

## **DPW sends a team of experts to refurbish Antarctica Research Base**

**By Bakhaliphicebo Nakedi, Michael Murphy, Heine Smith,**

**Ellie van der Hoven and Louise vd Heever**

The Department of Public Works has sent 32 maintenance staff on the SA Agulhas II as part of the team travelling to the Antarctica research station. The newly built research ship, dedicated to the memory of Mama Africa Miriam Makeba, sailed for the Southern continent on 3 December 2015.

As part of maintaining infrastructure built by the Department on the Antarctic base, every December, the Department takes part in the South African National Antarctic Expedition (SANAE) as part of a group of scientists who go to the Southern ocean islands. The SANAE IV consists of physical scientists, earth scientists, oceanographers, life scientists and support staff.

Some of the work that will be undertaken during this season is the installation of a safety net on the cliff edge, underfloor heating and moving of inner walls in preparation of refurbishment work scheduled for the next season's trip as well as some external paintwork and general maintenance work.

The various kinds of research and its importance on the international platform done at the base were discussed. The Department is also constructing, maintaining and refurbishing infrastructure for the team who solely depend on the facilities during the long, dark and very cold winters experienced at the base as well as the long, light and still very cold summers.

The maintenance includes repairs and renovations such as sanitation facilities, painting, and plumbing, maintaining electrical and upgrading technical engineering systems.

The formal event started after singing the National Anthem where after Dr. Jonas Mpephiya from the Department of Environmental Affairs delivered his address. In his address he informed the attendees that South Africa has a presence on Antarctica since 1960 and as such the 55th expedition is undertaken this year.

The function was attended by the Deputy Minister, Mr Jeremy Cronin, Mr Paul Serote, the Head of the PMTE and Mr. Fred Johnson, the Regional Manager from Cape Town Regional

Office and the Departments of Environmental Affairs, Science and Technology, the expedition team members and their family members.

The Deputy Minister lauded the efforts of the two Departments in conservation of our environment. The DPW is the custodian of the research base and we are proud to be part of this project as the largest property operation in South Africa. "I think this is such a wonderful implementation and a global human effort to take pride in. Looking at climate change and the harsh weather conditions in the Antarctica, none of these expeditions would be possible if there was no base."

"The Department of Public Works is making a great effort in ensuring that our scientists who are doing a great job at these research stations are working in comfortable conditions. We have built environmentally friendly sewage disposal facilities at the base as well as installed underfloor heating to ameliorate the harsh climate conditions found in Antarctica," said the Deputy Minister.

Mr Cronin also extended his thanks to the departmental team and representatives from Nolitha (Pty) Ltd that will work very long hours to ensure that all the required work planned for this season is executed.

DPW has taken great care in ensuring that no damage is done to the environment during the construction of the new SANAE IV base. No harmful chemicals and machineries were used during construction, thus contributing to the well-being of the planet.

Mr. Heine Smith, the Departmental team leader, was requested by the Deputy Minister to share some of his experiences at the base on Antarctica. For the first time in the history, a contractor was appointed to conduct work at Antarctica.

The SANAE IV base is divided into four components: Physical sciences, life sciences, earth sciences and oceanographic sciences. The new base is located at Veslekarvet, 220 Km due south of SANAE III.

Veslekarvet is a nunatak that is a rocky outcrop peeping out of a snowy surface. In sharp contrast to the white surroundings, its colour is normally black or dark brown. In some cases it is able to support some sort of life such as mosses, algae, a few insects and birds.

Coincidentally, the departure of the Expedition Team of the SA Agulhas II happened during the Climate Change Summit that was being held at the COP 21 in Paris.

Appropriately, our scientists would help the cause of climate change and contribute a great deal of research. Because the new SANAE IV is built on a hillside, the Department's critical task was building a safety net to ensure the safety of the crew members.

Also considering that the SANAE III collapsed because of snow piling, the DPW took safety precautions in the construction of the new SANAE IV base, ensuring that no similar incidents occurred again.

The DPW crew members expressed great excitement to be part of this expedition. "I am so excited to be part of this expedition and it is my first time going to the base", said Michael Phillips, an Electrical Engineer from the Department.

The Department's maintenance team have approximately 75 days between December and February to complete a variety of maintenance tasks. They are accompanied by a number of scientists from various South African and international universities who will be conducting their own research on Antarctica.

The Department of Environmental Affairs scientists will also be dropping some research samples along the way with particular focus on climate studies in the Southern Oceans.

### ***Antarctica – a brief summary***

Antarctica is about 4 800 km from Cape Town and travelling time, weather permitting, is between 12 – 15 days. On the way to Antarctica, the "Roaring Fifties" is crossed which is regarded as the roughest seas on the planet.

South Africa was one of the original signatory countries to sign the Antarctic Treaty. The Antarctic Treaty and related agreements, collectively known as the Antarctic Treaty System (ATS) regulate international relations with respect to Antarctica, earth's only continent without a native human population. The treaty sets aside Antarctica as a scientific preserve and establishes freedom of scientific investigations.

Once the SA Agulhas II reaches the Antarctic ice shelf, that is if she can break through the bay ice, the cargo is either off-loaded at the Penguin (RSA) Bukta or the Akta (German) Bukta, which are 180 and 300 km from SANAE IV respectively.

At the Penguin Bukta they need to cut a ramp, using the D6 Caterpillars, through the ice shelf so that the cargo can be transported up this ramp and on top off the shelf, before sending it off to SANAE IV. Offloading at the Akta Bukta is much easier.

Transporting the cargo from these two depots takes another 2 – 3 days, weather permitting. It is anticipated that the team will arrive at SANAE IV approximately 19 or 20 December 2015 to commence with the maintenance and refurbishment work planned for this year. They will also have to adapt to these cold conditions, especially avoiding the extreme UV sun rays and walking in deep snow and on slippery ice.

The Departmental team can only execute their work during the summer months. Whilst we all think about summer as nice, warm and sunny days, the team will experience average temperatures (yes, summer temperatures) of between -10 to - 15°C.

Although the sun shines for 24 hours, severe blizzards, high wind speeds and occasional white-outs will also be experienced by the team. As the time available to perform all the required tasks is limited, the DPW representatives will work very long hours (most days between 12 – 15 hours per day).

Before departing to Antarctica, all the material required during this season had to be procured, packed, weighed, custom-cleared and transported to the ship by both the contractor and the Department prior to it been loaded on board the ship.

The reason for weighing the cargo is that the helicopter can only lift 1200kg and in the event that there is a problem offloading using the ship's cranes, they can airlift the cargo from the ship and set it down in the material depots. In that sense if the blizzards don't get you, the down draft caused by the helicopters rotor blades on the snow will blast you with ice.

The planning of the tasks to be executed is intense for the reason if even something small as a screw is forgotten, there is no way to buy that screw in Antarctica as there is no hardware store, just an icy desert. The same will apply to personal things being packed. If you for instance have a sweet tooth, you have to ensure that you have enough packed to last for the whole trip.

As the work is done over the festive period, the people are not at home to spend time with their families and loved ones. Communication is limited to an occasional phone call and “WhatsApp” messaging.

During this period the majority of us will enjoy time with our families and loved ones and work will be one of the last thoughts on our minds. When you have some quiet time, just take a minute to salute the people at SANAE IV, representing not just DPW, but our lovely country in ensuring that the facilities and technical installations are maintained for it to continuously be regarded as one of the best on Antarctica.