



# **INCIDENT REPORT INCIDENT AT GELDINGAFELL ON THE 7<sup>TH</sup> OF JANUARY MOUNTAINEERS OF ICELAND**

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## ABOUT MOUNTAINEERS

Mountaineers of Iceland was established in 1996 and has since operated snowmobile and super jeep tours with great success and a solid safety record. Mountaineers operate 6 vehicles, 4 super jeeps, 5 large passenger trucks, 1 bulldozer, 1 road grader, 12 Yamaha Viper snowmobiles and 106 Yamaha Venture snowmobiles and is one of the largest snowmobile rentals in the world.

On an annual basis Mountaineers serve well over 50 thousand clients in more than one thousand tours, with just under 300 thousand clients since 2014.

Mountaineers have had two serious non-injurious incidents due to human error since 1996, where the assistance of the Ice-SAR volunteer units has been required. The first was three years ago and Mountaineers took several precautions to learn from that incident and again in January 2020. In 2019 Mountaineers cancelled 19 operational days due to bad weather. Mountaineers will take every possible measure to ensure an incident free operation as before.

## INCIDENT DESCRIPTION

On 7th of January snowmobile trips booked for clients arriving by car or bus were cancelled due to bad weather expected at 16:00 as indicated by weather forecasts (yellow warning – Icelandic Met Office explanation of colour coded warnings is shown below). The transport of bus or car to Geldingafell (elevation 621 m) is not recommended in such conditions.

It was however decided to continue with the tours arriving with super jeeps as such vehicles have little problems arriving at, or departing from, Geldingafell. The tours in question were Hot Spring & Cool Glacier, The Pear Tour and a private tour operated by our partners. These tours would have their snowmobile trip run together in one larger group.

The plan was to drive the snowmobiles, from Geldingafell basecamp (621m above sea level), to our ice cave (670m above sea level), visit the ice cave and return as soon as possible. The group should have departed from our basecamp on snowmobiles at 12:30. The tour should have arrived back at the basecamp around 13:45. However they departed on snowmobiles at 12:50, 20 minutes behind schedule which was the first delay in a sequence that contributed to the group entering the storm period.

## Icelandic Met Office Colour Codes for Weather Warning

Impact Matrix of the Icelandic Meteorological Office

	Minimal or no hazard. No damage likely.
	Medium or high likelihood of medium impact weather which can have localized affects. This weather could affect travels between different areas of Iceland. The weather is potentially hazardous if precautions are not taken and can cause damages or accidents. Yellow warnings are fairly common and should not cause systematic disruptions to transport, public services or infrastructure. Yellow warning can also indicate the possibility of very severe, high impact weather 3-5 days ahead.
	Medium or high likelihood of medium or high impact weather. This weather can will likely have short term impact on transportation, public services and infrastructure. This weather may cause damages or accidents. Can be a threat to lives if precautions are not take. Amber warnings happen every year. Show caution and make the necessary arrangements.
	High likelihood of extreme weather causing high societal impact. Extreme weather with very hazardous conditions is forecasted. This weather can cause threat to life and property. High likelihood of nationwide disruptions to transportation, public services and infrastructure. Pay close attention to all available information and updates from IMO and Civil Protection.

