

Residents meeting in Reykjanesbær 09/11/2023

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On November 9, 2023, an information meeting was held at Stapi Hljómahöll in Reykjanesbær regarding the state of uncertainty related to seismic activity on the Reykjanes Peninsula.

The meeting was opened by the mayor of Reykjanesbær, Kjartan Már Kjartansson. He introduced the guests, who were Kristín Jónsdóttir, a volcanologist from the Veðurstofa Íslands meteorological office, Kristinn Harðarson, director of the HS Orka thermal power plant, Páll Erland, director of HS Veitur, Viðir Reynisson, commissioner of the Civil Protection Department of the National Police Commissioner, and Guðrún Hafsteinsdóttir, Minister of Justice. The questions were additionally joined by Úlfar Lúðvíksson, commander of the police in Suðurnes, Otti Sigmarsson, chairman of Landsbjarg, Ari Guðmundsson, an engineer from Verkís, and Hulda Ragnheiður Árnadóttir, director of the insurance company Náttúruhamfaratrygging Íslands.

The mayor encouraged residents to visit the websites of municipalities, the meteorological office, the Department of Civil Protection and other institutions, where they can find useful and the latest information, instructions, evacuation plans and addresses of important websites. He also thanked all parties for their cooperation. The purpose of this meeting was to provide residents with information and a chance to ask questions.

The meeting was opened by Minister of Justice Guðrún Hafsteinsdóttir.

She admitted that it was a great honor to be present at this meeting and thanked the Department of Civil Protection for organizing it. She then emphasized that great tasks lie ahead due to a possible eruption on the Reykjanes Peninsula. Meetings like these are very important because they inform residents and give them a chance to ask questions. If an eruption were to occur, the Department of Civil Protection plays the main role, among others: in preparations and activities. Icelanders have extensive experience in dealing with natural hazard situations, including: avalanches, eruptions, landslides and bad weather. These experiences help us face the tasks that now lie before us. Since the police chief announced the state of uncertainty of the Department of Civil Protection on October 25, much work has been carried out to be as best prepared as possible for a possible eruption on the peninsula. She emphasized that we can all trust that we have the most qualified specialists who are constantly working to ensure our safety. The same goes for the government, which is preparing and will take the necessary actions to avoid damage and ensure that Reykjanes remains a good place to live.

Despite the heavy burden on the institution, work is progressing on preparatory plans, including: plans related to the construction of dams, emergency heating systems and emergency drilling, as well as work on the interpretation of measurements and the transfer of information. Finally, she assured that the government would take the necessary steps to ensure the safety of residents. Iceland may be a difficult country, but we must remember that in these difficult times we are not alone, the whole nation is behind us. We are a small country facing a big challenge, but let's remember that we are one in this.

Kristín Jónsdóttir, a volcanologist from the Veðurstofa Islands meteorological office

Kristín Jónsdóttir, a volcanologist and seismologist from the Veðurstof Íslands Meteorological Institute, spoke next. She described what the situation looks like today from the point of view of specialists from the meteorological institute.

While talking, she focused on today's situation.

What we see near Mount Fagradalsfjall is magma that collects at a depth of 10-15 km. It is located below the already petrified lava. This magma may be preparing to erupt again in the future. This is a similar event to the one that occurred before the last eruptions in the area and is visible from the Krýsuvík area to Reykjanestá.

What we see now is the accumulation of lava near Mount Þorbjörn at a depth of 5 km. This expansion is actually the rising of the Earth's crust, which symbolizes the accumulation of magma. It is difficult to say exactly how this magma got to this place, whether it flowed from the area near Fagradalsfjall or migrated from below. It doesn't really matter at this point. It is important to understand and interpret what is happening in these highest kilometers and whether there is a likelihood of an eruption or not. Among other things, a faster and more constant rise of the earth's crust was observed. This can be seen, among others, through the interpretation of satellite images, GPS measurements, earthquake and gas scale measurements.

What is happening around Mount Þorbjörn is a phenomenon that has already happened five times since 2020. In 2020, the earth's crust rose three times, in 2022 once and now in 2023 it is rising for the fifth time. The change today is the biggest and fastest compared to previous years. As of today, the earth's crust at the epicenter of the uplift indicates 8cm.

