I. DEFINING LEGAL LIABILITY

“Legal liability” is really the result of a structured inquiry into the actions/inactions of a given person (in this inquiry – we are looking at the question in the context of forecasting). Briefly, the way in which responsibility/fault/blame and/or liability is examined in the secular legal system is an analysis of a four part test which considers: “duty/breach/causation/damages.” If a person (an actor) has a (1) duty to another and the actor (2) breaches that duty (by action or inaction) and that breach is the 3) cause of (4) damages (injury, death or property damage) to the one to whom the duty is owed, then we say that the actor is negligent. The ‘test’ requires an affirmative finding of each of these four elements; in other words, if an inquiry ultimately concludes (for instance) there was no duty owed or that any alleged breach was not the cause in fact of damage, then the analysis fails and negligence cannot be (legally) imputed or ascribed to the actor (the one who allegedly owed a duty). Using this test it is important to note that virtually anyone (inside or outside of the forecasting world) who has some type of duty to others can be found negligent (responsible or legally liable) for breach of that duty when the breach causes damages. In other words, the analysis is consistent inside and outside of the forecasting world.

II. THE ‘DUTY’ ELEMENT APPLIED TO FORECASTING

Having defined the legal liability analysis, we want to look at the question of - to whom do forecasters owe duties? Or – where do forecasters work? In the 2007 article “Current and Future Snow Avalanche Threats and Mitigation Measures in Canada” the authors note 702 avalanche deaths in Canada since the beginning of their records (1782) and they categorize these deaths as: 53% being people engaged in recreational activities, 18% as people in or near buildings (a poor category in this authors’ mind as it lacks context – IE – are these ski chalets, transportation sheds, industrial buildings?), 16% as folks travelling or working on/in transportation corridors and 8% as folks working in resource industries. The remainder 5% of the deaths were either unknown in terms of being categorized or were engaged in other activities such as hunting or avalanche control work. Obviously then, we find forecasters working at ski areas, Departments or Ministries of Transportation (DOTs or MOTs), railroads (RR), private consulting situations for various entities, etc. And, based on the statistics and based on the severity of the potential consequences, we are likely to see higher numbers of forecasters in recreation situations and in the transportation industry. Working in these contexts then, we look more closely at: to whom do the forecasters owe a duty and what is that duty?
It’s easy to see that forecasters – as employees – owe a duty to their employers (that duty being to competently exercise reasonable and prudent judgment given the specialized knowledge/training a forecaster should bring to the job). IE – the forecaster is hired to provide certain skill and expertise and to exercise that expertise on behalf of the employer. The various employers have goals to accomplish (getting the ski lifts running and not endangering the skiing public, keeping transportation corridors open and protecting the traveling public and/or keeping workers or buildings safe from threat/destruction). When and if a forecaster fails to do his/her work appropriately (timely, completely, with sufficient observation and appreciation of risk, without creating additional or secondary risks – IE – ‘non-negligently’) the forecaster exposes their employer to legal liability when a target goal (getting the lifts running, keeping a transportation corridor open while protecting the traveling public, keeping workers or buildings safe, etc.) is not met and someone gets hurt or killed or property is damaged.

It’s important to note that many of the folks that may be harmed by a forecaster’s failure (or negligent actions) are tantamount to what the law calls “third party beneficiaries.” In other words, the target goal of a forecaster and his/her employer may be to get a ski resort open or keep a transportation corridor open, and the forecaster may have duties toward his/her employer, but it is usually within the intention or contemplation of the forecaster and his/her employer that the mitigation/forecasting work is being done to protect other persons/entities (IE - the skiing public or the traveling public or employees in a given mountainous industrial site). That being said, it should then be obvious that the forecaster not only owes certain duties to his/her employer, but the duty to act non-negligently can also be said to extend to numerous other third parties who will be affected by the forecaster’s actions or inactions (the skiers, roadway users, employees at the mountainous industrial site). These other third parties are the actual people who are entitled to the “benefit” of whatever the target goal may be or of whatever is being accomplished. Obviously – in the world of forecasting then – while a hired forecaster owes duties to the entity/person who employs them – most often the real beneficiaries of the forecasters work (and therefore an additional class of people who are entitled to rely on the forecasters work) are the people at the ski areas and driving along the road systems or riding in trains or who are workers at facilities that need protection from avalanche hazard.

