

# aspects of good practice

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FROM *Ki Waha*\* Issue 2 Spring/Water edition 08

I got 5 students plus a support instructor out of the cave, including one girl who was very nervous about the low roof. I used the normal process of floating her on her back, eyes closed and passed her out to the support instructor waiting outside. I went to assist one more student, floating her out the same way. I got her half way out but took a mouth full of water so pulled her back in and got my breath. I went to re-do the exit, but the water level had risen to fully block the exit, so I stopped for a few seconds, not understanding what, why or where and after 20 seconds, realised the water level had come up. I went back to get out the escape route. The other support instructor, who had never been caving before, went in the middle chamber only to find that the first passage was also blocked. When he came back 30 seconds later, the passage he had taken was also full of water. He took a deep breath and came back to the group by diving under... Six students, the support instructor and I were now trapped between two sumps. //

Analysing what has gone wrong in the past is as important as anticipating what may go wrong in any given outdoor activity. Both are important components of safety and risk management in outdoor programmes.

Incidents are undesired events that could or do result in a loss to people, property or process. An incident is an umbrella term to describe a fatality, injury, illness, damage to property, near miss or a combination of these. Behavioural and motivation problems also fall into the incident category. Loss to process is an interruption to the programme or routine.



Effective incident reporting and review procedures are crucial to transfer the learning from incidents like the one in the excerpt above, into effective safety management in an outdoor programme. Valued lessons can be gleaned from incidents to inform organisational policies, improve the programme, assist in staff training, and contribute to a better understanding and management of the risks involved. Incident reports can provide organisations with valuable historic lessons which, if accessibly stored, can help to retain organisational knowledge despite staff and culture changes over time. Incident review findings can also inform relevant government policy and outdoor sector activity guidelines.

No one is immune from having an incident. The tendency for people to think "it can't happen to me" is flawed, as very experienced and motivated outdoor leaders and outdoor organisations with excellent reputations are represented in incident statistics alongside inexperienced leaders and outdoor organisations with poor reputations.

Breadth and depth are important when analysing outdoor incidents. The National Incident Database\* (NID) is a quantitative tool designed to identify trends across a broad range of incidents in diverse settings. Whereas in-depth analysis of individual incidents involves qualitative methods to reveal important information and contributing factors that simply cannot be attained from the broad analysis the NID is designed for. In effect, the two types of analysis yield different types of information, both important.

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While all incidents that rate a 3 or more on the Incident Severity Scale\*\* should be reported to the NID – not all need in-depth review, or organisations would be doing nothing but in-depth reviews! The Department of Labour (DOL) requires workplaces to report serious harm events, which equate to a 6 or more on the Incident Severity Scale. However, DOL does not investigate all serious harm incidents reported to it. With fatalities, the Police, Coroner, Department of Labour, Maritime New Zealand or a combination of these statutory authorities might investigate.

Outdoor organisations should identify a threshold for the type of incident that warrants an in-depth review to them. Considerations include:

- the severity and potential severity of the incident
- frequency of use and participation rates for the activity
- the likelihood of a similar event occurring
- the adequacy of standard operating procedures for the activity
- the consequences to the organisation of further or worse such incidents (eg, loss of: reputation, use of an area, or exemption to statutory requirements such as land transport or maritime rules).



In-depth incident reviews can be internal or external, and a team of two to three people is sufficient for the purpose. If internal, it is good practice to involve at least one person from outside the immediate staff. This may be a board or safety committee member. Whether setting up an internal or external incident review team, it is important to involve the right people. Considerations include:

- independence from the organisation that had the incident
- activity expertise
- incident review or audit expertise
- relevant professional affiliation and standing
- access to legal advice

It is useful to establish clear terms of reference for an incident review. This should include who owns the review report, what the information will be used for, and a commitment from relevant organisations to act on the review findings and recommendations. This would ideally extend beyond the organisation that had the incident to the wider outdoor sector, including the national standards setting body for an activity or the relevant professional association. This is to ensure that any learning is incorporated into relevant activity guidelines or professional body responsibilities.

**// Miriam had completed 3 climbs. It was the end of the session and she wanted to do one more climb. The climbing groups had broken up. Miriam observed Katy to be on the outer and asked if she would belay her so Katy would feel included. Katy accepted. No back-up belayer was put in place. Miriam climbed to the top of the wall quickly. She asked Katy "Are you ready to lower me?" Katy replied "Yes." There was slack in the rope. Katy left her hand on the live rope above the ATC and the right hand was down in the lock off position on dead rope. Katy gripped with 'the top hand'.**

Miriam leaned back and let go. She fell the length of the slack in the rope, creating more force on the rope than would have occurred with a tight rope. The rope ran through the ATC. Katy was not able to grip the rope properly so Miriam's fall was not arrested. Miriam hit the teacher, who was standing at the bottom of the climb, before landing on the ground feet first.

**Miriam fractured her left leg and sprained her right ankle ... and sustained significant soft tissue damage. //**



The external review of this incident included a check of the recently released activity guidelines at the time, *Outdoor Activities – Guidelines for Leaders*, which revealed no mention of the current accepted practice of having back-up belayers in place when teaching novices to climb. This was recommended to be included in the next edition and articles on back-up belaying appeared in subsequent industry newsletters.

The incident review process should be clear and transparent, with provision for the organisation that had the incident to provide information to the review team as necessary and give feedback on the draft report before it is finalised.

