

## **Massey's Avalanche Guide's Report and Learning March 11, 2019**

On behalf of Merrie-Beth Board, Benjamin Paradis and Sarah Hueniken, **the guides who were involved in or responded to the avalanche on Massey's Waterfall on March 11, 2019**, this report has been written for the greater outdoor community to better understand the circumstances that led to the tragic loss of Sonja Johnson Findlater, as well as the nature of the involvement of other participants in the accident. The guides have always wanted to share this perspective, but circumstances made that difficult:

First, as friends of Sonja's, and out of respect for Sonja's family, we as guides limited our social media involvement regarding the accident. We focused our energy toward Sonja's important relationships, to best honor her and work through the difficulties of healing. We are beyond humbled and grateful for the compassion, understanding, love, and support that Sonja's family and friends have shared with us throughout this process and hope to continue honoring her through our future actions including this report.

Second, as members of a professional organization, we as guides were required to stay within **prescribed communication boundaries**. These boundaries lengthened and became tighter after a complaint was filed and a review process was held and completed by an ACMG committee of two mountain guides and a member of the public. This **complaint was dismissed** by the committee after extensive information was gathered and considered; however, the complainant continued to seek more review and demands from the guides and from the ACMG, including **filing complaints against the rescue team**. Significant efforts were made to engage the complainant in order to create an opportunity for learning and healing, including emails, phone calls, and in-person mediation with the guides. **These offers were not accepted.**

Third, time and distance from the trauma were necessary before significant learning from the accident could occur. It was initially difficult to separate real understanding from on-going hindsight judgment.

The guides hope those reading this report find in our words the sadness and grief that all of us—guides and participants—experienced that day. This pain is ongoing for all involved, especially Sonja's family and friends. Please consider and respect them in any comments you might make.

### **Context**

#### **Guide backgrounds:**

For the last ten years, ACMG Alpine Guide Sarah Hueniken has run women's winter waterfall ice climber-training programs with Sonja Findlater as the Camp Manager. These camps have been hosted in various places over the years but many of them have taken place in Field and have thus been referred to as the Field Camp. The camp has always been targeted toward participants looking to improve their waterfall ice climbing skills. As an advanced camp, participants were required to have previous experience and a certain fitness level in order to take part in the program. Every year, the camp was led by Sarah along with other certified ACMG



Alpine/Apprentice Alpine or Mountain Guides. From March 12 to 14, 2019, a total of four ACMG certified guides joined Sarah during the Field Camp. Each had an average of 13-20 years' experience as ice climbers and 5-15 years as Professional Guides. Merrie-Beth Board, a Mountain Guide and Benjamin Paradis, an Assistant Alpine Guide, were the two guides working on Massey's on March 11. Scott McKay, an Alpine Guide was guiding Carlsberg Column, and Sarah Hueniken, an Alpine Guide, and Sebastian Taborszky, an Assistant Alpine Guide, were guiding on Guinness Gully. William Gadd, also an Alpine Guide, was at the hostel the night before, and morning of, but was not guiding that day.



Merrie-Beth Board has been a certified IFMGA Mountain Guide since 2016. She has been ice climbing for 22 years and guiding ice for the last 10. She works in avalanche terrain consistently as a helicopter skiing lead guide, and has done so since 2007, for Canadian Mountain Holidays. She also ski tours recreationally and along with her guide work, spends over 150 days each winter in the mountains. She has her Canadian Avalanche Association Industry Standard Level 2. As a freelance guide she often works privately or for other companies as a contracted guide. Guiding mainly in Canada, she has visited and worked in other ranges of the world such as Chile, Europe, and Alaska. Since winter 1999, Merrie-Beth has spent hundreds of days ice climbing, from the Ice Fields Parkway, to Banff, Canmore, Kananaskis, Kicking Horse Canyon, and Field BC. Merrie-Beth has climbed, and guided, Massey's Icefall numerous times.