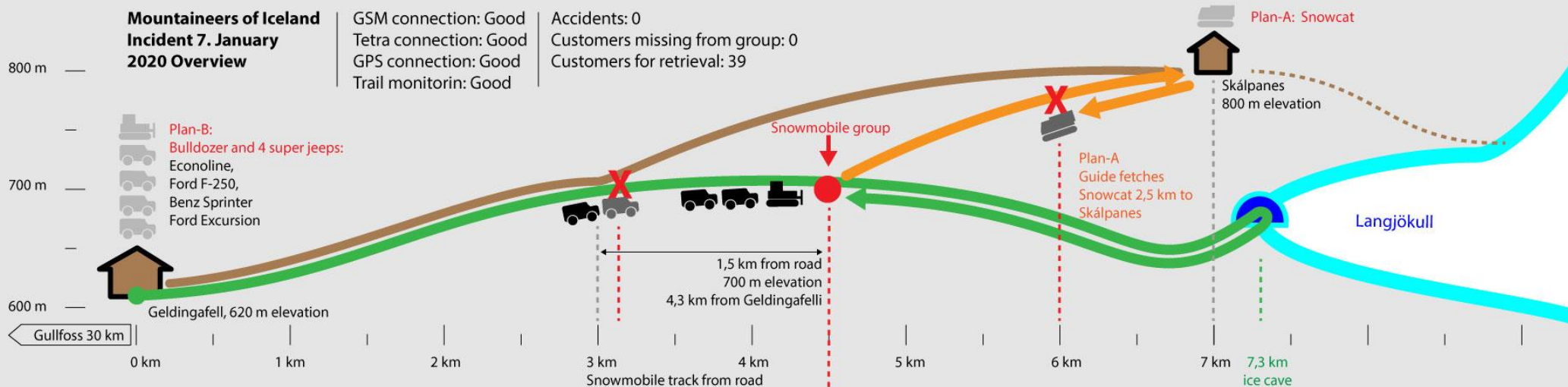
## Windspeed classification from Icelandic Met Office

To ease the understanding of the m/s measurement, the following table can be used.

Windspeed IN m/s	Description
<5	Very slow wind
5-10	Rather slow wind
10-20	Considerable wind, may lead to difficulties
20-30	Very windy, caution is advised
>30	Extreme wind, dangerous

**Mountaineers of Iceland  
Incident 7. January  
2020 Overview**

 GSM connection: Good  
 Tetra connection: Good  
 GPS connection: Good  
 Trail monitorin: Good

 Accidents: 0  
 Customers missing from group: 0  
 Customers for retrieval: 39


m/sek	Timi	Event
-1°C	12:50	Snowmobile group departs for trip - 39 customers
-1°C	14:16	Snowmobile group heads back
-3°C	15:20	Back-up plans visited
-4°C	16:15	<b>Plan-A</b> Guide reports troubles due to rough conditions and requests assistance <b>Snowmobile groups is stopped - guides arrange shelter along snowmobiles - 1 guide fetches snowcat</b> <b>Snowcat fails and stops</b>
-5°C	17:30	
-5°C	17:50	<b>Plan-B</b> - Group from Flúðir departs from Geldingafell basecamp with a bulldozer leading the Econoline, Ford F-250, Benz Sprinter and Ford Excursion
-7°C	19:30	19:30 Super jeep nr.3 suffers from malfunctioning
-7°C	19:32	<b>Plan-C</b> - 112 emergency service are called to inform of pending situation
-8°C	19:40	Super jepp nr. 3 stops and cannot continue, it blocks super jeep nr. 4
-8°C	19:59	112 emergency services are called, asking for assistance due to the malfunction of super jeep
-8°C	20:28	Super jeeps nr. 1 og 2 arrive to the group - customers seek shelter in vehicles
-8°C	00:15	Super jepp nr. 4 arrives - Guides start preparing departure by super jeep to Geldingafell basecamp
-8°C	00:30	First responders arrive (á vélsleðum) and assume control. Transport is paused
-8°C	01:00	Ice-SAR resume transport of customers by belted vehicles
-8°C	01:45	First group of 13 customers arrive to Geldingafell with help of Ice-SAR (by belted vehicles)
-8°C	03:31	Last 2 customers arrive at Geldingafell

***Weather readout at 12:50 from Geldingafell weather station:****Wind speed: 2,3 m/s**Wind direction: 213 deg – SouthWest**Temperature: 0.5°C*

The snowmobile group arrived at the ice cave at 13:40 (670m above sea level). The tour took longer than usual due to terrain and snow. There were some further delays due to the guides allowing passengers to take their time to enter the ice cave. Usual travel time to the ice cave is around 30 minutes. In this case it was 50 minutes. This delay also contributed to the group entering the storm period.

