



# ASF Cave Safety Guidelines April 2011 Version

Information, such as definitions, has been drawn from the ASF Inc Risk Management Guidelines and the Adventure Activity Standards of abseiling and caving from SA, VIC, TAS and NSW.

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See the ASF Inc [Safety and Risk Management](http://www.caves.org.au) information on the ASF Inc website, [www.caves.org.au](http://www.caves.org.au) and for Accident/Incident form.

## Important Cautions

Please read the following important message BEFORE reading the Cave Safety Guidelines.

These Guidelines shall be deemed to include every copy, draft or revision of these Guidelines, and any copy or part thereof.

If you do not completely understand these important cautions, you should seek your own, INDEPENDENT LEGAL ADVICE.

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## 1. Definitions

**Trip or Activity Leader** - is the “chief Organiser” of the club activity.

**Cave/Party Leader** - is the leader of an individual party. There may be several parties on an activity entering separate caves or undertaking different activities.

**Caver/Member** – a participant in a party or on a club activity.

**Caving Party/Party** – group of members in a cave or on a club activity.

**Activity** - all speleological events which are organised and run by ASF Inc members, including but not limited to; ASF Inc conferences, speleological trips, photography trips, cave diving trips, exploration trips, beginners trips, expedition trips, training and sporting trips (eg, “Speleosports” events).

## 2. Introduction

As cavers we enter an environment that provides physical and mental challenges as well as the satisfaction of personal discovery. It is also an environment that can be unremitting in its hostility to the unprepared, incapacitated or injured.

Emergency medical support, that is readily available to participants in other outdoor activities, may take many hours to reach a casualty in a cave. Obtaining and getting such aid to the casualty is only the start to what can often be the long and difficult task of returning the injured person to the surface.

Risks can be reduced to acceptable levels but never eliminated. The way to minimise risks is to undertake caving with an attitude of self-reliance, responsibility and preparedness. In practical terms this means careful planning, competent organisation, appropriate provisioning, thorough training and co-operation between party members.

## 3. Planning and Preparation

When planning for activities of a caving nature ASF Inc suggests members take into account the following codes produced by the ASF Inc: Minimum Impact Caving Code; the Code of Ethics and Conservation; the Minimum Impact Code for Scientific Investigation in Caves and Karst; and the Risk Management Policy and Guidelines.

Trip planning needs to include:

- Research about the caving area, caves to be entered and equipment required for the planned activities
- Application for permits and land access as appropriate
- Minimum required experience, training and fitness level(s) for party members
- Risk assessment and emergency procedures to be followed

Consider whether ‘local’ speleological groups should be contacted in the course of planning for an activity, particularly in an area unfamiliar to the party where they may seek advice concerning hazards, needs for special equipment or other information.

Whilst planning caving activities consider the following:

- 3.1 The ASF Inc recognises that the minimum party size for its members participating in a club or Special Interest Group caving activity will vary depending on such factors as the size of the cave, experience of the party and activity undertaken. A minimum underground party size of 4 persons is suggested for a party of dependent cavers. For parties of experienced non-dependent cavers, a smaller minimum group size may be appropriate; and in some circumstances a maximum group size of less than 4 persons may be desirable for reasons of personal safety or environmental protection.
- 3.2 Parties should have a designated Party Leader and identify a member to act as a Deputy Party Leader in case the party has to be split or in case of an emergency.
- 3.3 It is preferable that all members of a party have training in first aid to an appropriate level set out in the Australian Qualification Framework. As a minimum one member should possess a current qualification.
- 3.4 Details of the intended activity should be left with a responsible person or the appropriate authority for the region where the activity is planned. This includes: a realistic expected return time for the intended activity and a time to instigate search and rescue procedures.
- 3.5 Cavers and surface support personnel need to be familiar with the procedure(s) for overdue party/ies and for summoning help in the event of an emergency (as per the Risk Management guidelines).
- 3.6 Members of the party should be briefed as to the hazards likely to be encountered in the cave or caving area prior to the commencement of the activity/ies. The briefing could include:
  - objective(s);
  - equipment required;
  - realistic duration;
  - emergency procedures; and
  - critical factors that would mean abandoning the activity or turning back — e.g. high water levels, bad weather, hypothermia, CO<sub>2</sub> etc.
- 3.7 The level of knowledge, skill and physical abilities of all party members is ascertained prior to commencement of the activity.
- 3.8 Cavers attempting demanding caves and/or caving in remote areas should pay special attention to training and practice prior to the activity
- 3.9 Sufficient personal and party equipment is taken on the activity. This may include emergency equipment and provisions appropriate for the expected duration, hazards and the activities planned.
- 3.10 Each party member is responsible for ensuring all equipment is checked for suitability and/or serviceability prior to every activity and that damaged or unserviceable equipment is discarded.