In the legal system – ‘duty’ is defined as the responsibility to act like a reasonably prudent person given whatever situation you are in. IOW’s – what would a reasonably prudent person (not a ‘rock star’ or an extraordinary person) – do in the situation that is at issue? The ripple here – is that duties are different between classes of people – and this difference is primarily related to levels/classes of education/experience. Essentially then – what we would expect a novice amateur forecaster (IE – weekend backcountry skier) to do will be very different than what we would expect an expert or professional forecaster to do. In other words, what would be considered ‘reasonable and prudent’ action or judgment or observational criteria for a seasoned professional would be considerably different than what we would consider ‘reasonable and prudent’ action or judgment or observational criteria for a novice/amateur actor. So – if you are a hired forecasting expert we will expect that you can/will conduct yourself as a reasonably prudent avalanche forecaster, not as a novice backcountry (arm chair type) forecaster. Analyzing whether action or judgment or observational criteria used by a forecaster is actually reasonable and prudent requires consideration of what is called “industry standards” and usually involves expert assistance in considering what other folks operating in similar situations/systems/geographic areas, etc. do in similar situations. Put plainly, when we look (in the legal context) at the question of whether a forecaster is operating within recognized industry standards (noting that a finding that a forecaster’s actions/inactions that fall below recognized standards usually means a finding that he/she has breached his/her duty in that situation), that inquiry will focus on what other professional forecasters are doing in response to similar situations and we will use other forecasters as ‘experts’ to make this analysis.

One of the hallmarks of duty – and the attendant requirement that you act like a reasonably prudent person/forecaster – is the issue of foreseeability. If we expect you (a forecaster or snow/ice technician) to ‘act’ at all (let alone act reasonably and prudently) whatever it is that you should be responding to has to be foreseeable. And let’s clarify – so often in the analysis of duty we are looking to see whether someone responded appropriately in an emergency or risk related situation. So, what we are talking about is the
precise question of – “was the risk that produced the injury/death/damage foreseeable?” If it was foreseeable – then a reasonably prudent person (forecaster) would move to minimize/mitigate the risk. If the risk that produced the injury was in no way foreseeable then we cannot say that there is a corresponding duty to respond. Think: risk ‘predictability’ or probability. Now – foreseeability is a fungible concept – lots of things are (arguably) foreseeable and we can’t expect professionals to minimize/mitigate ALL risk or nothing would get done. So – usually industry standards form or coalesce around the notion that professionals (whether you are a heli-ski guide or a ski resort employee or a RR technician) set out to minimize/mitigate risks that produce either severe or frequent results. As expressed in the forecasting world, questions fundamental to risk assessment and the employment of mitigation techniques include an analysis of 1) the probability of any given event occurring and 2) the consequences of an event occurring. Put another way – if there is a low probability of an occurrence, but that occurrence would produce disastrous consequences, then there would be a corresponding duty on the part of the forecaster to make greater efforts at mitigation against that occurrence despite another simultaneous situation where there might be a greater probability of occurrence but the potential consequences would be far less severe.

III. CASES WHERE LIABILITY HAS BEEN FOUND/EXAMINED IN FORECASTING

Having structured how the law thinks about the duty to act as a forecaster, we look at cases/situations where entities or individuals been accused of negligence in their forecasting efforts. Specifically, we are looking at the issue of whether the snow or ice avalanche events in these cases could have or should have been mitigated, and whether the failure to respond/mitigate caused (third element of negligence analysis) damages (fourth element of negligence analysis). These cases are considering whether an entity has legal liability for an avalanche event and/or for the entities’ failure to forecast or respond to the probability of an event occurring.

Of course, no examination of legal liability for the consequences of an avalanche event should begin anywhere other than with the Canadian Supreme Court’s exhaustive examination of stratigraphy and the internal forecasting practices of a well-known Canadian helicopter ski operation in the case of

**Ochoa v. Canadian Mountain Holidays, et al.**

This case is widely known in the industry and in the legal liability world and is a case that involved the simultaneous avalanche deaths of 8 people in a commercial heli-ski context. When the family of one of the decedents (Alfonso “Ochoa”) sued Canadian Mountain Holidays (“CMH”) for civil liability (seeking payment of damages through allegations of negligence) and alleged criminal negligence against two of the ski guides, the “…trial took on tones of a Royal Commission into the viability of the sport of heli-skiing. The industry of avalanche forecasting and guiding in heli-skiing in particular, were canvassed at length.” The allegations in the case involved the issue of whether the potential for deep slab instability on a ski run in the Bugaboo Mountains called “Bay Street” should have been recognized by the guides involved in terrain selection and should have precluded the use of the slope by the guides and commercial clients on the day in question.

