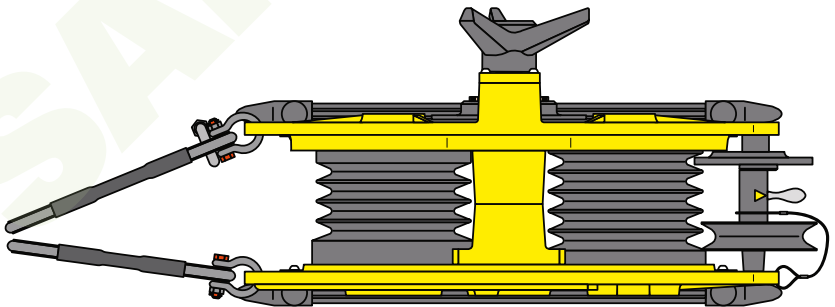


4 Rescue techniques

ALPINE RESCUE MANUAL

Part 1





ALPINE RESCUE MANUAL

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4.1 Introduction

A range of rescue equipment (stretchers, rescuer seat, etc.) can be deployed for the rescue techniques described in this chapter. Since new and further refined devices are constantly coming onto the market, no detailed instructions will be given on how to use the individual products. Descriptions of the equipment and the instructions for use are published in electronic form in the internet, and readers are also referred to the data provided by the manufacturers.

4.2 Search operations

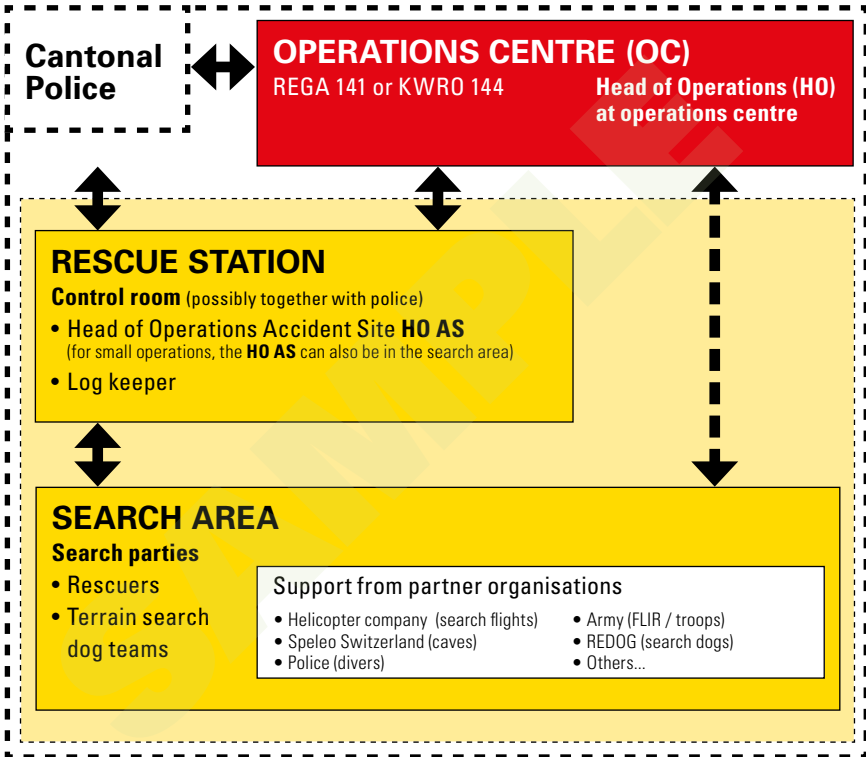
4.2.1 General information

If people are missing, either in the mountains or elsewhere, this is a matter for the cantonal police (KAPO). If people have gone missing in impassable terrain or in Alpine regions, the cantonal police will generally call in the local rescue station. The Head of Operations at the rescue station will then formally accept the search order from the cantonal police and will remain in constant contact with the police over the entire course of the operation

4.2.2 Organisation

The size of the incident will determine the number of people that need to be deployed on the different jobs. The bigger the incident, the more differentiated the functions involved will be.

