

# Petrel Post



SANAE 58<sup>th</sup> Overwintering Team

## Chapter 10

*In this chapter you will meet the other Diesel Mechanic, Mr. Sanele Action Mkhize, who will tell you more about himself and his responsibilities. Further in this chapter you will read about our generators, our weather and more...*

*Our expedition has come to an end as we are handing over to the SANAE 59<sup>th</sup> overwintering team. Therefore, this will unfortunately be our final chapter. We hope you enjoyed it. Goodbye and God bless!*



*"Lorenzen Pigger" Viewed from the SANAE IV Base (Zoomed), Antarctic Petrel in flight over the top of the mountain.*



*From left to right: Marvin, Jacques, Bongisipho, Juffer, Mpati, Travis, Sanele, Ewald and Salomé.*

# SANAE 58

Editor: Salomé Odendaal

Dec. 2019

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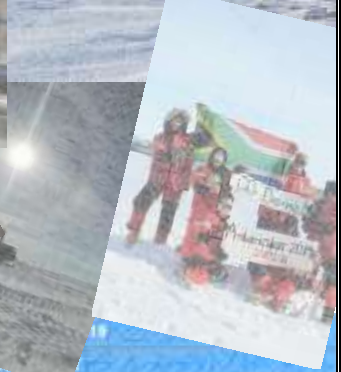
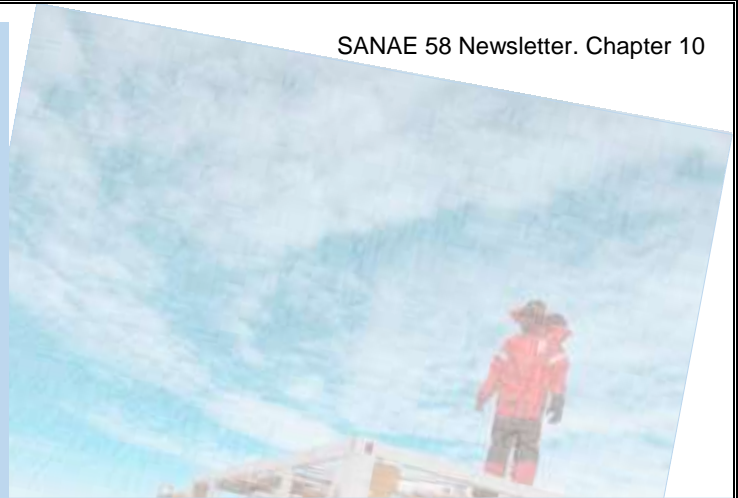
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	Minimum	Q1	Median	Average	Q3	Maximum
Temperature (°C)	-12.0 (20%)	-7.8	-6.0	-6.2	-4.0	-0.0 (23%)
Humidity (%)	25.0 (18%)	33	66.0	67.9	87.0	94.0 (23%)
Wind Gust (m/s)	0.0 (21%)	3.3	7.0	9.0	13.3	32.1 (21%)
Pressure (hPa)	994.0 (23%)	995	994.5	995.0	996.0	994.0 (18%)

## Did you know?

### Antarctica Has No Official Time Zone

Antarctica is mostly uninhabited and as a continent not officially divided into time zones. A number of existing research stations use either the time zone of the country that operates or supplies them, or the station may use the local time of countries located nearby. For example, McMurdo Station (New Zealand research station) observes either New Zealand Standard Time (NZST) or New Zealand Daylight Time (NZDT), as per the New Zealand time, whereas Palmer Station (American research station) keeps Chile Summer Time (CLST) as Chile is the closest country to their station.

# MEET OUR DIESEL MECHANIC: SANELE MKHIZE

Sanele A. Mkhize (DEA Diesel Mechanic)

Hi there!

My name is Sanele Action Mkhize. I am 28 years old, born on the 26<sup>th</sup> of November 1990. I was born in Kwa-Zulu Natal Durban and I reside in Cato Manor. I am not married yet, but I have one child and I weigh 75kg with a height of 1,70m.

I did my tertiary education firstly at Cato Manor TVET College, where I obtained a Fitting and Turning Level 2 National Certificate in 2010, and the following year I went to Umlazi V Coastal KZN College where I obtained a Mechanical Engineering National N Diploma in 2016. I then got an Apprenticeship at Transnet Engineering and I did my on the job training (OJT) at Transnet Port Terminals, where we dealt with machines like Reach Stackers (Kalmar and Sany), Mobile Harbour Cranes(Liebherr), Toyota Diesel Forklifts, Generators, Elmar and Buth Tub Trailers, Empty Handlers, Sweeper Machines, Bobcats, ERF (Ferrari and Mafi) Haulers, SEM and Dezzi Pay Loaders. I then did my trade test at McCarthy Toyota where I obtained a Diesel Mechanic Trade Test Certificate, Welding Level 1 Certificate and a Level 2 Certificate in Hydraulics all in early 2016.