The Ochoa court said that the duty of the CMH guides in the context of their forecasting activities was to “…exercise reasonable care…” and to “…not expose their guests to risks regarded in the business as unreasonably high, whether from avalanche or other hazard to which participants in the sport are normally exposed.” The court also recognized the concept of ‘inherent risk’ and stated that there are certain unavoidable risks which included “…being caught in an inescapable avalanche…” that did not alter the duty of the guides with respect to forecasting. The case ultimately focused on interpreting a hasty pit snow profile taken at the base of the Bay Street run some two weeks prior to the incident, what reasonable conclusions could be drawn from avalanche events observed in the area prior to the incident and whether the Bay Street run should have been skied with commercial clients without doing tests (snow pit and shovel sheer testing) for deep layer stability prior to going on the slope. The court heard expert testimony from numerous experts and compared the experience of the experts, concluding that the experts with broad experience in snow science, avalanche mechanics, teaching, standards development, heli-ski operations, research and publishing, forecasting, etc. was far preferable than testimony from ‘experts’ with limited, largely informal and ‘backcountry’ style experience. The court specifically heard testimony on and sought understanding of practices related to snow pit profiles, crystal observations, record keeping, use of terminology, the general nature of stratigraphy...
and how it is taught, the Canadian National Research Council’s guidelines on sheer tests, how guides are certified in heli-ski operations, the role of trust in the person making snow related observations, the methods used to examine recent geographically relevant avalanche activity and it compared the practices of MOT forecasters against the practices of forecasting in the heli-ski world. Concluding that on all of these points the defense evidence (offered by the experts for CMH) was consistent, offered by experts from a broad range of perspectives and with very deep knowledge bases, the Court ultimately found no criminal negligence on the part of the guides involved (Jocelyn Lang and Dean Walton) and it found no negligence (legal liability) on the part of CMH.

Notable about this case for the instant reader are a few points. The main point, of course, is the exhaustive nature of the court’s inquiry into practices related to avalanche forecasting and how those practices are similar and dissimilar across industries (MOT and heli-skiing). A second point is the fact that, though employed by CMH, two individual guides were named in the action and their own actions on the day in question were held up to legal examination (in other words, individual guides/forecasters can be personally named in a legal action). The third point to be made is that the case was brought with the intent of seeking civil redress (money damages) for the death of a man who left behind a wife and six dependent children and offers some insight into how the court or the law quantifies the value of life for purposes of paying money damages. The fourth point is that, in the recreational context in which this avalanche occurred, the court also examines the viability of a release and waiver document which the decedent had signed prior to going heli-skiing (the court upheld the waiver). The final point is the detailed enunciations made by the court with respect to the duties of CMH and its guides in regards to forecasting for the purpose of taking commercial clients into avalanche prone ski zones. The case really should be required reading for anyone working in the snow science or forecasting business and certainly in the heli-ski world.

Another case involving forecasting judgments that is worth examination for the purpose of a differing context (an industrial situation and a different legal forum) is the Alaska case entitled State of Alaska, Department of Labor and Workforce Development, Division of Labor Standards and Safety, Occupational Safety and Health Section v. Whitewater Engineering Corporation. This particular case involved the State of Alaska (“SOA”) issuing a citation and criminal penalties to Whitewater Engineering (“WE”) for violations of occupational safety and health standards (“OSHA” standards) following WE’s failure to initiate and maintain an avalanche control program and its failure to have a competent person trained in avalanche hazard recognition conduct regular inspections of a site with a known avalanche chute where numerous people were working on construction of a hydroelectric facility near Cordova, Alaska. The evidence in the case showed that a WE engineer from Washington visited the site in November of 1998 and observed fallen and scattered trees in the avalanche chute that alerted him to the potential danger; the engineer instructed the on-site superintendent to contact avalanche experts to assess how strong the facility would have to be built to withstand the effects of avalanche activity. The superintendent contacted David Hamre, a well-known local avalanche expert and Snow Safety Director for the Alaska RR; Hamre visited the site in March of 1999, made a visual inspection of the site, discussed the various exposures and dangers with WE personnel and issued a written report with recommendations. Hamre recommended WE employ a regular forecaster for the area (he was unavailable because of AK RR duties) and that WE have an avalanche control and mitigation plan developed. Hamre also recommended that employees working at the developing facility receive avalanche awareness training. Despite Hamre’s recommendations, no plan was developed, no training was given to the employees and no forecaster was hired. On April 15, 1999 a large avalanche came down the known chute burying part of the incomplete facility and killing an employee. The SOA investigated the industrial accident and employee death and asked for any documents related to WE’s snow safety program; when the SOA found the written advices/report from Hamre it found OSHA style violations against WE that were classified as “willful” and issued a finding that WE had demonstrated a reckless disregard and plain indifference to employee safety from avalanche hazards after it had sought expert advice and then totally disregarded that advice. The SOA employed yet another well-known local snow safety expert, Doug Fesler from the Alaska Mountain Safety Center to criminally prosecute WE; Fesler opined that WE was ‘grossly negligent’ for having no avalanche control program (particularly after having sought out and received
Hamre’s advices) and for not taking adequate safety measures to protect employees. In the decision ultimately issued by the Alaska Occupational Safety and Health Board (“AOSHA”) the finding was that WE breached the duty of an employer to provide a workplace free of recognized hazards. The AOSHA also found that WE’s actions were inadequate and insufficient to mitigate the substantial avalanche dangers that caused the death (damages) of the deceased employee.

