team at sanae@sanap.ac.za with your questions or news.
- Email team-members directly, using the format below:
firstname.lastname@sanae.sanap.ac.za
- Visit the websites of our sister projects at Marion and Gough Islands:
marion.sanap.org.za, and gough.sanap.org.za
- Many of the organisations involved have their own pages, and some team-members have personal blogs.
 - The links page on the official SANAP website has plenty-
<http://www.sanap.org.za/links.html>
 - The Scientific Committee on Antarctic Research (SCAR) –
www.scar.org
 - The Hermanus Magnetic Observatory - www.hmo.ac.za
 - Ross' blog about living in Antarctica - www.doctorross.co.za

Finally, you can CALL US at normal South African telephone rates by dialling:

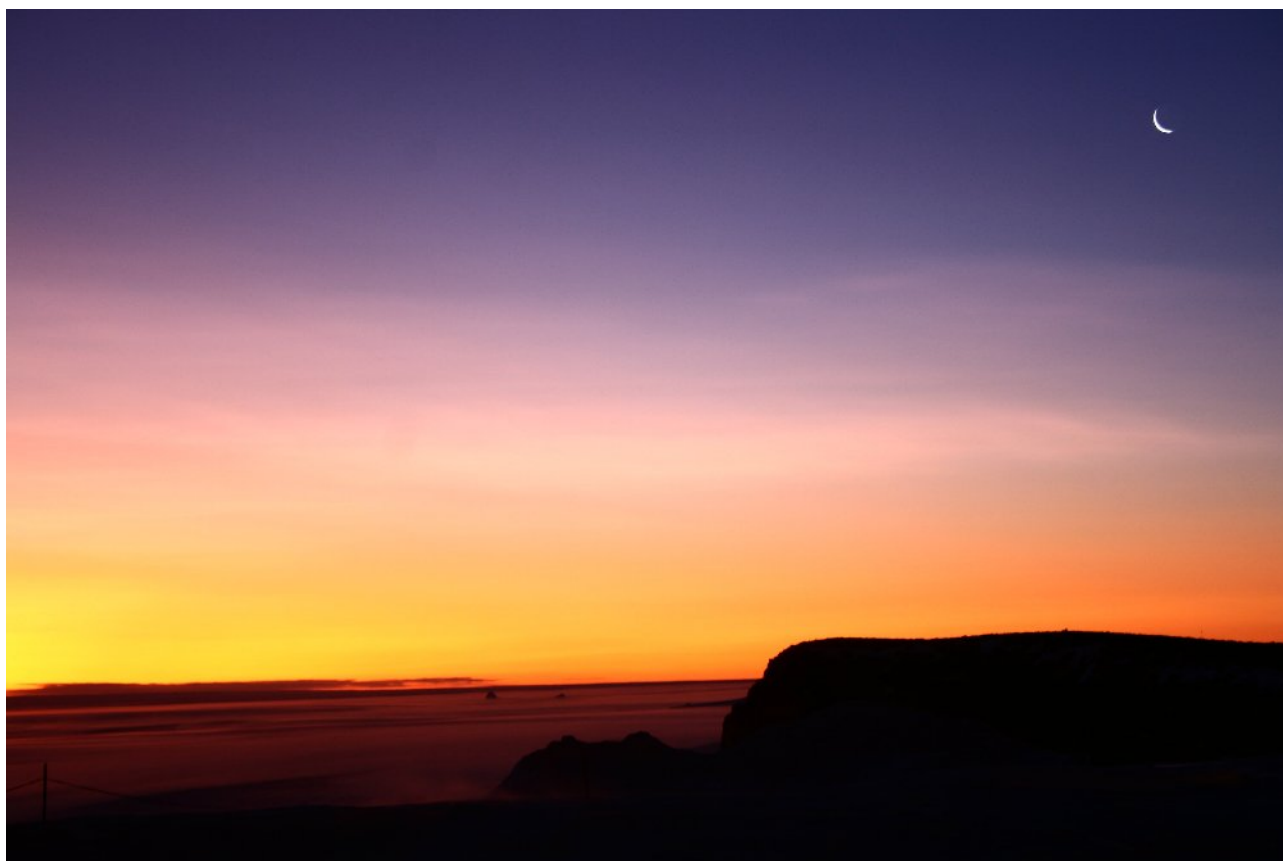
021 405 9428/9



WEATHER STATS: JULY 2008

	Maximum		Minimum		Average
Pressure	892.6 hPa	28-Jul	853.1 hPa	11-Jul	877.4 hPa
Temperature	-10.0°C	20-Jul	-30.2°C	5-Jul	-21.6°C
Humidity	96%	8-Jul	47%	30-Jul	82%
Wind Gust	46.5m.s ⁻¹	11-Jul			
	167.4km.h ⁻¹				

Parting Shot – Noon Moon over Vesleskarvet



photograph © Morgan O’Kennedy 2008