Ben Paradis has been a Certified ACMG Apprentice Alpine Guide since 2017. In addition, he has been certified by the Canadian Avalanche Operation for Operation Level 1, and Operation Level 2: Modules 1 and 2 (registered to Level 3). He has ice climbed for over thirteen years and guided ice full-time for the last two seasons (2018-2019 season and 2017-2018 season). Ben has also ice climbed abroad in Chamonix, Patagonia, and Mt. Washington, among others. He has guided close to 60 days on ice in Jasper, the Icefield Parkway, the Lake Louise area, Banff and Kananaskis. Ben has climbed in Field for the last eight years, both recreationally and professionally, and had guided Massey's twice. Ben is also a father to a young child and husband to a loving wife, key factors in his mountain choices, group, and personal safety every day.



Sarah Hueniken has been a full Alpine Guide since 2008 and an Assistant Alpine Guide since 2005, guiding ice climbing in the Canadian Rockies full-time every winter since 2005. She has her CAA Avalanche Operations Level 2 and works as an ACMG instructor and examiner for the Training and Assessment program for upcoming guides in both the rock and alpine programs. She has ice climbed extensively in the Canadian Rockies and all over the world both personally and professionally. Sarah has been running women-specific ice camps for 10 years with the intention of empowering women to travel independently in the mountains, and has spent countless days climbing in the Field area both recreationally and as a guide. Her dedication to the camps and the women on the camps has always went far beyond that of a job as did her relationship with Sonja, who was her close friend of 15 years.

### **The venue:**

Out of the 4-day camp, three days were targeted toward multi-pitch climbing, thus the need for more certified guides to keep a 1:1 or 1:2 ratio of guides to participants. Since the camp focused on learning new skills, whenever time and conditions allowed, more advanced skills and techniques such as leading, anchor building, and rope management were included. As such,

location selection required a safe but demanding environment to provide the students with a challenge up to their skills.

Because the climbs in Field provide this level of challenge, they are very popular amongst ice climbers and are frequented often for this reason, despite all climbs being situated in complex terrain. Although the camp was located in Field, in prior years climbs were not limited to this area but chosen based on conditions and safety as a priority. Massey's Waterfall on Mt. Stephen, and Carlsberg Column and Guinness Gully on Mt. Dennis, were chosen as climbs appropriate for the day's forecast and hazards.



## **Snowpack and Weather Conditions Leading up to March 11**

### **Snow conditions**

Prior to the March 11 incident, the provinces of British Columbia and Alberta had seen a long period of very cold temperatures (about three weeks of -20 to -30 degrees Celsius) and a long stretch of zero precipitation. The BC government snow monitoring stations in the region noted the general snowpack depth was below average, and discussions with Parks Canada suggested that there was less snow than usual in the starting zone of the avalanche path above Massey's for that time of year. In an analysis of avalanche hazard, the reported snow depth for the time of the camp indicated the chance of a large avalanche to be low. Fifteen to twenty cms of snow fell in the Yoho area four days prior to the incident, on Thursday, March 7<sup>th</sup>, with moderate SW winds.



### **Weather forecast**

The weather forecast in Field for March 11 was sunny with cloudy periods, light southwesterly winds up to 17km/hr, cold temperatures rising up to -2 degrees by late afternoon at valley bottom, and 2mm of snow expected overnight. Sunrise was at 8:09am and sunset, 7:44pm. March 11 was the first day of Daylight Savings Time (historical data from <https://www.worldweatheronline.com/field-weather-history/british-columbia/ca.aspx>).



### **Avalanche rating**

Parks Canada issues daily avalanche ratings in the mountain National Parks throughout the winter months. In the period between the March 7 snow event and the March 11 Field Camp, the new snow settled and the avalanche rating improved. On March 11 the hazard was rated Moderate in the alpine, Low at treeline and Low below treeline. The likelihood of avalanches in the professional definition of "Moderate" hazard is, "natural avalanches are unlikely, and human triggered avalanches are possible." The definition for Low is, "Natural and human trigger avalanches unlikely." The forecast noted that hazard would increase with the arrival of new snow and strong alpine winds Monday night (after the day's planned events). The guide's observations agreed with these forecasts.



In addition, Sarah Hueniken had discussions with Banff-Yoho-Kootenay Visitor Safety (VS) Specialists regarding Parks' observations from their latest avalanche control initiatives and flights. The VS Specialist indicated that, since the March 7 storm, most natural avalanches had already run, further reducing the hazard. Parks was not planning more avalanche control efforts until after the next storm.