Review teams need to collect and analyse all relevant information for a review. The review team for the caving incident, mentioned earlier in this article, reviewed over eighty documents provided by four organisations (a school, lead provider and two sub-contracted providers) and other relevant authorities (the Police, Search and Rescue, and Cave SAR Adviser). Documents included internal incident reports from the four organisations, witness accounts, emergency services reports, safety management documentation, programme goals and outcomes, training records, site maps and photographs. A detailed sequence of events was developed in three dimensions: the incident in the cave; the search and rescue effort; the traumatic incident response from the organisations affected. One review team member made a site visit with a senior staff member who knew the incident site and caving activity well, and visited the landowner. Information was gained on previous and recent flood events in the cave. The review team also accessed independent data from the Meteorological Service. This included weather forecasts for the day of the incident and the day prior and rainfall data from four separate local rain gauges. In addition, the review team had ongoing email and telephone communication with the four organisations to clarify information and fill any gaps.

## Immediate and root causes of incidents

Incidents don't just happen. They usually have multiple causes that combine under just the right circumstances to result in an incident. Some factors can be described as immediate causes such as an unsafe act or equipment failure immediately prior to the event. Other factors can be described as the basic or root causes of an incident, such as inadequate policies and standard operating procedures or an informal culture of saving money by employing unqualified people. These underlying factors are systemic and relate to the organisation's systems, policies and culture. They may also relate to a lack of clear industry standards. Root causes create the pre-conditions for incidents. Management and industry bodies usually have control over root causes.

It is important to identify both immediate and root causes of incidents. These can form a complex web of interacting factors, with different weightings. In the case of the caving incident 15 immediate and 10 root causes were identified. In the case of the rock climbing incident, 11 immediate and 7 root causes were identified. Organisations need to address the underlying root causes rather than focus purely on preventing unsafe acts (immediate causes).

**“ Some students were preparing and cooking dinner on camping stoves. Janine, who had arrived at camp late and missed the cooker instruction, was worried her cooker was not going properly and may be out of fuel. An adult told Janine to change the canister. Janine took her cooker to the teacher and asked for help to remove the canister. The teacher removed the canister 'after a struggle'.**

Janine returned to her cooking group to replace the canister with a new one. She 'pushed and twisted' the canister in order to fit it to the cooker. Cold white liquid gas escaped from the new canister, frightening Janine who dropped it. There was a whoosh then a two metre by two metre flash of two to three seconds as the gas ignited from a nearby stove about a metre away.

The fireball hit two students standing in its pathway, burning them on the legs and one on her exposed stomach (she was wearing a midriff top). All students scattered away from the heat.

One of the underlying causes of this stove incident was that the school had no strategies to catch pupils up on important safety briefings they had missed if they arrived late at camp. They also had no strategy to prevent students participating in a risky activity such as operating the stoves, if they had received no instruction. One of the immediate causes identified was inadequate supervision of cooking by the teachers, particularly the teacher who failed to recognise that if the student had trouble removing the empty canister, she may have trouble fitting the new one. If the school addressed the immediate cause only, the underlying pre-condition would still remain and a similar incident could easily occur.

Informal practices that are not consistent with formal policies, but accepted by the organisation, are common in organisations. These can also contribute to incidents as root causes. In the caving incident at the start of this article, the practice of using support instructors who had outdoor leadership experience but no caving experience was identified as an underlying root cause of the incident. This in turn affected the contributory causes of 'lack of competent supervisors to novices' (inadequate ratios) and contributed to 'task overload' for the one competent caving instructor on the caving trip, especially during the incident.



The practice of using instructors or support instructors with inadequate experience in the activity was a root cause in all three incidents in this article. The practice usually crept in over several years, possibly due to budget restraints (the real root cause), and was accepted by the organisations even though all were aware that in general, outdoor leaders should meet industry standards for all activities.

In one incident, recommendations were made to review policies and strengthen contracts to ensure that any subcontractors used by a lead provider had a clause requiring them to meet relevant industry standards, including instructor competence, to ensure the ultimate safety of participants. The intention was to prevent standards eroding over time, especially if several levels of subcontracting were in place.

## Incident review scope

Ideally the scope of an incident review should include:

- programme objectives and outcomes;
- participant and leader preparation for an activity of this nature;
- the organisation's understanding of the risks involved and their safety management systems to mitigate risk;
- the participants'/parents' understanding of the risks involved and informed consent procedures;
- formal approval processes in place for activities of this nature;
- competence of staff to deliver the programme and deal with emergencies meets relevant industry standards;
- consistency of practices used in the activity with current accepted practices and relevant standards in the outdoor sector;
- the role of outside agencies in planning, execution, response and review;
- commendations – all the things the organisation/s did well in managing and resolving the incident; and
- recommendations for the organisation, relevant government agencies, and the wider outdoor sector, as a result of the findings.

If you wish to initiate an incident review, contact one of the following for advice:

The Ministry of Education  
eotc@minedu.govt.nz

Register of Outdoor Safety Auditors (ROSA)  
info@outdoorsnz.org.nz

Outdoors New Zealand (ONZ) info@outdoorsnz.org.nz

New Zealand Mountain Safety Council (NZMSC)  
info@mountainsafety.org.nz

Water Safety New Zealand (WSNZ)  
wsnz@watersafety.org.nz

New Zealand Outdoor Instructors Association (NZOIA)  
ao@nzoia.org.nz

Education Outdoors New Zealand (EONZ)  
eonz.eo@clear.net.nz

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### Notes

\* Register free at [www.incidentreport.org.nz](http://www.incidentreport.org.nz)

\*\* see the Incident Severity Scale at [www.incidentreport.org.nz](http://www.incidentreport.org.nz)

(Adapted from Davidson 2002)

All names in this article have been changed to preserve confidentiality.

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