

**Expedition Report Of The Vestfonna Ice Core Drill Team During The 2008 Spring Expedition As Part Of IPY-Kinnvika Activities**

By

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## Table of Contents

Table of Contents.....	2
Introduction.....	3
Expedition Preparations.....	3
Drill Preparations and Challenges.....	5

## Introduction

The main goal of the scientists participating in the expedition is to drill a deep ice core of approximately 350 m length on Vestfonna glacier during Spring 2008 and use it to decipher chemical records. The members of the drill team include Venkata Gandikota and Emilie Beaudon from the Arctic Centre, Rovaniemi, Finland; Sakari Kankaanpää with Metsähallitus, Finland; Laura Arppe, University of Helsinki, Finland; Piotr Glowacki with the Polish Polar Station on Hornsund; and Michael Gerasimoff from Canada.

## Expedition Preparations

Most of the gear for this field work has been sent to Kinnvika via the Polish ship Horizont in Summer 2007. Some additional and spare parts that we thought would be needed were bought in Longyearbyen before flying to Kinnvika. All the members of the group were transported to Kinnvika within the space of three days from April 9<sup>th</sup> till April 11<sup>th</sup>. In the meantime the drill gear was also airlifted by helicopters from Longyearbyen and dropped on the Vestfonna glacier; the location coordinates noted down and marked with aluminum poles by Janne, who is with the Swedish Polar Research Secretariat (SPRS) and were providing the logistics for the spring expedition.



*First convoy to the foot of the glacier. (Photo: Venkata Gandikota)*

The next few days we checked and assembled the mess tent and double checked all our scientific gear and discussed about how we would organize the drilling and the

measurements. On April 14<sup>th</sup> Veijo and Rickard went to the glacier and did some initial radar surveys, so from that data we could decide where to setup the drill. A few hours after they left, the next group of people (Piotr, Sakari, Mike, Janne, Lasse, Poul and Alun) went to the glacier, where they would meet up with Veijo and Rickard. After they got back to Kinnvika we were told that they did not go up the glacier as it was quite stormy and had to leave all the equipment at the foot of the glacier at a depot. On April 16<sup>th</sup> all the remaining gear was loaded on to the sledges and we started off for the glacier, as the weather calmed down. We then pitched the two pyramid tents and the kitchen tent we had with us. In the mean time, Janne, Lasse, Veijo and Rickard went to the site where the helicopter dropped off the drill related equipment and got them to the drill site which was about 150 meters from the camp (Summit Ahlmann).



*Camp Ahlmann in the storm. (Photo: Sakari Kankaanpää)*

About the same time we were pitching the tents and getting the drill equipment, it also started snowing heavily along with some wind and turned to hail during the night and quite soon, there was a white out. So, we thought of setting up the drill tent and equipment as soon as the weather gets better but for the next 7 days from April 17<sup>th</sup> till April 22<sup>nd</sup> we were stuck in a storm that seemed to get stronger with each passing day. All this while we kept contact with John in Rovaniemi via Iridium and with the other members of the Spring Expedition in Kinnvika via radio contact.

The camp site coordinates and altitude were N 79°58'46.1'' E20°07'18.1'' and 619.5 m respectively.



*Camp Ahlmann after the storm (Photo: Emilie Beaudon).*

### Drill Preparations And Challenges

After the storm subsided we went to the drill site and dug around for the drill equipment and the drill tent. We found all the drill equipment boxes and the frames for the tent (all the 9 boxes/items that were counted at Airlift's site in Longyearbyen) but couldn't find the tent cover itself. We used snow probes to look for it first at the drill site, then near the sleeping tents, and later went to the helicopter drop-off site but we couldn't find the tent cover. In the meanwhile, we decided to erect the tent frame to look how it could be setup and also to see if we would be able to fit any other tent cover onto this frame. There was an additional tent cover in Kinnvika similar to the kitchen tent cover and the SPRS guys hauled it to the nearest depot at the foot of the glacier. Piotr and Sakari went to that depot and got it to the camp site so we could try and see if it will fit the drill frame or not. This tent skin fit quite nicely on the drill frame even though either of them was not designed for each other. But it was only 3/4<sup>th</sup> of the entire frame and for the remaining part; we covered it with a tarpaulin sheet and secured them all together as best as possible. The next thing we did was to set up the floor for the drill by digging about half a meter deep, then evened it properly and then put wood beams and later on top of the beams laid out the plywood floor.



*Mike preparing the floor inside the drill tent. (Photo: Laura Arppe). Drill tent. (Photo: Emilie Beaudon).*

The next day on April 29<sup>th</sup>, Mike was checking the drill barrel for setting it up and discovered that the drill barrel which actually consists of an outer barrel and a rotating inner barrel has a bend. He showed us that the inner barrel which usually must slide in and out of the outer barrel quite freely was not doing so. The option we wanted to try was to use a welder's torch (oxy-acetylene flame) to try and remove the bend but for this we have to either get the required equipment to Kinnvika or fly the drill barrel to Longyearbyen. We did find the necessary equipment to be flown to Kinnvika but the helicopter people required a special permit which we didn't have and so it could not be flown. The decision was then made to fly Mike to Longyearbyen along with the barrel to get it fixed and he left for Kinnvika from the Vestfonna camp on May 1<sup>st</sup>.



*Bent outer barrel. (Photos: Mike Gerasimoff)*

On May 2<sup>nd</sup> Piotr made a call to Hornsund to get info about the weather for the next few days and was told that there was a potentially low pressure storm system developing and

that it could get worse from the next day onwards with winds reaching hurricane force. So, a decision was taken to pack and secure all our gear and get back to Kinnvika rather than be trapped in a big storm. We packed the essential stuff that we needed to take along to Kinnvika and the remaining were packed and put inside the kitchen tent in order of priority, meaning, the leftover personal gear would be put first and then the scientific gear and so on and the drill equipment were put together in boxes at the drill site. On May 3<sup>rd</sup> all of us got back to Kinnvika. The next few days we kept waiting for the helicopter to arrive so Mike could go to Longyearbyen to get the drill fixed and get back so we could at least salvage something from the spring expedition but bad weather prevented this and on May 7<sup>th</sup> a decision was taken to cancel the drill project since the weather was making it quite difficult to get the helicopter to Kinnvika and the season was also getting extended into warmer weather. On May 5<sup>th</sup> we dug 2 snow pits (115 cm and 104 cm deep respectively) on a nearby lake (N 80°03'06.1", E 018°32'10.4"). Stratigraphy of those 2 pits has been described and 25 samples will be analyzed for ions. Results will be compared with chemical data from snow sampled on Vestfonna glacier. On May 11<sup>th</sup> we flew out of Kinnvika to Longyearbyen to get back to Finland and end our part of the spring expedition.



*Drill tent, frame and drill components covered in emergency before leaving the camp.  
(Photo: Laura Arppe).*