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UMHVERFISSTOFNUN

Haukadalur, 1. júní 2016  
UST201605-103/L.K.  
09.05.01

**Subject: Research permit at the Great Geysir area**

The Environment Agency of Iceland has received the request from Dr. Thomas R. Walter, dated 12<sup>th</sup> of May, 2016, regarding permits to test to which degree the rise of gas slugs leads to deformation of the surrounding and how this deformation is controlled by the conduit geometry at the Geysir area.

**Description of the project:**

The project will take place from the 23<sup>rd</sup> of July until the 7<sup>th</sup> of August 2016, participants are Volcanology group at GFZ in Potsdam, Germany, IMO and the University of Iceland. The project will examine new monitoring strategies for Icelandic volcanoes and they wish to test to which degree the rise of gas slugs leads to deformation of the surrounding and how this deformation is controlled by the conduit geometry. To this aim the researchers request to place highly sensitive tilts and deformation sensors at 3 to 5 meters distance to the Geysir and let it record before, during and after eruptions. The researchers also wish to use high speed cameras and a novel radar sensor, to measure how the geysers geometry shape is slightly changing during eruptions. All sensors are made and designed to have no impact on the Geysir structure and will not cause any damage. Scientifically the researchers are also performing the same studies elsewhere and consider the Haukadalur Geysirs to be some of the best accessible ones and would furthermore enhance their understanding on how these systems work. In return the researchers offer access to all their scientific results (e.g. for tourist information) and referral in international conferences, proceedings and publications. All these experiments will be done during the night (between midnight and 6 am) so that no tourists will be affected by this research during the summer season.

High speed camera and radar sensors will be placed at 20 m distance on regular tripods, which will be removed. Ground installations (tilt meters and seismometers) will be placed at 3-5 m distance and placed on 40x40cm solid plates, which will be removed again after the experiments. Therefore, no disturbance on geological features, soil, flora and fauna will occur.

As the experiments will be conducted outside the tourist visit times, no disruption will occur. No samples will be taken. The tilt meters and seismometers measure the deformation of the ground. The high speed cameras measure the velocity of the eruption. The radar sends out a radio wave that is reflected at the geyser and the echo measured again at the radar. The cameras record up to 1000 frames per second. The tilt, seismometer and radar at 200 per second. Therefore no direct sampling, no material will be taken.

## Impact Assessment:

The Environment Agency concludes that the research, as described in the application, will not cause damage to the site, if the following conditions are met.

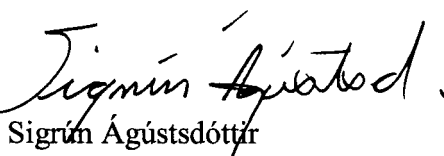
### The permit is hereby granted and subjected to the following conditions:


- This permission is granted for the period 23<sup>rd</sup> of July to 7<sup>th</sup> of August 2016.
- The Volcanology group shall remove the research equipment as soon as possible once the research is completed.
- The Environment Agency requests that the researchers will contact the ranger working in the area before field work begins and inform him on their intentions. (Please contact Anna S. Gunnarsdóttir +354 8224086).
- The researchers should carry the signed permit during their research.
- This permit is only valid for research purposes.
- All research equipment should be placed and removed with utmost care and the Geysir area left undisturbed by the process.
- The Environment Agency of Iceland wishes to be secured, free of charge, a copy of all reports and scientific articles that result from the research project.
- The permit only authorises research on Geysir and Strokkur.

### The Environment Agency notes the following:

- A separate permit from the National Energy Authority in Iceland may be needed to conduct research at geothermal sites in Iceland which the researchers should also carry at the research site. ([www.os.is](http://www.os.is), email: [os@os.is](mailto:os@os.is)).
- Please keep in mind that a part of the Geysir area is not owned by the Icelandic state and therefore the permit is only valid for Geysir and Strokkur, as described in the application.

Sincerely

  
Sigrún Ágústsdóttir  
Director

  
Lárus Kjartansson  
Advisor