Fig. 4.01 Organisation chart



4.2.2.1 Functions

The cantonal police

Whichever organisation receives notification of a missing person, they must always forward it to the cantonal police. It is the cantonal police who hold responsibility and who will issue a search order to a local rescue station where appropriate. The cantonal police will take charge of clarifying the situation and asking people as to the potential whereabouts of the missing person(s), with the assistance of the rescue station. This is also the procedure adopted for informing and questioning the relatives.

The operations centre (EZ) – Rega 1414 or OCVS/KWRO 144

The rescue station is called up via the operations centre. The operations centre can call up other partner organisations by agreement with the cantonal police and the rescue station. During the operation, the operations centre will provide organisational support for the on-site emergency personnel.

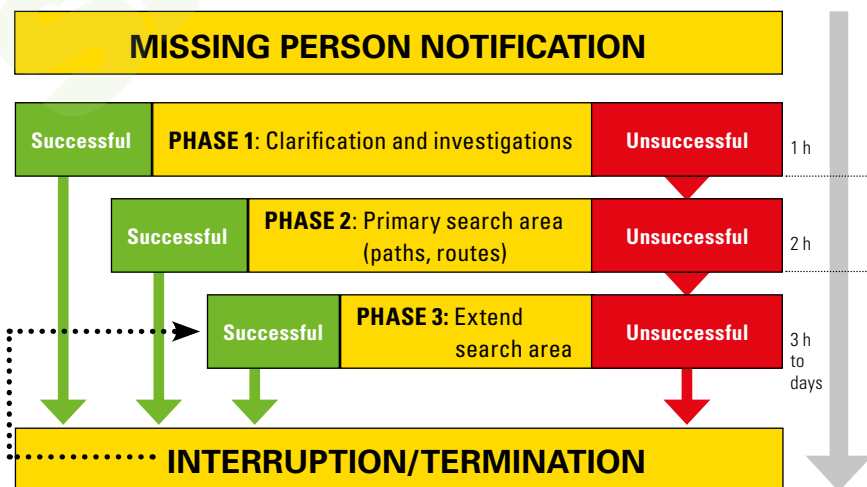
The rescue station

The rescue station is the mobilisation point for the individual rescuers (as per the rescue station's alarm procedure). For large-scale search operations, the Head of Operations Accident Site from the rescue station will take up his post in a control room down in the valley at the search location, together with the cantonal police where possible. (For small-scale operations, the Head of Operations Accident Site can also be located in the actual search area.) The Head of Operations Accident Site determines the appropriate search resources and coordinates and manages the operation. The operation must be continuously logged and documented. Wherever possible, the Head of Operations Accident Site should be able to contact the search party in the search area by radio or telephone.

4.2.3 Procedure

Dividing up the procedure for a search operation into different activities, to be conducted at the appropriate points in time, is designed to assist the Head of Operations Accident Site in structuring the operation.

Fig. 4.02 Search operation flowchart



4.2.3.1 Missing person notification

When a person is reported as missing, the cantonal police will take charge of the initial clarifications. The “Missing Person Report” worksheet forms the basis for recording details of the missing person(s). If necessary, the cantonal police will call in a Head of Operations from the rescue station at this stage already.

4.2.3.2 Phase 1: Clarification and investigations

Once a person has been reported as missing, a start must be made on clarifying the situation and on conducting investigations. Here, it is a matter of delimiting the primary search area as far as possible – keeping it small – or of establishing the location of the missing person(s). The question as to whether it is important to locate the person quickly or not must be answered as rapidly as possible.