- 3.11 All party members are responsible for making a continuous assessment as to whether they and others are able to continue or need to exit the cave, or conclude the activity. Any member of the party can terminate the activity. At that point the party either needs to either exit the cave or, where there are sufficient participants; those who are unable to continue need to be escorted to the exit. All members of the party must be consulted.
- 3.12 In an emergency, the extent to which a party can 'self-rescue' compared to a full-scale rescue should be determined by the nature of the emergency, equipment and personnel available, and by the time delay before a full mobilisation of emergency personnel.
- 3.13 Other support items that should be available on the surface include:
- (a) A comprehensive First Aid kit –
  - (b) Sleeping bag, mat and shelter;
  - (c) Food, fuel stove and water;
  - (d) Adequate communication equipment suitable to contact the land owner or emergency services.
- 3.14 All members of the party must be able to access the support and emergency equipment.
- 3.15 Clubs should have a system in place to train members and appoint leaders

## **4. Party Leader's Responsibilities**

The ASF Inc advise the Party Leader:

- 4.1 Is responsible for the co-ordination and organisation of the party. The party leader should possess sufficient experience and skills to safely supervise the activity being undertaken. In some cases the party leader may be assisted by a person more familiar with the cave or activity.
- 4.2 Holds a briefing prior to commencing the activity. See point 3.6.
- 4.3 Undertakes the lead role in monitoring and maintaining the safety and well-being of the group.
- 4.4 Has the final decision as to who is considered to be appropriately equipped, trained and physically fit for the planned activity.
- 4.5 Is responsible for checking the suitability and adequacy of:
- i) party/communal equipment and resources for the proposed activity; and
  - ii) the personal equipment of any participant without the necessary experience to assess their own equipment.
- 4.6 Uses their experience to modify or terminate the activity as appropriate. This includes modifying the route and/or early return to the surface.
- 4.7 Assigns tasks to individuals as appropriate, to help the party undertake the activity, and in an emergency situation, the Party Leader takes control of the emergency by assigning tasks such as rendering first aid, rigging/de-rigging and in summoning outside assistance.

4.8 Assist statutory authorities if an emergency situation occurs.

4.9 As part of Risk Management, report any incidents to the ASF Inc Safety Convenor.

## **5. Individual Responsibilities**

The ASF Inc advise party members that they:

5.1 Be aware of the nature and risks of the activity to be undertaken and are competent to undertake such an activity.

5.2 Have the knowledge, skills, fitness, and appropriate equipment to safely undertake the activity.

5.3 Are members of a party or team and they should be aware of other party member's position and physical condition.

5.4 Inform the Party Leader when conditions are beyond their capabilities and/or comfort level.

5.5 Freely inform the Party Leader, and where appropriate other party members:

- (a) of any personal medical condition; and
- (b) If under any medication, its effects, location of medication, dosage details, times to be taken, and effects on them if their medication is not taken; and
- (c) members must maintain this information as confidential unless in a medical emergency.

5.6 Not enter a cave or undertake an activity when they are under the influence of alcohol, recreational drugs or other medication that may affect their performance.

5.7 Know how to use any safety/vertical and other equipment which they will be required to use or operate as part of the activity.

5.8 Indicate any uncertainty about procedures or equipment to be used before committing to the activity.

5.9 Inspect all rigging and associated vertical equipment prior to use. (You have the right to ask for extra back-up, or re-rig the pitch after consultation with other party members, and ideally the person who completed the rigging.)

5.10 Terminate their participation in the activity for whatever reason. Should this occur, the decision needs to be communicated to the Party Leader immediately (see item 3.11). This may result in the abandonment of the activity by the party or see that party member escorted from the activity where there are sufficient numbers of participants.