By interpreting satellite images, it is possible to create a model. He tells us that magma is accumulating horizontally near Þorbjörn at a depth of 5 km. As the pressure caused by the accumulation of magma increases, it is possible for the magma to spread more sideways.

During the eruption at Fagradalsfjall, magma moved vertically through a channel, trying to find its way to the surface. The earth's crust then began to collapse at the epicenter and rise on the sides.

The type of lava pool we see today can grow quickly and over long periods of time. These types of magma deposits can be very large in size.

According to our models, the magma pool lies from Sýlingarfell and faces southwest.

The rising of the Earth's crust and the accumulation of magma horizontally results in many earthquakes around the magma pool. Earthquakes since October 25 have been more distributed over the area, which means that the magma that accumulates creates pressure under the earth's surface and this pressure is discharged around it.

The earthquakes change places and are distributed over the terrain. However, this does not indicate that magma is moving towards the outlet.

The meteorological institute now has the following tasks: to carefully monitor all changes taking place and interpret them, to check whether there are signs that magma is moving towards the

surface. As of today, there are no signs that this is happening. Institute employees also have 24-hour shifts and regular meetings with other specialists and the Department of Civil Protection.

Finally, she said what to expect in the next days and weeks:

- The rising of the Earth's crust tells us that magma is still accumulating. This may be accompanied by increased seismic activity, with earthquakes up to 5 on the Richter scale. Earthquakes will occur and move around this magma pool. There may be boulder landslides in the mountains and cracks may appear where the earth's crust rises the most.
- A magma pool may result in an eruption.
- The rise of the Earth's crust may stop and seismic activity will decrease.

Kristinn Harðarson, director of the HS Orka thermal power plant

Kristinn Harðarson, director of the HS Orka thermal power plant, also took part in the meeting and paid particular attention to how important the Svartsengi plant is for the Reykjanes Peninsula. There are two thermal power plants on the Reykjanes Peninsula, Svartsengi and Reykjanesvirkjun.

What the commune receives from the Svartsengi heat and power plant is electricity, hot water and cold water. They produce 66 MW of electricity. If a situation arises that the operation of the Svartsengi factory is disturbed, it is possible to connect the commune to the Reykjanesvirkjun and Suðurnesjalínu factories.

Cold water is used as drinking water and to produce hot water. Hot water is produced in Svartsengi. Extracting hot water does not mean drilling wells and immediately providing clean hot water. The water produced there is similar to the water we have in the Blue Lagoon, which means it is not ready for everyday use. The production of hot water is therefore a much more difficult process than cold water. All equipment for hot water production is located in Svartsengi.

In light of the current situation, we have prepared an action plan. We put the safety of employees and devices first. We create evacuation plans, determine evacuation routes, and measure air quality. Secondly, we take care of checking the quality of cold water and daily measurements of hot water. We also pay attention to ensuring uninterrupted operation of the heat and power plant. We run 24-hour shifts, perform regular inspections and check the possibilities of controlling the heat and power plant remotely.

When it comes to the accumulation of magma, we do not see any changes taking place, among others: in measurements. The factory is built very well keeping earthquakes in mind. There was no major damage to the machines. During the earthquake that occurred a few days ago, a pipeline leaked, but we managed to repair it quickly. We are carefully checking the possibility of controlling the heat and power plant remotely. If an eruption and evacuation occurred, it could be remotely controlled to some extent from the Reykjanesvirkjun thermal power plant.

If an eruption occurs near Svartsenga, we will work to protect the most important infrastructure. Talks are being held with the Department of Civil Protection to build dams whenever possible in the event of an eruption, including dams that change the direction of lava flow and pouring water on the lava. It is also very important to protect the drilled holes needed for the operation of the thermal power plant. We are checking the possibility of filling these wells so that they can be used again after the eruption ends.

However, if an eruption occurs in an undesirable location, there is a possibility that not much can be done.

Today, teams are working to try to find a solution to the lack of water or electricity that may occur if there is an eruption that destroys the thermal power plant.