Immediate measures at this point in time are aimed at:

- ▷ making optimum use of the available time
- ▷ creating time for an appropriate assessment of the situation
- ▷ incorporating/mobilising the deployable resources in the operation as rapidly as possible

The following **immediate measures** are possible:

- ▷ preliminary orientation
- ▷ standby arrangements
- ▷ alerting the resources that can be deployed
- ▷ relocation to the operations area
- ▷ making equipment available
- ▷ informing partners

The **following inquiries** should be made:

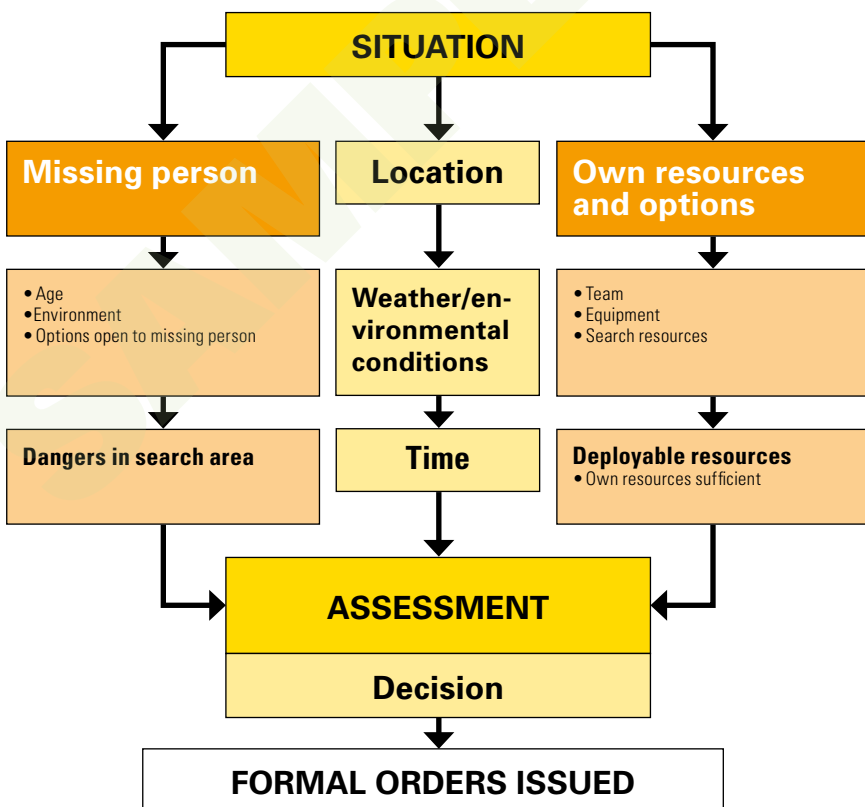
- ▷ contact and question relatives, friends, fellow mountaineers, hut wardens
- ▷ check on huts (including unstaffed ones), mountain guest houses, Alpine lodges, summit books, etc.
- ▷ establish the location of vehicles
- ▷ question staff of cableways/mountain railways, mountain restaurants and hotels
- ▷ check with hospitals and local doctors

The following **questions must be taken into account for the next stage in the procedure:**

- ▷ have weather conditions caused delays?
- ▷ have other mountaineers failed to return?
- ▷ has help already been organised by another body?
- ▷ could the missing person(s) have switched to a different valley or region?
- ▷ could the missing person(s) have left the region for personal reasons? (e.g. due to an argument with a partner)
- ▷ other reasons ...

At the end of Phase 1, a detailed assessment will be made of the situation, taking in all the known facts up to that time.

Fig. 4.03 **Assessment of the situation in a search operation**



4.2.3.3 Phase 2: Searching the primary area

Once the clarifications and initial investigations have been fully completed and have not produced any success, the search operation will be started as a function of the urgency, weather and time of day. It must always be possible to justify this decision, which now leads on to formal orders being issued.

The **issuing of orders** to the search parties is staggered on the basis of urgency and the following schedule:

- ▷ Orientation
- ▷ Intention
- ▷ Formal orders
- ▷ Special instructions
- ▷ Locations

In this phase, a thorough search is made of the primary search area (paths, routes). The search strategy must be specified as a function of the situation and the terrain. The search parties are allocated clear territories. Only rescuers familiar with the territory should be deployed as search party leaders. Each group should be equipped with the necessary means of communication and orientation and also the necessary rescue equipment.