## 6. Personal Equipment

- 6.1 The ASF Inc advise the following personal equipment be carried or worn as appropriate to the caving activity to be undertaken:
- a) A helmet that can take a side load and has a three or four point rigid chin strap, is brimless and, if possible, complies with EN12492, EN397 or UIAA Standard for a climbing helmet (not a construction/site cap/helmet).
  - b) Reliable independent primary and secondary light sources with a 3<sup>rd</sup> light source, spare globes and batteries as appropriate for the activity.
  - c) Appropriate clothing for the activity being undertaken.
  - d) Appropriate footwear
  - e) Gloves may be considered to keep hands clean, dry and protected.
  - f) Small first aid kit with one or two thermal/space blanket(s), a casualty accident/report observation form and a notebook and pencil.
  - g) A pocket knife (or scissors) and whistle (if appropriate for cave conditions and with SRT).
  - h) Food and water appropriate for the duration of the activity.
  - i) A watch
  - j) A roll of electrical or sports tape (or other similar, which may be with the small first aid kit)
- 6.2 Other personal safety equipment that may be carried depending upon the circumstances:
- a) Waist tape with krab (5m x 50 mm webbing or 25 mm tube-tape).
  - b) A short hand line or extra rope.
  - c) Extra clothing such as thermal underwear and beanie.
  - d) A "Pee bottle" or similar on extended trips

## 7. Communications

A communications system is established when undertaking vertical caving, which is understood and used by all party members, capable of communicating signals to the following effect (not all the examples need be used). On pitches where there is difficulty hearing voice or whistle calls (such as long or wet pitches), radio communication should be considered.

- (a) "GEAR CHECK" – advise a nearby party member that you request an independent check that your gear is safe.
- (b) "ROPE BELOW" – A warning that a rope is about to be deployed down a pitch or received from above.
- (c) "ON ROPE or ON BELAY" – the climber is advising all members that they, the climbing person, is attached to the rope.
- (d) "READY TO BELAY" – the person belaying, is conscious of the person on the rope and ready to belay that person.
- (e) "TAKE IN" or "UP ROPE" - The person climbing wishes the belayer to 'take in' or eliminate excess rope before climbing.
- (f) "THAT'S ME" - The rope is tight for the person climbing and not caught on an object.
- (g) "CLIMB WHEN READY" - The belayer acknowledges the climber's call and instructs the caver that they are safe to climb.
- (h) "CLIMBING" - The climber has heard the call 'CLIMB WHEN READY' from the

- belayer and is informing them that they have begun the ascent or descent.
- (i) “UP ROPE” or “Take in”- If the climber needs the rope tightened.
  - (j) “SLACK or “DOWN ROPE” - If the climber needs more rope to ascend or descend or to overcome an obstacle.
  - (k) “SAFE” – The climb or descent has been completed and the climber lets the belayer and party members know that the climber is stable and has moved to a safe area.
  - (l) “OFF ROPE” (OFF BELAY” or “ROPE FREE” may be localised terminology) – The climber informs the party that the belay is no longer operational and that they, the climber, has detached themselves from the rope.
  - (m) “BELOW” - A warning that there is something falling. It may have been dropped or dislodged during the climb. DO NOT LOOK UP, tuck your head in and if possible cover your neck with your hands or quickly duck under an overhang or get as close to the wall as possible.
  - (n) “RESTING” – the climber is having a rest and the belayer needs to be aware of this situation.
  - (o) “STOP” – indicates that a problem exists and is called by any member for all to cease movement. Absolute quiet is to be maintained until further communication is recommenced.
  - (p) “OK” – acknowledgement of an action
  - (q) Using whistle signals, such as
 

One short blast	STOP
Two short blasts	HAUL or UP
One long blast	LOWER or DOWN
A series of long continuous blasts	HELP
3 short blasts	OK/SAFE or
3 loud whistle blasts be used in place of the call of “OFF ROPE”.	

## 8. Climbing

The ASF Inc advise that party members be familiar with the following if undertaking vertical caving (climbing, ladder or SRT):

- 8.1 A belay rope should be used on climbing pitches and where a ladder is used.
- 8.2 A safety line should be rigged where required (depending on the experience of the party) or when requested by a party member.
- 8.3 There should only be one person climbing at any given time.

## 9. Single Rope Techniques (SRT)

Vertical caving includes a diverse range of technical and personal challenges. These can range from simple pitches to multiple rebelay etc. Individuals are advised that they possess the appropriate skills for the type of cave being undertaken.