Notable about the Whitewater Engineering case for the instant reader is the fact that WE can be said to have completely breached a recognized duty to its employees, causing at least one employee’s death (damage). What is also notable for purposes of this discussion is the State’s interest in making sure employers follow safety standards in working in avalanche prone areas and that failure to do so can result not in just civil liabilities but also in criminal and OSHA style violations. What was also notable about this case is that the accused, WE, had actually received written professional forecaster advices and had then totally disregarded those advices, resulting in a legal finding of gross negligence.

Finally – a third case worth considering is the British Columbia case of Sloan v. North Coast Road Maintenance and the Province of British Columbia Ministry of Transportation. Sloan involved a situation where a large vertical slab or column of ice fell from above Highway 16 between Terrace and Prince Rupert onto a traveling pick-up truck killing the driver and severely injuring the passenger. Unique to this case is that the movement that caused the damages (death/injuries) was frozen ice. At the location in question “…water percolates down from forest cover above and in the winter, during periods of freezing, the water freezes on these surfaces to form ice…” which formed columns and hung over the roadway. The Province of British Columbia was responsible for highway maintenance and, in trying to fulfill that duty had entered into a contract with a private contractor to have that contractor maintain the section of Highway 16 which included a segment known as “Carwash Rock” where this incident occurred. During the pendency of the legal action that ensued after this incident, the British Columbia Ministry of Transportation and Highways (BCMOTH) conceded to the court that it had a duty to users of the highway to prevent snow, ice or other debris from falling on the highway and BCMOTH conceded that failure to take reasonable steps to prevent such an event would be a breach of that duty. What BCMOTH did argue, however, was that its contractor (North Coast) should have been the one responsible to users of the highway to take appropriate observational and mitigation actions with respect to the ice that accumulated, propagated and shed during a warming period ultimately causing the pick-up driver’s death (damages). North Coast also acknowledged that it had a duty to users of the highway arising out of its contractual obligations to BCMOTH, but North Coast demonstrated that it had no specific express obligations under its contract to mitigate ice on rock surfaces. The issue literally amounted to the fact that everyone recognized that a duty to keep the roadway clear of this type of severe event/risk existed, but the parties in that case were looking at which of the entities involved (BCMOTH or North Coast) should be held legally liable for discharging (or, breaching) that duty. Ultimately the Canadian Court was required to examine, under the terms of the BCMOTH-North Coast contract and using expert testimony, which party was responsible for which geographic area of the Highway and what type of mitigation work could/should have been done on the ice columns, so testimony on the location of the starting zone and the nature of the depositional material was sought. Ultimately the court found that BCMOTH was 100% (legally) liable for payment of damages and that BCMOTH could not seek to tag North Coast with any percentage of fault in the case.

Notable about the Sloan case for the instant reader is the fact that, while both possible actors (the BCMOTH and its contractor North Coast) acknowledged the duty to users of the highway to prevent snow, ice or other debris from falling on the highway and causing damage to drivers, the fight was over which of the entities was actually responsible to fulfill that duty (or – which of the entities had breached that duty). The lack of clarity in which entity was responsible to accomplish the duty was the reason that expert forecasting testimony was brought into the case.

IV. CAUSATION/DAMAGES ASPECT OF FORECASTER LIABILITY

After looking at some of the cases that produced legal liability allegations for forecasting activities (or inactivity) it is wise to make some further notes on the issue of causation in the liability analysis. Where we recognize in forecasting that predictions are not always going to be 100% accurate, we
want to further parse the issue of when and how you can become legally liable – and so assist in your thought process of when you should be moving to minimize/mitigate a particular risk.