4.2.3.4 Phase 3: Extending the search area

When searching the extended area it is important to include unusual routes and illogical possibilities. All meaningful search resources must also be deployed. In the case of prolonged operations, the further procedure to be adopted should be discussed with the relatives, the air rescue organisation and, if appropriate, with the insurance companies.

4.2.3.5 Interruption/termination of the operation

We make a distinction between interrupting an operation and terminating an operation.

Interruption

It may be necessary to interrupt a search operation if it is no longer in proportion to the prospects of success or if the safety of the rescue team can no longer be ensured. The Head of Operations of the rescue station holds responsibility for the search parties in the terrain and must interrupt the operation if their safety is

no longer assured. The decision must be made in consultation with the cantonal police, the helicopter crew and the relatives, etc. and must be substantiated.

The following criteria can lead to the **interruption of the operation**:

- ▷ danger of an avalanche
- ▷ danger of falling ice
- ▷ glacier crevasses
- ▷ weather (wind, fog, storm, etc.)
- ▷ darkness/night
- ▷ unclear situation (search area too large)
interruption until new information/findings are available
- ▷ others...

Termination

It is the cantonal police who take the decision to terminate a search operation. This decision must be taken in cooperation with the Head of Operations at the rescue station and the relatives, etc. and must be substantiated.

The following circumstances can lead to the **termination of an operation**:

- ▷ all missing persons have been found.
- ▷ there is no specific information to suggest that the missing person(s) is/are in this area.
- ▷ the detailed terrestrial search (2-3 days) has proved unsuccessful.
- ▷ the relatives have been informed.
- ▷ others ...

4.2.4 Risk assessment

There are often a large number of rescuers in the terrain during search operations. Particular attention must therefore be paid to their safety. We use the "Checklist rescue mission in summer" as an aid for assessing the risks.

4.2.5 Logging and documentation

Keeping a log constitutes a management aid, with the log being used to justify decisions and to provide documentation. What needs to be logged are the procedures implemented in the rescue station (control room and search area). At the end of the operation, the operation report and the billing are drawn up on the basis of the log.

The Head of Operations at the rescue centre is responsible for the log. He deploys a log keeper. The log should include the relevant organisational procedures (paths, routes and areas searched), notifications and decisions.

The following **forms and worksheets** can be used to compile the log:

- ▷ missing person notification
- ▷ rescuer group list
- ▷ activity report
- ▷ contact list
- ▷ pending items list
- ▷ report by the Head of Operations

The log should additionally include (in the documentation) a map of the site, sketches, photos, GPS data, pictures of tracks, objects found, the location and personal details of persons found.

(The date/time that is recorded in the electronic devices for photos, telephone calls and GPS records constitutes a further aid when drawing up the log.)

4.2.6 Search resources

In rescue operations, the term “search resources” covers the full range of human resources and equipment options that can be deployed in a search.

4.2.6.1 Search by “eye, ear and voice (calling out)”

A search by eye and ear does not require any special knowledge and is implemented without delay in every search operation. Terrestrial search parties employ binoculars/telescopes for searching at a distance. Calling out loud, especially if visibility is poor and at night, can also prove successful.

4.2.6.2 Helicopter search

If the weather will permit, a helicopter is the most efficient resource over clear terrain, especially above the tree line in the mountains. Prior to starting, the area, paths and routes that are to be searched must be precisely defined. Rescuers with a good knowledge of the area and, if possible, Helicopter Rescue Specialists (RSH) should be deployed for search flights. It is also recommended that the helicopter land at an appropriate point during the search and that an attempt be made to locate the missing persons by calling out.

A better view can be obtained of blind spots (such as marginal crevasses on glaciers) if a Helicopter Rescue Specialist is suspended on the hoist hook beneath the helicopter.

4.2.6.3 Search dogs

For search operations, the Head of Operations at the rescue station should enlist a dog handler as rapidly as possible to support and advise him in the deployment of the dog team. (This is to clarify questions such as: what type of terrain is suited to a search with dogs? How many dog teams are required?)