***Weather readout at 13:40 from Geldingafell weather station:****Wind speed: 7,6 m/s**Wind direction: 176 deg – South**Temperature: 0.2°C*

The time spent in the ice cave was beyond what is normally planned but otherwise the visit was uneventful. The glacier ice was explained to the passengers and they were given the opportunity to take photos. At 14:16 the group was leaving the ice cave when they should already have been back to Geldingafell base camp.

***Weather readout at 14:16 from Geldingafell weather station:****Wind speed: 14,8 m/s**Wind direction: 183 deg – South**Temperature: -1.0°C*

The group was still on their way back at 15:16 (690m above sea level). Everyone was accounted for and the delays were very clear to everyone at this point. Operations begin to prepare initiation of backup plans. i.e. using alternative methods to bring passengers back to the basecamp at Geldingafell. Passengers are having trouble operating snowmobiles in this terrain. They require constant assistance from Mountaineers guides. It is not only the weather that is delaying them, it is first and foremost the terrain and difficult snow conditions.

***Weather readout at 15:16 from Geldingafell weather station:****Wind speed: 20,4 m/s**Wind direction: 228 deg – SouthWest**Temperature: -2.7°C*

At this point it has become very windy, and temperature is beginning to drop.

Rescue Plan A, B & C are discussed by operations, shift foreman at the glacier and the chief operating officer.

#### **Plan A**

Shift foreman/lead guide would fetch a snowcat to Skálpanesskáli, approx. 3km away from the group. He would transport all clients and personnel back to Geldingafell basecamp in one trip.

#### **Plan B**

Dispatch personnel from Flúðir, closest to the site, and fetch the group using a bulldozer and four modified super jeeps.

#### **Plan C**

Request full support from local authorities and Ice-SAR volunteer units.

15:20 A rescue party at Flúðir is contacted and they begin to prepare themselves.

15:50 Plan A and Plan B are initiated.

#### **Weather readout at 15:50 from Geldingafell weather station:**

*Wind speed: 20,9 m/s*

*Wind direction: 234 deg – SouthWest*

*Temperature: -3.4°C*

At 15:50 a party from Mountaineers was dispatched from Flúðir according to Plan B to help the group back to Geldingafell base camp. They attempt to take a bulldozer and four modified super-jeeps to the group.

At 16:15 The group is stopped (695m above sea level), and they take cover by the snowmobiles, as progress is very limited at this point. They are 4500 meters from the basecamp and 2000 meters from the ice cave. The lead guide travels in haste to Skálpanesskáli, 2500 meters from the group, and fetches a snow cat which can accommodate the whole group.

#### **Weather readout at 16:15 from Geldingafell weather station:**

*Wind speed: 17,5 m/s*

*Wind direction: 228 deg – SouthWest*

*Temperature: -4.1°C*

At 16:30 the lead guide reaches the snowcat at Skálpanes Basecamp (800m above sea level). He preps the vehicle and departs towards the group.

#### **Weather readout at 16:15 from Geldingafell weather station:**

*Wind speed: 16,0 m/s*

*Wind direction: 232 deg – SouthWest*

*Temperature: -4.0°C*

At 17:20 The snowcat begins to show signs of running issues.

#### **Weather readout at 17:20 from Geldingafell weather station:**

*Wind speed: 20,2 m/s*

*Wind direction: 229 deg – SouthWest*

*Temperature: -5.2°C*

At 17:30 The snow cat was able to travel 1000 meters and then breaks down, with the lead guide stranded. The snowcat is situated 780m above sea level and 1,5km from snowmobile group. The group has waited for assistance for an hour and fifteen minutes.

At 17:50 The rescue party from Flúðir departs from Geldingafell basecamp. The party forms a convoy of a bulldozer and four modified super jeeps. The group has waited for assistance for an hour and thirty-five minutes.

**Weather readout at 17:50 from Geldingafell weather station:**

*Wind speed: 19,8 m/s*

*Wind direction: 216 deg – SouthWest*

*Temperature: -5.3°C*

At 18:15 operations and chief operating officer request backup to the office. Therefore, there are three people in the office at Reykjavík, in communication with various parties. The group has waited for assistance for two hours.

At 19:00 the party from Flúðir is approx. 2 km from the group. The group has waited for assistance for two hours and forty-five minutes.