Under the law, a person who is being accused of negligence is not legally liable unless their conduct (acting or failing to act) is the proximate cause of the injured parties' damages. The actor’s actions (or inactions) must have caused the injuries (damages) and the injury must not be too remote from the action. This is the real foundation of the fault based legal system in awarding monetary compensation as a method of righting civil wrongs. As an example, consider the scenario of a commercial remote backcountry ski lodge. If the lodge sends clients out on a guided ski run and the clients are avalanched, is the lodge (or its guides) legally liable for the client’s injuries/damages? If we change the scenario a bit to a situation where the clients decide to go out and ski in an unguided situation and they are avalanched, is the lodge liable? If we change the situation yet again to consider uninvited skiers coming onto the lodge’s land and using their permitted terrain without the lodge’s knowledge and the skiers are avalanched, what liability could the lodge have for that incident? The point is that, the further away from direct action or inaction, or the more remote you get from the accused actor (the lodge), the less likely it is that true legal liability can be ascribed to the actor.

Damages, of course, are somewhat obvious. In order for a finding of liability to be reached, the person encountering the risk (in the context of this paper it would be the person who encountered a snow or ice avalanche or mass movement of such material) must actually have been ‘damaged’ in some objectively demonstrable way. Typical damages in a civil liability case will include pain and suffering, past and future lost wages, past and future expenses such as medical or funereal care, the value of a life lost, legal costs/fees, property damages or replacement costs, etc. In each of the cases we discuss above, there are clearly damages (8 dead clients in the Ochoa case, a damaged facility and a dead employee in the Whitewater Engineering case and a dead motorist in the Sloan case).

V. RECOMMENDATIONS FOR AVOIDING LIABILITY IN THE CONTEXT OF YOUR FORECASTING DUTIES

Finally, we offer some thoughts on how forecasters can protect themselves from being found legally liable for their actions (or inactions) or how they can protect themselves in the event that negligence is alleged against them.

- Snow/ice technicians or forecasting professionals need to be able to demonstrate/document the basis for their advices, the level of exposures (probability and severity of an event) they are predicting for their clients and the specific mitigation measures they are advising for their clients; documenting usually means not just recording which pieces of the puzzle you are considering (field observations, studies/tests, anecdotal evidence, etc.), but putting your recommendations in writing so there is no opportunity for a person/entity to come back and say they did not receive complete or understandable information from the forecaster. Consider the Whitewater Engineering case.

- Snow/ice technicians or forecasting professionals should carry professional liability or general liability style insurance that provides defense and indemnity coverage.

- Snow/ice technicians or forecasting professionals should stay abreast of changes in their field. As we all know, ‘knowledge has no equilibrium’ and new information in this field is constantly becoming available. Demonstrating attendance at conferences, reading current research and literature reviews insures not just an awareness of new developments, but awareness in areas where the standards might be shifting.

- Snow/ice technicians or forecasting professionals should consider having in place a corporate form that shields them personally from liability for their professional and work related endeavors.

- By the same token, snow/ice technicians or forecasting professionals should consider specific employment agreements that define the exact extent of their responsibilities with respect to forecasting and which provide assurances as to how allegations of liability will be dealt with between the employer and the employee.

- Snow/ice technicians or forecasting professionals need to realize that (stratigraphy) is an inexact science and
not get caught with static responses to new situations. Where there is no ‘cookbook’ response to a given situation, the hallmark of forecasting and mitigation has been innovation. Forecasters shouldn’t be caught not trying or not experimenting – that isn’t reasonably prudent for a forecaster where an occurrence or event is either probable or the consequences will be severe. If known control methods are not effective or available – then use of either another control technique or experimentation to derive a new method is the prudent thing to do. Experimentation and acute and constant observations ARE primary mitigation techniques for forecasters where risks are known or foreseeable but methods to mitigate the risk are not known.

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i Laura Bakermans, Cam Campbell, Bruce Jamieson, Chris Stethem “Current and Future Snow Avalanche Threats and Mitigation Measures in Canada” (2007) available on-line through the Canadian Avalanche Center at http://www.avalanche.ca/cac


iii Please note that the author has chosen just a few cases where forecasting decisions were examined legally. These few cases were chosen just for point of reference in this article and these cases are not meant to be exhaustive in nature or suggestive that they are the only cases reported in this area.


viii 1993 CANLII 725, B.C.J. No. 2655.

ix Dave Hamre offered testimony for BCMOTH and Scott Flavelle offered testimony for North Coast; both experts offered opinions on the starting zones for the material that crushed the pick-up truck in question and on the nature of the depositional material that landed on the truck so that the court could ascertain – under the terms of the BCMOTH-North Coast contract, which party was responsible for which geographic area and which type of mitigation work.