Páll Erland, director of HS Veitur

Páll Erland, director of HS veitur, continued the conversation about electricity and water supply.

HS Veitur's activities are very large. We provide services to almost the entire Reykjanes Peninsula, but also to Hafnarfjörður, Garðabær and Vestmannaeyjar. The thermal power plant's employees run 24-hour shifts to provide these services. 90 thousand inhabitants count on our services. Some of them are residents of Reykjanes and in the event of an eruption, they will be able to feel its effects. HS Veitur receives electricity, hot and cold water from the Svartsengi heat and power plant and then distributes it further to customers. If a situation arises that due to the effects of a natural disaster we do not receive these resources, we have prepared action plans that were created together with HS Orka in cooperation with the Department of Civil Protection, the police, the Björgunarsveitin rescue team and municipalities.

We are, to some extent, using the plans that we have prepared since the previous eruptions, updating them and also creating new ones.

He started by talking about electricity. Even though Svartsengi would interrupt the power supply, we will still get it. We have the possibility of connecting to Suðurnesjalín and Reykjanesvirkjun. Suðurnesjalína 1 plays a major role in our plans, so it is important to build Suðurnesjalína 2 in the future, which will be stronger. Landsnet knows how important Suðurnesjalína is to us and has also prepared plans to protect it in the event of destruction.

The HS Veitur electrical system is comprehensive. Because we live in a geothermal area, the system is not built to heat buildings electrically, but geothermally. Electric heating can quickly overload our system, which will be very sensitive and limited in the event of an eruption.

In his presentation, he showed charts showing what electricity consumption looks like today and what it would look like if all residents started heating their homes electrically. After connecting one electric heater (3 kW), the electricity consumption for Reykjanesbær and the surrounding area would

jump from 25 MW to 60 MW. If each house connected two radiators, this value would increase to 100 MW.

If a situation arises that requires electrical heating, it will be important that the electricity per house does not exceed 2.5 kW.

The plan for cold utility water is to build a reserve well to extract cold water in Árnarétt. Municipalities and other parties have already sent a request for permission and assistance in starting work to the government. If there is no eruption this time, we will be prepared for the coming years.

We get hot water from Svartsenga. Together with HS Orka, they are working on plans to continue providing hot water services to residents. One option we are checking out is backup water heaters. However, this is not an easy undertaking.

On the HS Veitur website you can find instructions that are worth reading. There you will find, among others, advice in the event of natural disasters, including: electric heating, heating selection and use, information for electric car owners and energy saving tips.

Finally, he informed that house systems, i.e. electrical and heating, are the property and responsibility of the apartment owner. It is important that owners do everything they can to offset the damage caused by natural disasters.

In the event of natural disasters and losses beyond the power plant's control, the company is not responsible for the losses.

Legislators, however, are responsible for such situations with special legal provisions regarding natural disasters.

Viðir Reynisson, commissioner of the Civil Protection Department of the National Police Commissioner

At the end of the meeting, Viðir Reynisson, Commissioner of the Civil Protection Department of the National Police Commissioner, spoke.

Discussions in recent days have focused on the threats and effects of a possible eruption on the Reykjanes Peninsula. This is accompanied by unpleasant earthquakes that we experience every day. The talks largely focus on this worst-case scenario. It doesn't have to happen, but you need to be as prepared as possible and people should be kept informed about the situation. We are faced with uncertainty that affects many people's well-being. Remember to take care of your mental health, take care of others, and remember about people who have trouble finding information or don't understand what may happen. Let's also be honest with our children, our family, follow the instructions we receive and read the information provided by professionals. Those who feel unwell can seek help. You can contact the Red Cross hotline on 1717 or chat on the 1717.is internet site. You can get help there 24/7 and you can count on confidentiality.

It is also important to familiarize yourself with the preparation plans and necessary information. Good knowledge can help and ease the work of the rescue team. This way we can continue to work together in the future.

For the last 4 years, since the first signs of the eruption, a team of specialists has been working hard, and our system is getting stronger and very well prepared every year. A meeting like this is a very important preparatory element, because we are all part of civil protection. Talking and collaborating is key to solving problems in difficult times.