### **Avalanche hazard discussion**

On the evening of March 10 and the morning of March 11, guides discussed the conditions and forecast, and made plans to communicate throughout the day via cell phone with their ongoing observations and concerns, if any. Warming, incoming snow and winds were at the forefront of every guide's mind as potential hazards and indicators to retreat. Each individual guide prepared themselves for the following day's route, by gathering information from multiple sources about current conditions and forecasts.

On the evening of March 10th, the participants were briefed on the avalanche risk and hazards. Each guide and participant packed avalanche gear ready for the following day. The participants on Massey's were all familiar with the gear, as it was their own. **Everyone brought a probe and shovel, and wore a beacon.**



### **March 11 Timeline**

March 11 was the second day of the four-day Field Camp. Sarah and Merrie-Beth had spent the first day in the area of Haffner Creek in Kootenay National Park.

On the morning of March 11<sup>th</sup>, all five guides met for a guides' meeting prior to going out, on objectives that were previously discussed by phone, email, or in-person. As per standard, **everyone showed up with their notes** and discussed the weather, avalanche concerns, participants abilities, and climbing objectives. Another experienced Alpine Guide that was not working that day was also present for the meeting. (Will Gadd)




7:00 am: The Massey's Group, led by guides Merrie-Beth Board and Benjamin Paradis, left the Hostel by headlamp along with four participants. Of note: due to the Daylight Savings Time change, this group's departure time would have been 6am, had the time zone switch not taken place. This was the earliest possible time the group could have reasonably left without climbing with headlamps on. The temperature at the time of departure was -14 at the upper Bosworth telemetry station, -10 at the Lower Bosworth, and -5 in the town of Field. The wind was calm, with broken skies.


7:25 am: Once out of town and before reaching the avalanche path enroute to Massey's, the two guides and the four participants performed transceiver checks before entering the slide path. The whole group arrived at the base of the climb around 7:35am by headlamp.

8:00 am: The groups started climbing with the sunrise. Splitting into two teams of three, they climbed Massey's Waterfall side by side. The last 20 m of Massey's were led on pre-placed ice screws by two participants with coaching from the guides from above. Upon reaching the top, the group descended in two long rappels.





2:10 pm: The group had completed the descent of the waterfall as a large team and returned to the base area to pack (This would have been 1:10pm, had the climb taken place the day

before). While the group was repacking their bags in preparation to return to the hostel, one of the guides responded to a **request to demonstrate a V-thread.** 

2:27 pm: A third guide, Sarah, was returning to the Field town site from her day on Guinness Gully with two participants and was crossing the train tracks into Field when one participant noticed a powder cloud on Mt Stephen, indicating an avalanche of some size. Sarah immediately phoned Merrie-Beth and told her to get **everyone behind the ice.** Merrie-Beth acknowledged the call and the phone went dead. (Note that in order to answer the phone, Merrie-Beth had to remove her gloves. She placed them on her pack, and was left gloveless when the avalanche came down and swept them away). Sarah immediately began running toward the climb with a shovel and probe. She gave directions to her two participants to follow as fast as they could with their emergency response equipment. Running was made more difficult as a train was moving on the tracks. While running, Sarah called Parks and initiated a rescue. She also called Scott McKay, who was guiding another team on Carlsberg Column, to come as quickly as he could. 

2:28 pm: The avalanche descended on the Massey group with little to no warning. Despite Merrie-Beth receiving the call and information from Sarah, the avalanche struck the group with no time for anyone to get ready. Participants watching the V-thread demonstration were close to the base of the ice wall, and made every effort to lean against it while the snow was coming down. Sonja, who was a few meters away from the wall taking off her equipment, had no time to react and was swept away. Another participant who made a subtle movement trying to take a breath during the avalanche was also taken away from the base and carried along in the avalanche. **Merrie-Beth was between Sonja's position and the ice wall. She was able to move two steps closer to the wall before the avalanche poured over the group.**


When the avalanche stopped, a head count was immediately established. One participant was missing and another one was partially buried with one arm and her face sticking out of the snow. All remaining participants were okay and were directed to switch their transceivers to "search." The victim whose hand was above the snow was located and attended to immediately. She was **dug out down to her chest** and was otherwise calm and breathing normally. In the meantime, Sonja was pinpointed within two minutes. Digging started right away. 