My first job as a qualified Artisan was in mid-2016, just 3 months after I qualified, in a company called MWM Plant and Transport Hire Company where I did breakdowns, service repairs and preventative maintenance on heavy duty vehicles like Dezzi. SEM, Caterpillar Pay loaders with pushers and buckets, TLB's, Petrol Forklifts, Hydraulic Systems on factory sawing machines and Isuzu Trucks for 2 years. In late 2018 I was hired as a Diesel Mechanic by the Department of Environmental Affairs to work in Antarctica (SANAE 4 base) for 15 months maintaining and fixing systems like Smelter, Diesel Bunkers, Fan Coil Units (FCU), Refrigeration, Generators, Dozers, Challengers and Skidoos etc.

Being in Antarctica is a once in a lifetime opportunity for me, from which I am taking a vast amount of knowledge and experience back to South Africa. When I return back to South Africa, I am planning on going back to school to further my studies and obtain either a Government Certificate of Competency (GCC) in Factories or Mine Works, still not sure as yet. Being here in Antarctica will not only help me financially but will make my resume presentable in the future, so I gracefully thank the department for giving me this rare and exciting opportunity.

# GENERATORS

Sanele A. Mkhize (DEA Diesel Mechanic)



Figure 1. SANAE IV Generator Room with the 3 generators.

We have 3 generators at SANAE IV, which are mounted in series in the bottom C-block. These 3 generators power every electrical, mechanical and electronic system in the entire base. The engines are C9.3 Caterpillar engines which are cooled by means of heat exchanger cooling system, which is identified as Sea Water Aftercooled (SWAC) system. The engines are 2280mm long, width of 1279mm, height of 1237mm and a weight of 2495kg. They have 500-hour oil change intervals with a refill capacity of 24.5 litres lube oil system (engine oil) and 41,3 litres cooling system (Anti-freeze).

In the generator room there are two large tanks. The Domestic Hot Water (DHW) tank that supplies hot water to the taps and showers, and the Fan Coil Unit (FCU) tank that supplies hot glycol to warm up the base. Both these tanks are heated up by heat taken from the generators by means of heat exchanger, and the remaining heat is dumped off by the heat dumper, since the entire systems of the base can't take all the heat generated by the generators

Each generator can run up to 110 hours if no commands are forced upon it or if there is no excessive load before changing automatically over to the next generator. Each generator can run on its own up to a power load of 150kw without starting the second engine. However, the second generator will start if the power load is above 150kw and both generators will then share that load of 150kw to 75kw per generator until the load is reduced. Once the load is reduced, the generator with more hours on the deep-sea panel will switch off automatically leaving the one with less hours to continue.

When all generators are off and you want to start them, you first start from the furthest to help synchronize all three generators, so you first start generator 3, then generator 1 and lastly generator 2. If the load is suitable for only one generator, the generator with the most hours will switch off automatically after 15 minutes and the second generator with more hours (between the two remaining generators) will switch off 10 minutes after the first generator switched off. Thus, only one generator will run, which is the one with least hours between the three generators.

Each generator is fitted with duplex oil filters, duplex fuel primary filters and two duplex fuel secondary filters. The duplex system is for change over every 250-hour service interval by means of a hand lever.

# OUR WEATHER

Marvin Rankudu (Senior Meteorological Technician / SAWS Representative)

Table 1. SANAE IV weather statistics, as recorded for the month of Dec. 2019.

Weather Statistics: December 2019						
SANAE IV - VESLESKARVET						
	Minimum	Q1	Median	Average	Q3	Maximum
Temperature (°C)	-12.0 (26 <sup>th</sup> )	-7.8	-6.0	-6.2	-4.8	-0.9 (23 <sup>rd</sup> )
Humidity (%)	25.0 (15 <sup>th</sup> )	53	68.0	67.9	87.0	94.0 (23 <sup>rd</sup> )
Wind Gust (m/s)	0.0 (21 <sup>st</sup> )	3.3	7.5	9.0	13.9	32.1 (3 <sup>rd</sup> )
Pressure (hPa)	884.6 (23 <sup>rd</sup> )	892	894.5	859.0	898.0	904.0 (18 <sup>th</sup> )

°C, degrees Celsius; Q1, first quartile or 25<sup>th</sup> percentile; Q3, third quartile or 75<sup>th</sup> percentile; %, percentage; m/s, meter per second; hPa, hectopascal

# FAREWELL & REFLECTION

Jacques Robbertze (Team Leader & DEA Diesel Mechanic)

This will be our last newsletter regarding our time here and I want to take this opportunity to thank all our family, friends and sponsors for their ongoing encouragement and support through-out the year. I would also like to thank the Department again for providing us with this unique opportunity to have come here and form part of the South African National Antarctic Programme.