**Weather readout at 19:00 from Geldingafell weather station:**

*Wind speed: 22,34 m/s*

*Wind direction: 239 deg – SouthWest*

*Temperature: -5.4°C*

At 19:32 National authorities are alerted. The group has waited for assistance for three hours and seventeen minutes.

At 19:58 One super jeep breaks down, it's 3<sup>rd</sup> in line after the bulldozer and thereby also blocks the 4<sup>th</sup> super jeep. The bulldozer continues with the first two cars towards the group. Plan C, Mountaineers request full back up and rescue from authorities. First responders are dispatched. The group has waited for assistance for three hours and forty-three minutes.

**Weather readout at 19:58 from Geldingafell weather station:**

*Wind speed: 23,34 m/s*

*Wind direction: 223 deg – SouthWest*

*Temperature: -7.2°C*

At 20:10 The bulldozer is approx. 650m from the group. Guides are notified that only two super jeeps are coming with the bulldozer. The group has waited for assistance for three hours and fifty-five minutes.

At 20:28 The bulldozer and two cars reach the group.

Passengers take cover in the super-jeeps.

The bulldozer then returns to the two super jeeps which were left behind, to fetch the super-jeep which was fourth in line.

The group has by this time waited in total for assistance for four hours and thirteen minutes.

**Weather readout at 20:28 from Geldingafell weather station:**

*Wind speed: 18,58 m/s*

*Wind direction: 226 deg – SouthWest*

*Temperature: -8.0°C*

At 21:15 Information over the radio that one of the passengers has an underlying heart condition. This is the first time the Mountaineers of Iceland team learns this. According to the information the passenger is stable and ok. Mountaineers relay this information to first responders.

At just after midnight the bulldozer returns with the third super jeep to the group.

At 00:30 the first responders from the Ice-SAR volunteer units arrives at the group on snowmobiles.