**The avalanche had swept away and covered all the packs.** Merrie-Beth searched for packs but none could be found in a timely manner. **The group dug with helmets, crampons, sticks and hands.** Without gloves, Merrie-Beth asked the partially buried victim for her gloves as her hands were nonfunctional. Selflessly the partially buried victim gave her gloves in order to enable Merrie-Beth to continue with the digging efforts. 

2:47 pm: Sarah arrived at the base with a probe and a shovel. The group had been able to dig down about a meter with the limited tools they had. They had not yet reached Sonja.

2:50 pm: A probe strike confirmed Sonja's location.

3:00 pm: Sonja's body position was found face down, downslope, and she was not breathing. There was no snow in her mouth. Sonja was recovered in approximately 30 minutes' total time from the start of the avalanche. CPR began immediately.

Those who were not performing CPR aided in the full recovery of the partially buried participant who had already self-extricated to her mid-thighs. 

3:07 pm: Scott McKay arrived at the scene and managed radio contact with Visitor Safety for landing and evacuation. An OPA (Oropharyngeal airway that helps open and maintain a patient's airway) was used to aid in respirations. Sonja was moved on to the side of the avalanche path and other participants were instructed to move down to the safety of the railway tracks. CPR continued steadily. A tarp and all available layers of warmth were used to bundle the victim and to keep her warm.


3:45 pm: BNP Visitor Safety arrived on scene. CPR continued while preparing Sonja for transport.

3:53 pm: Sonja, along with a visitor safety attendant, were lifted to the waiting ambulance. The remaining guides and participants were escorted back into Field with BNP Visitor Safety.

Sonja's heartbeat was re-established at the staging area in Field and she was then airlifted to Calgary. Once in the hospital, Sonja seemed to recover overnight. Her temperature rose. Her family, Sarah Hueniken and many friends gathered to support her and her husband at the hospital.

The following day, we were given the news that she would not make it. She remained on life support long enough to provide five people with new chances of life through her organ donation...a gift that our amazing Sonja and her compassionate family felt was important.

### **The Avalanche**

The specific avalanche details of the start zone size and layers remains unknown, as the location of the start zone was inaccessible at the time, preventing direct investigation. The actual trigger that initiated the wind slab is unknown. The wind slab may have been triggered by a cornice fall, a narrow loose dry avalanche, or reaching threshold from rapid wind loading. The observations made concluded the avalanche is believed to have been a wind slab that entrained facets (sugary snow) as it gained mass, resulting in a size 2- 2.5. From photographs of the start zone area taken by Parks Canada on March 11<sup>th</sup> after the avalanche, the fracture line was estimated to be in the order of 50 m to 100 m wide, 0.5 m deep, and located in the lower starting zone at 2300m. 

### **Massey's Terrain and Historical Data**

#### **Massey's terrain**





The Massey's climb is located between approximately 1350 and 1450 m elevation on Mt. Stephen. The climb starts with a challenging Grade 4 pitch and then angles off significantly for the second half. It is a wide curtain that can manage two groups climbing side by side. It is not an ideal climb for novice climbers because it starts with a difficult pitch. It is also not an ideal climb for strong climbers, because the second half of the climb is anticlimactic after doing the first pitch. These factors make it a potential climb for people who are strong enough to lead some easier ice and also still get the challenge of seconding something harder. It is also likely one reason why it is less popular than some of the other climbs in Field that are more consistent for the grade.

The avalanche path that affects Massey's Waterfall ranges from 3150 m elevation, near the summit of Mt. Stephen, to approximately 1250 m at the Kicking Horse River valley bottom. The path encompasses all three elevation bands that are normally associated with avalanche hazard – Alpine, Treeline, and Below Treeline.

The starting zone of the avalanche path is a large, northwest-facing, alpine bowl with several small gully systems that converge into a single channeled track in the Below Treeline elevation band, at approximately 1700 m. The slope incline of the starting zone ranges between 35° to 45° on average.

Although the starting zone is large (up to 700 m wide near the top), vegetation patterns suggest that most avalanches terminate above the convergence point at 1700 m. This is estimated to be partly due to the disconnected nature of the start zone, resulting in the vast majority of avalanches releasing from only a small segment of the start zone. This pattern of limited-length avalanches is consistent with long term observations of this avalanche path by Parks Canada.