Terrain search dogs

The deployment of terrain search dog teams makes sense especially in terrain with extensive areas that cannot be searched by the human eye, i.e. in impassable terrain that is difficult to see, or if there is limited visibility on account of the weather (making flying impossible). Depending on the terrain in question, a terrain search dog team can perform the work of a 30-person search team. Each team must be accompanied by a rescuer familiar with the territory. His job is to guide the dog handler over the terrain and to ensure the necessary safeguards in difficult situations.

A dog can be deployed for about six hours if it is given the necessary breaks, as determined by the dog handler. The factors that have the biggest impact on reducing deployment time are heat and/or very steep terrain.

Path search

A dog team is allocated a specific section of a path and conducts a search on one side of the path down to a depth of some 30m (on the valley side). A path search makes sense in Phase 2 of a search operation and, depending on the particular incident, can also be performed as an immediate measure during the night.

Segment search

A dog team is allocated a specific section of the terrain (segment), which the team searches independently. The ideal size of a segment is 200 to 300m wide, with a natural boundary (stream or road). A segment search is suitable for both unclear and open terrain in the forest, as well as in fog or in the twilight. A segment search is best conducted in Phase 3 of a search operation if a path search has not proved successful.

Chain search

Several dog teams search adjacent segments. This method requires visual contact between the different handlers (approx. 60m). A chain search is not advisable in the mountains.

Crevasse search dog

A dog team is allocated a specific section of terrain on the glacier. A three-man rope team (two rescuers and one dog handler with his dog) searches the specified crevasse zone. The crevasse search dog can locate persons who have fallen into a crevasse.

4.2.6.4 FLIR

A military helicopter, equipped with a thermal imaging camera/FLIR (Forward Looking InfraRed), is called in by the Rega operations centre or OCVS/KWRO144 (Valais). Providing that the weather is suitable for flying, FLIR is a further suitable search resource for clear terrain, especially above the tree line in mountain regions.

The helicopter searches the area specified by the Head of Operations Accident Site (drawn in on a map), and a Helicopter Rescue Specialist (RSH) familiar with the area is also on board.

The FLIR recognises the temperature difference between the terrain surface and anyone on it. The ideal deployment time is after midnight when the terrain surface (stones, bushes, grass) has cooled down a great deal, creating a big difference between its temperature and the temperature of anyone on it. The system will not detect persons who have been buried or who are located under trees. FLIR is thus not suitable for use in forests.

4.2.6.5 Tracing the position of mobile phones

It is the cantonal police who have to arrange for the position of mobile phones to be traced. The accuracy of this system varies from a few hundred metres to several kilometres.

4.2.7 Deployment tactics for search resources

4.2.7.1 General information

Each search operation is different. It is thus not possible to draw up a standard procedure. What is important is that the operation must be competently managed in both organisational and tactical terms, right from the start. The decision as to which search resource is to be deployed when, how and where should always be taken by the team as a whole where possible.

4.2.7.2 Appropriate search resources in high mountain regions

- ▷ helicopter
- ▷ terrestrial search (eye, ear, voice)
- ▷ FLIR/military helicopter
- ▷ crevasse search dogs (on glaciers)
- ▷ avalanche search dogs (only in winter)

4.2.7.3 Appropriate search resources in skiing areas

- ▷ terrestrial search with skis from the top downwards (eye, ear, voice)
- ▷ snow grooming vehicles (transport, lights)
- ▷ avalanche search dogs
- ▷ terrain search dogs (the snow surface must be firm and suitable for dog to walk on)
- ▷ helicopter (only to be deployed when the skiing area is closed - in the morning and the evening)
- ▷ FLIR/military helicopter (deployable above the tree line)

4.2.7.4 Appropriate search resources in fields and forests

- ▷ terrestrial search (eye, ear, voice)
- ▷ terrain search dogs
- ▷ helicopter (open areas and forest clearings)