***Weather readout at 23:59 from Geldingafell weather station:***

*Wind speed: 21,56 m/s*

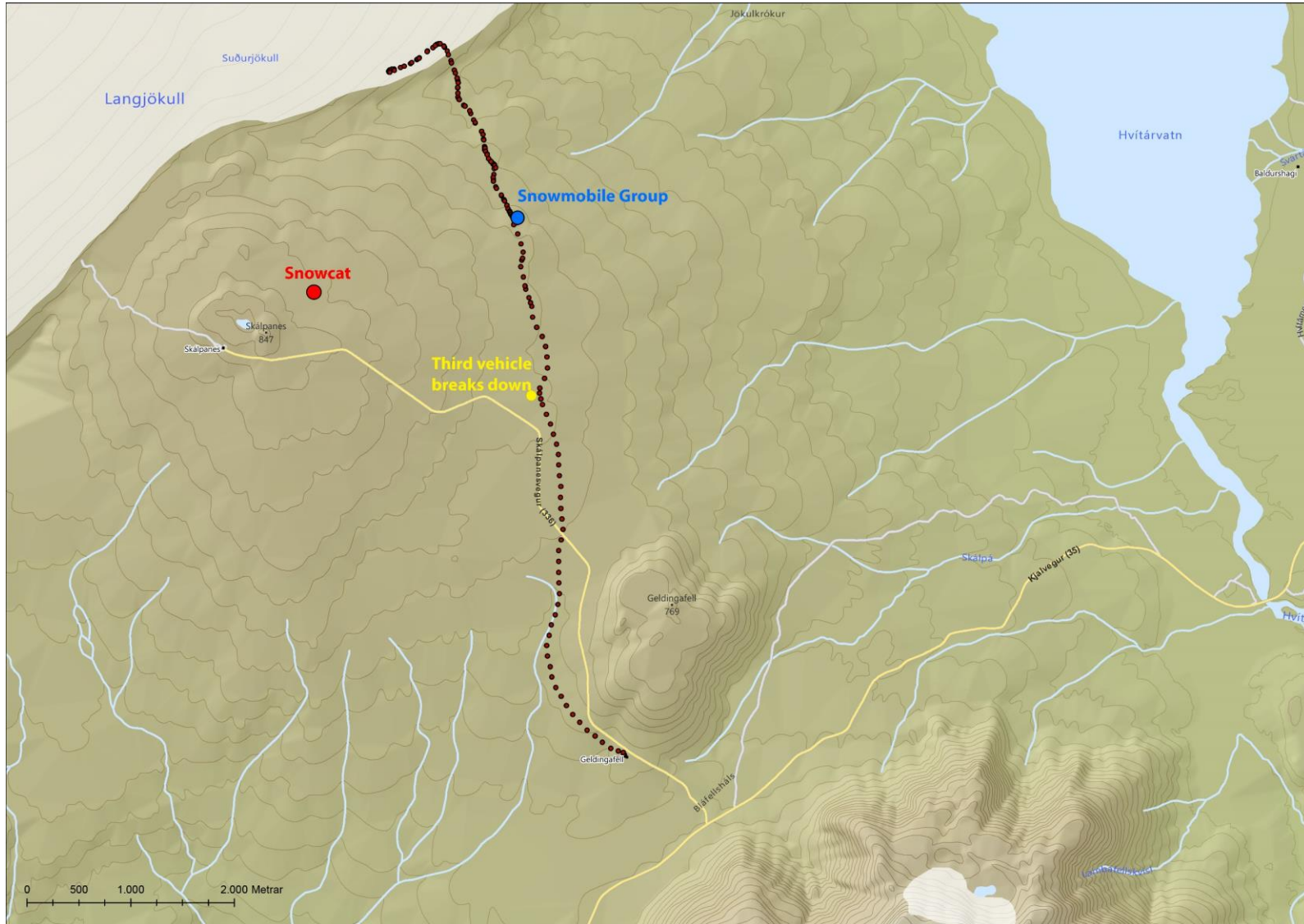
*Wind direction: 251 deg – West*

*Temperature: -8.2°C*

At around 01:00 Ice-SAR volunteer units begin to transport the passengers to Geldingafell with tracked vehicles. They are transported in multiple parties towards Geldingafell basecamp. The last people arrive in Geldingafell at around 3:30. There they are given food, drink and a change of clothes. From there Ice-SAR volunteer units transport them to a temporary relief shelter at Gullfoss.



# INCIDENT MAP OVERVIEW



## INCIDENT CAUSES:

- The group did not depart from the camp on time.
- The terrain was difficult to pass due to loose, airy and uncondensed snow, causing further delays.
- Route to ice cave was not optimal.
- A visit to the ice cave went ahead despite delays, extending the trip beyond the allocated timeframe.
- The snowcat (Plan A) breaks down, the cause is not yet known as the snowcat has not been retrieved at this point.
- One of the super jeeps stops due to the airfilter clogging from the snow.

## FOLLOW UP:

- Communication devices functioned as needed throughout the whole operation. E.g. Tetra radios.
- No one was ever lost.

### **Equipment to assist in a similar case in the future:**

- Supply shovels on the guide snowmobiles. Strap them down for easy access. They're always fixed on the snowmobiles.
- Purchase Lifesystems (or equivalent) shelter tents. Have them at hand in our basecamp on a snowmobile

trailer that can shelter large groups in difficult terrain and bad weather.

- Replace gloves with mittens for clients.

### **Training to assist in a similar case in the future:**

- Storm holdout training

### **Procedures to prevent a similar case in the future:**

- Create a fixed track for ice cave. Compress it with a bulldozer and a trailer. Fit this new route with road markers. Then make it a mandatory route for snowmobile guides.
- If there is any chance of bad weather that day, even in the evening, then the ice cave is cancelled, and clients get a partial refund. A safer snowmobile route is chosen making sure not to venture far from our basecamp.
- Time frame for acceptable weather is increased.
- Lead guide to send in route plans to operations and chief operating officer when trips are operated under yellow warning weather conditions.
- Health and Safety plan to be taken under scrutiny. Mountaineers will hire an independent firm, with expertise in search and rescue operations, to review and amend the Health and Safety Plan.