- 9.1 Members participating in single rope technique caving, other than in training or supervised situations, should be able to tie knots for the following purposes:
  - (a) tape knot for joining tapes or slings
  - (b) An end of rope knot (eg figure-8 loop, figure-9 loop)
  - (c) a rope joining knot (eg double Fishermans bend or "n-Line 8)
  - (d) a mid-rope knot (eg alpine butterfly)
  - (e) a Prusik knot
  - (f) a belay knot (eg Italian friction hitch/munter hitch)
- 9.2 Persons learning SRT should practise techniques above ground before using them for the first time in a cave.
- 9.3 Appropriate communication systems are used.
- 9.4 Cavers become proficient in the following where appropriate:
  - (a) Fitting of SRT harness and safe attachment of equipment.
  - (b) Crossing re-belays, rope-protectors and re-directions.
  - (c) Changing from descent to ascent and vice versa.
  - (d) Crossing knots - both ascending and descending.
- 9.5 Each member of the party should have their own personal equipment and that sharing is discouraged.
- 9.6 Gloves may be worn to protect hands while abseiling. Abseilers should not abseil at a rate where they do not have full control of their speed or at a rate which heats or damages equipment.
- 9.7 Long hair should be tied back, beards trimmed and loose jewellery removed. There should be NO loose clothing.
- 9.8 Both ascending and descending equipment should always be carried. The equipment should be arranged so that it is ready to be used to reverse direction without delay and in such situations as crossing knots, re-belays, rope protectors or transferring to tails at the pitch head.
- 9.9 When ascending there should always be at least two points of attachment between the seat harness and rope/ rebelay. Equipment needs to be arranged in such a manner that if the equipment fails the caver remains in an upright position.
- 9.10 A variable friction device is preferred for abseiling. Examples include: rappel rack, whaletail or a bobbin style device (Figure Eight, Harpoon devices and the "classic" style are not recommended).

- 9.11 Rigged ropes should have an end of rope knot tied in the end to prevent accidentally abseiling off the end of the rope. It is preferable that the first person to descend a pitch have excess rope in a pack that is attached below the person.
- 9.12 Every person descending or ascending a pitch should check their personal equipment and rigging for correct setup and adjust the equipment or rigging if warranted. Attention should be paid to anchor points, karabiner gates, knots, rope protection, free hang and length of rope.

## **10. Caving in Toxic Air (commonly referred to as Foul Air)**

Caves can contain elevated concentrations of Carbon Dioxide (CO<sub>2</sub>) and or reduced levels of oxygen (O<sub>2</sub>) which can be dangerous to cavers.

The ASF Inc recommends that:

- 10.1 Cavers recognise the symptoms of brief exposure to Toxic or foul air as a rapid increase in the heart and breathing rates headaches, clumsiness, fatigue, anxiety and loss of energy. Prolonged exposure to Toxic air could lead to some or all of the following serious signs and symptoms:
- (a) Increased heart and breathing rate
  - (b) Lack of attention to details
  - (c) Clumsiness
  - (d) Fatigue
  - (e) Anxiety
  - (f) Severe headaches and in some cases nausea.
  - (g) Asphyxiation and
  - (h) Death
- 10.2 The presence of toxic air can be indicated by the flame extinction test (lighting a match or butane cigarette lighter or moving a lit candle into suspected toxic air. If the flame is extinguished, foul air is present). However, the test is not conclusive of the absence of toxic air as the flame might not be extinguished at concentrations of toxic air that still have potential adverse health effects.
- 10.3 Without sophisticated measuring apparatus to confirm the presence and concentration of toxic air, the best advice is that if the group reasonably suspects the presence of toxic air while in a cave (based on any knowledge, symptoms and/or tests performed), the party should leave the suspected area of toxic air promptly and without panic unless the party is equipped to safely traverse the area.

## 11. Cave Diving

The ASF Inc recommends that:

- 11.1 Those people wishing to undertake cave diving in water filled passages/caverns using SCUBA or other supplied breathing apparatus, are properly trained and certified by a technical diving certification agency (for example the Cave Divers Association of Australia - CDAA).
- 11.2 Cave divers follow the Safety Guidelines for cave diving, which are contained in the [ASF Inc Cave Diving - Code of Practice](#) (1988).

## 12. Free Diving

The ASF Inc recommends that:

- 12.1 Cavers wishing to explore caves using breath-hold diving of (relatively) short water filled passages, without the use of supplied breathing apparatus (most commonly practiced in the free-diving of sumps) should use a rope, line or similar for safety.
- 12.2 Cavers follow the Safety Guidelines for free diving that are contained in the [ASF Inc Free Diving - Code of Practice](#).

The ASF Inc has adopted the following publication:

Alan Warild's [Vertical](#) 5<sup>th</sup> (and later) editions published by Alan Warild 2007, as its reference guide to vertical caving