From the 19<sup>th</sup> of December 2019 and onward, the Summer Team and new SANAE 59-year team members arrived to SANAE IV. The influx of new faces and conversations brought a lot of new energy and enthusiasm. The parcels received from our loved one's back home were a delight and very much appreciated. During this period of take-over, we are handing over our duties and responsibilities and we are involved in training the new team. The base is also being inspected and receiving a lot of attention regarding any and all maintenance aspects and will likely look like a new base at the end of this summer.

During this last part of our time here, we will have a formal handover function where the new SANAE 59 team will take over and soon after that we will be departing Antarctica for the sunny shores of South Africa and beyond. We will soon be going home and wish the new team all the best for their time here.

Thank you again and all the best for 2020.



SANAE IV.



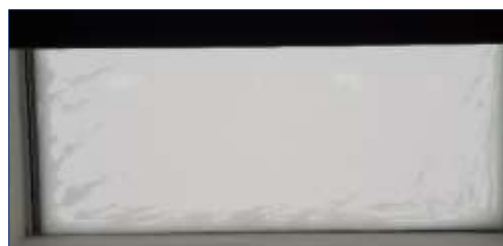
CAT trains.



Feeding Smelly.



We learned how to cook.



Snowstorms and staying inside.



Beautiful sunsets.



Firefighting training & playing. Some days were sunny, others cloudy. Not all was fun: late night cleaning of a burst pipe and unexpected invasion of snow.



Wind scoop.



Northern Buttress hike.



Last sunset.



Wine tasting.



Midwinter celebrations.



48-hour film festival.



Karaoke!



Aurora australis.



Dress-up parties.



Work (Waste Room).



Medical Sessions.



Volleyball in the hanger.



Outside braai.



Supporting the Boks!



Dozer runs.



Team photo sessions galore!

# ANTARCTICA MATTERS: DIAMOND DUST

Salomé Odendaal (DEA Team Medical Doctor)

Diamond dust is one of the meteorological wonders of Antarctica.

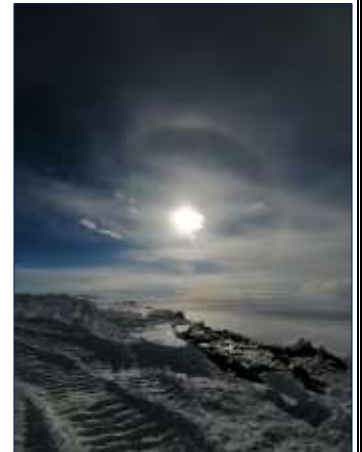
It is made of tiny ice crystals that precipitate out of humid air near the earth's surface and is usually first noticed when the tiny crystals reflect sunlight falling on them as they tumble through the air, looking like tiny floating diamonds.

Diamond dust is a type of cloud coverage that exists at the ground level, almost like an icy fog. However, fog is made up of liquid and diamond dust involves ice crystals. Fog also usually reduces visibility significantly whereas diamond dust is very thin and rarely reduces visibility.

The diamond dust ice crystal formation takes place when there is warmer air above the surface that mixes with the colder air closer to the surface. The formation of diamond dust is highly dependent on the temperature and the quality of air.

This phenomenon happens in most parts of the world where there are cold winters, although it is most common in the polar regions and may continue uninterruptedly for several days.

Diamond dust is associated with beautiful optical phenomena like the formation of light pillars, halos, and sun dogs.



*Halo. Photo taken at SANAE IV by Markus Viljoen, SANDF driver, on 14 January 2020.*



*Photos taken by Markus Viljoen, SANDF driver, on 20 December 2019 at the RSA Bukta.*

## References:

- Gallo, N. (2016, November). 10 fun facts about Antarctica. Aurora Expeditions [Online]. Available from: <https://www.auroraexpeditions.com.au/blog/10-fun-facts-about-antarctica/>
- Sen Nag, O. (2017, August 1). What is diamond dust? WorldAtlas.com. Available from: <https://www.worldatlas.com/articles/what-is-diamond-dust>

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Ultimate Heli  
<http://www.ultimateheli.com>  
 A dartboard and charcoal for the year as ours was "forgotten" back home.  
 Thanks guys, you made every braai day this year happen for us.



We would like to thank each of our sponsors for making our year that much more durable and comfortable.