### **Historical data**

Decades of observations show Massey's Waterfall is impacted by avalanches much less frequently than other exposed ice climbs near Field. Parks Canada Visitor Safety staff note it is an exceptional event for an avalanche to reach the ice climb. In previous years, avalanches have been observed to run in times of elevated avalanche hazard (Considerable, High, or Extreme) or later in the spring when daytime temperatures reach mountain tops. Even during times of high probability, **avalanches above Massey's have rarely run as far as the ice climb**. This is one reason Massey's has been a popular climb for both non-guided and guided parties and often used as a top rope venue as well.  

The guides involved in the March 11 event returned to the site several times in the next few months and there were no signs of any further avalanche activity despite several more snow storms and temperature spikes in spring warmings. This was the only avalanche that reached the climb that year.

Post-accident, the guides spoke individually with many other highly experienced guides as well as the Parks Canada Public Safety avalanche forecasters and other professional avalanche forecasters to better understand the day. Everyone they spoke to also said that they would have been guiding there that day, and were horribly surprised by what had happened. This accident

has deeply shaken many who work in avalanche terrain: Low probability, high consequence events are every climber's nightmare.

## Learnings

A fatality is the worst and most painful accident to have learnings from. All those affected have experienced extreme trauma and grief, and **learnings in these situations take time and reflection, and require humility and compassion.** Through deep and ongoing analysis, the following contributing factors were identified. The intent of this report is to share our clearest understandings of the environmental and human factors that contributed to this outcome. The purpose is to advance our community and culture in being better equipped to face similar future situations.

### **Inherent risk, high consequence terrain and human fallibility**

The five guides working that day (and one other involved in decision making) were all certified, experienced, and familiar with the **current conditions and chosen terrain.** Based on consultation and analysis of conditions, we each felt we had sufficient information to make an informed choice and felt positive and solid in the climbs we were guiding for the day. During the day, the guides were continuously assessing conditions and we were aware of potential concerns. They checked in regularly with each other by cell phone. They cared a great deal about the people they were guiding, and were themselves also exposed equally in the terrain. If there was doubt among the guides or participants they would have gone elsewhere, as has often happened in these camps. Accidents can still happen even under these circumstances. This avalanche on Massey's has made many climbers, both experienced and novice, reevaluate avalanche risk.

*Summary: The evaluation of acceptable risks needs to be deeply considered by everyone who ice climbs: guides, guests and recreational climbers. **Very rarely are ice climbers in low consequence terrain.** Managing the probability of that consequence is challenging and imperfect. Sharing this decision making, and the realities of inherent risks, with guests is imperative for the collective understanding of what is acceptable. Recognizing there will always be human imperfections in our ability to assess the probability of an outcome is what we need to verbalize and truly understand whether we are guiding or personally climbing. Unfortunately, no one is ever perfect in their understanding of the mountains. There is a large difference between intellectually understanding this idea, and living the outcome. We urge everyone to reflect on this, as we have and will continue to in Sonja's memory.*

### **Cumulative factors (wind, facets, alpine terrain):**

During the month following the accident, graphs of temperature, wind, and precipitation data from all the weather stations near Mt Stephen from March 7 (when the last snow arrived) to March 11 (the time of the avalanche) were created and analyzed in an effort to best understand the effects of changing conditions on the terrain in question. **This analysis revealed there were no great changes in temperature (low temperatures in Field ranged from -17 to -14; highs ranged from -5 to -2).** A wind event was recorded on the upper Bosworth station at 2700m the previous night (March 10) with average speeds between 50-60 km/hr and reached top speeds at high altitudes of 90 km/hr between 10am-12pm on March 11. The slide was a loose dry avalanche,





not wet. With an undetermined trigger, a wind slab propagated, promoting the failure of the snowpack below.



A released wind slab from this location, from Parks Canada historical reference, often will not reach the climb, due to the length and slope of the terrain. However, a month of cold temperatures and clear skies created an unusually weak snow pack of faceted low-density crystals, allowing the avalanche to travel an atypically long distance.

