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Evacuation plan for volcanic eruptions in the Katla caldera in Iceland

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Through the ages and in the last centuries volcanic activity has been frequent in the Katla caldera under the glacier of Mýrdalsjökull in the southern part of Iceland. The same applies for the glacier Eyjafjallajökull, which lies close by. Usually the resulting jokulhlaup (flood burst) flows directly southwards over the sandy planes to the sea. Nevertheless there is a slight possibility that the jokulhlaup flows to the west, over an important agricultural area, thus demolishing farms and villages. It was therefore considered necessary to plan the evacuation of everybody in the area with accuracy and care.

Scientists have for a long time done research in the area. They are doing online measurements and monitoring the situation. They have estimated what time will elapse from the point when an eruption is detected until the jokulhlaup breaks out from the glacier edge. Furthermore a detailed water flow simulation was carried out with the water depth and speed and thus determined where the flood boundary would be at any given time. This is based on historical data and a digital terrain model.

In order to do an actual evacuation plan, the engineering consultancy Línuhönnun was hired to simulate the traffic flow and decide on the methodology. The computer program TSIS (Corsim) from the University of Florida was used to obtain results for travelling and delay times and lengths of vehicle ques. A number of scenarios were analysed, based on different reaction and preparation times, summer and winter conditions, number of travellers in the area, etc.. The main result was that it was possible to evacuate the area in less than three hours. The farmers would though have to leave behind their equipment and livestock. Everybody in the area would be directed to take the westbound main highway and the only traffic problems could arise when driving

out of the evacuation area in the vicinity of the village of Hvolsvöllur.

The Icelandic Civil Defence supervised the project and helped to decide on the numerous questions that arose. There will be a rehearsal in March 2006 were valuable information will be obtained. It is likely that the chosen methodology will be used in future plans for other areas endangered by natural hazards in Iceland.