Field area does not have its own designated telemetry station. The closest high elevation station is Bosworth Mountain, at 2740m, ten km to the east. As guides, we reviewed the Spot weather forecast and the Mountain Weather forecast both the night before the March 11 climb, and in the morning, and neither showed the wind speeds recorded at Bosworth station. Guides' observations of wind, while in Field, both the night before and the morning of the climb, were that the winds were calm. Although changing conditions were on all our minds, clouds were not scudding, the air around us was still, and there was no "Yoho Blow" (a term used by locals in reference to high winds that can affect the Yoho valley) or even a moderate breeze. Other guides guiding in the area also did not experience winds, and non-working guides skiing on steep north aspects in Field also witnessed a lack of wind observations during the day. Later in the morning, one guide noted seeing some wind indicators from across the valley, and Merrie-Beth and two participants observed pluming high on Mt. Stephen, after topping out on Massey's. There was a lot of experience in the valley that day, and no one saw the observed winds as an imminent concern.

Summary: *The group was anticipating a storm front that evening and estimated that the indicators of an earlier arrival would come in the form of precipitation with wind. In this case, the winds arrived ahead of the precipitation, and didn't reach down into the valley. The actuals and direct observations varied greatly from forecasts. Wind can vary from one location to another and be a difficult element to track high above you in unseen terrain. This experience now signifies that a series of factors (a highly faceted snowpack and high winds even if not forecast or visible) can result in slides where not expected. We continue to wrestle with how best to use this knowledge going forward, but it's important to all climbers to recognize these factors. In some areas there are wind stations that can be monitored if there is cell service. This may help predict future events.*

## Equipment

All guides and participants carried the appropriate avalanche gear. Properly functioning avalanche transceivers were worn at all times, and were crucial, as they enabled finding everyone within two minutes after the avalanche settled. Other equipment, including probes, shovels, tarp to move a victim out of the run-out zone, OPA, and radios for communication in the event of an accident, were located in the guides' and/or participants' packs at the time of the incident.

During the day, there will always be times that packs need to be taken off and on to prepare for the climb. The avalanche took place in one of these moments in time, when packs were off and people were in the middle of disassembling their gear. Retrieval without a probe and shovel was slow, challenging, and frustrating. Progress was made in the unsettled avalanche debris, but was much slower without proper equipment.

Pack placement and the location of rescue equipment at this moment was a significant factor in the speed of rescue. For comfort of getting equipped for the climb and packing up at the end of the day, packs were placed as close to the ice as reasonable, while also considering overhead hazard from ice daggers. Packs were worn during the climb itself. The timing of the event resulted in both beneficial and detrimental outcomes. Had participants been wearing their packs, there is a high probability many more participants would have been swept away (for instance, a motion as subtle as trying to take a breath while pressing up close to the ice resulted in one participant being caught in the avalanche). Conversely, the fact that participants were not wearing their packs meant the packs were buried under the snow, making probes and shovels inaccessible, and thereby hampering efforts to extract victims.

Some have proposed that packs be attached to the ice or staged well away from the slide path. This could have changed the outcome, with the understanding people would still have been traveling through the hazard or standing at the same positions at the time of the avalanche.

*Summary: The packs were never found on March 11. On several occasions post-incident, the guides returned to retrieve packs. The two packs closest to the ice wall, on the low angled ice apron, were found in exactly the same location as they were left. They were buried 40cm deep: too deep to be found on that day, and no easier to discover had they been attached to the ice with a screw. The other packs had all been swept down the slide path. The only other recoverable and useful position the packs could have been placed while sorting equipment, would have been 50m off to the side where no path exists or 100 m back toward the tracks. With numerous ice climbs in avalanche tracks and run out zones, any opportunity to gather, approach, or descend out of an avalanche path should be highly considered.*

### **Group management and objectives in hazardous terrain**

Recreational and guided ice climbing has grown substantially over recent years. It is not uncommon for climbing parties to share ice climbs. This day, two parties were climbing side by side, managing ice fall between parties, which added time.


Guides often consider extending the day for the objectives of their guests, if conditions, energy and interest align. One participant from each party led the top ice pitch simultaneously with preplaced screws, as an opportunity to get coached on multi-pitch climbing and decision making in a practical venue. A V-thread was demonstrated as participants were getting packed to leave. Timing and conditions felt aligned for these opportunities, but together, these activities extended the day.


*Summary: Choosing the simplest terrain with limited exposure to objective hazard will remove some (not all) of the environmental stress and allow for skill development in the safest possible places, even on those days when the probability of avalanches is low. The tension of balancing client desires for learning and experience and their value of the day, with an environment that has inherent risks, will always be an imperfect goal for guides.*

### **Training and practice**

All guides were certified, with high levels of training for companion avalanche rescue, and the participants in the Massey's group had either very high-level training or had completed an


avalanche course. Guides ensured each participant packed all the appropriate avalanche equipment for the day, and ran a standard transceiver check prior to entering avalanche terrain. Guides did not practice a scenario, due to the group's experience and previous training.

Practicing a scenario would not have changed the day's outcome, but would have added more time to the day. 

Positioning close to the curtain of ice was discussed, but where to go if an avalanche poured over the climb was not. As the avalanche came with no audible warning, there was very little time to yell, or to respond at all. The guides had positioned the group as close as possible to the wall during the pack up and V-thread demonstration. Sonja's position was two to three meters from the wall and she was unable to get closer to the wall in the brief seconds between the group's awareness of the avalanche and its arrival. 

*Summary: Discussing scenarios prior to the day and what escape routes and safe zones look like, if certain hazards become active (avalanche, rockfall, ice fall, etc.) could improve participant reaction time. Since this accident, making additional time for companion rescue training prior to climbing in avalanche terrain, has been encouraged community-wide.*

### **Post-incident response**

The individual guides were small business owners or contract workers with few industry resources and standard protocols, that would've been helpful with post-incident care and debriefing. The ACMG also did not have any standard post-incident response for an accident of this nature. Directly after the accident, all guides who were involved in the rescue, but not all participants from the Masseys climb, were invited to attend a Parks debrief. This was an unintentional omission and despite the Parks' good intentions, this understandably led to animosity from those who weren't invited. Three weeks after the accident, a professionally run debrief was organized by Sarah and Scott for the entire group that attended the camp, along with Parks Safety workers. Everyone from the Field Camp, and Will Gadd who was also there the night prior and morning of, attended the meeting in person or via Skype. The meeting was intended to offer closure and discuss the emotional impact of the accident. This would have been much more effective had it been held closer to the date. In the immediate weeks following an accident of this significance, all those involved, both participants and guides, experienced shock, grief, and trauma. There were unfortunately few resources and little emotional or mental ability to figure out what was best for the group members and how to look after everyone's post accident problems. Most of the guide's energy went to Sonja's family, coping with digging out and losing a long-time friend. 

*Summary: It would benefit individual guides working outside of large companies to have a post-incident response format in place, in the event of a worst-possible scenario. This accident has also prompted the ACMG to significantly improve and broaden its accident response plan for future incidents. This work is ongoing.*

### **Information gathering**

The information we, as guides, have on many of the popular ice climbs we use, is still quite limited. Our best current resource to build historical data is the MIN (Mountain Information Network) offered through Avalanche Canada. As a community of ice climbers, it would benefit

us all to continue building our information resources about the climbs we choose, such as particulars about the terrain above a climb, the frequency of avalanches that run over a climb or on approaches, and other data. The Avalanche Terrain Exposure Scale (ATES) is useful as a base understanding of the complexity of the terrain overhead, but is only one tool in assisting our ability to predict natural avalanches.

*Summary: Currently, our best existing resource for building historical data is the Mountain Information Network (MIN). Encouraging all ice guides and recreational ice climbers to post daily observations on the MIN could grow our understanding. Sarah has recently signed on as an ambassador for Avalanche Canada and in that role, aims to compile ice climbing related posts and help bridge the gap between ice climbers and the MIN.*

### **Conclusion**

These learnings, formulated over the past 18 months, will continue to deepen as each of us processes this accident on a daily basis. This report has been built through extensive conversations and reflections from the guides present on the day, as well as many deep conversations with a wide range of people in the greater mountain community. Hindsight is crystal clear, but every day we go out the door to climb we all forecast the future with the available information, experience and at times limited knowledge. We hope this report will assist the community with preparedness and forecasting for the best possible outcomes.

Sonja's family and friends, and everyone who was on the climb and attended to the scene will be forever changed by this experience. We, as guides, grieve deeply for those involved and especially for the loss of our friend. We hope no one will have to experience an accident such as this in the future.