

## Helicopter as additional rescue means for special rescue



### Introduction

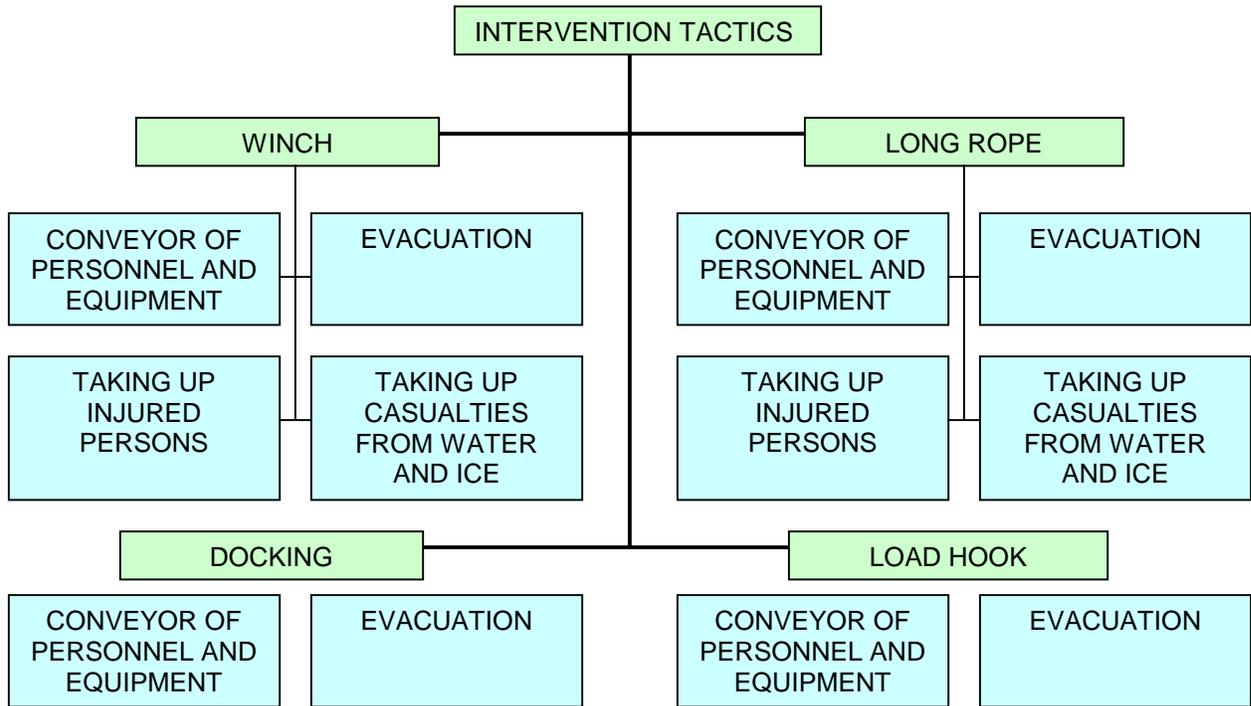
The helicopter forms an effective member of the rescue chain as fast means of transport as well as a rescue piece of equipment.

Rescues by means of helicopter are to prefer ground bound special rescue techniques in rough area because the rescue can be performed faster and more gentle for the casualties.

At this the view and weather conditions which set use a natural limit must be taken into consideration. The pilot has the sole responsibility for the execution of the rescue in view of the weather conditions and the geographical conditions.

For safety and insurance reasons continuous training of the special technique is essential for helicopter crews and special rescuers.

## INTERVENTION TACTICS AND TASKS



### **Rescue tasks**

- Reconnaissance and observation of the danger area
- Fast conveyor of personnel and equipment
- Evacuation
- Taking up injured persons
- Taking up persons from water or ice
- Gentle transport of injured persons under medical supervision

### **Rescue tactics**

1. Rescue by means of a winch
2. Rescue with long rope
3. Docking with landing skid at the object
4. Use of load hook and rescue basket
5. Descend out of the helicopter

## 1. Rescue by means of a winch



### **Conveyor of personnel and equipment**

Rescue personnel with full technical and medical-technical equipment can be removed and taken in ravines, canyons and other heavily accessible intervention sites.

### **Evacuation**

The evacuation of healthier or only slightly injured persons from awkward situation is possible by applying a rescue triangle and clip in the load hook by trained personnel.

### **Taking up casualties**

Injured persons can be taken up by means of a winch and either rescue triangle, rescue net, rigid stretcher or rescue bag.

The choice of the appropriate piece of equipment is dependent of the injury and the nature of the emergency. The patients must be accompanied in the rope for supervision during lifting by a special rescuer.

Rescue winch use is limited by the length and the load-capacity of the winch cable.

At every intervention the distance to the object has to be balanced in a way that it is high enough to allow the helicopter to execute an emergency landing manoeuvre in the case of a turbine damage and, close enough to allow a sensible work.

### **Taking up persons from water and ice**

With regard to the consequence of the wind produced by the rotors the distance of helicopter to water or ice surface has to be chosen generously.



### **RESCUE TRIANGLE**

A laying out fast makes the rescue triangle possible to the patient



### **RIGID STRETCHER**

A rigid stretcher allows stable positioning. She can be pulled over rough underground and transported by narrow crevices.



### **RESCUE BAG**

Rescue bag makes an individual embedding possible together with a vacuum mattress. Optimal warmth preservation of the casualty.

### **RESCUE NET**

The rescue net is only of pocket size if folded. Shoving the net under the patient can be performed by only one rescuer. The patient is transported in horizontal position.



## **2. Rescue with long rope**

### **Conveyor of personnel and equipment**

By means of the long rope personnel and equipment can be flown from easy accessible places to nearby, heavily accessible intervention sites.

In general at this variant personnel is not landed out of the helicopter.

### **Evacuation**

Rescue personnel and rescued casualties are flown to nearby meeting-places which are easy accessible over the land route.

### **Taking up injured persons**

Taking up injured persons by means of rescue triangle, rescue net, rescue stretcher or rescue bag is possible depending on the injury and the location of the incident site. The casualty and the accompanying rescuers are flown to a nearby place to land.

### **Taking up persons from water and ice**

With regard to the consequence of the wind produced by the rotors the distance of helicopter to water or ice surface has to be chosen generously.

The long rope rescue represents a good alternative for the winch rescue. Rescues are possible with rope lengths to maximum 200 meters.

The load-capacity of the holding rope must be taken into account.

Weather conditions considerably influence the long rope rescue.

The turn out (preparation) time is prolonged by clipping on the rope.

## **3. Docking with landing skid at the object**

### **Conveyor of personnel and equipment**

Docking is particularly used for fast lands and takes of rescue personnel in uneven area.

### **Evacuation**

This technique allows the fast removal from physically healthy persons possible from the danger area.

The step in of the persons into the helicopter cabin must be secured by a crew member. It is very important that casualties in a panic mood do not hurry into the cabin and destabilize the helicopter by overloading.

#### 4. Use of load hook and rescue basket



##### **Conveyor of personnel and equipment**

If landing or docking is not possible at the scene of an accident the use of the load hook and rescue basket allows transport to and from the site of several rescuers with their equipment.

##### **Evacuation**

The rescue basket allows the fast removal of several not or only easily injured persons simultaneously. During this action the presence of a trained responder in the rescue basket is imperative. When evacuating the danger area with people likely to react panicky on overloading of the rescue basket has to be avoided.

The loading capacity is limited by the load-capacity of the load hook as well as the performance limits of the helicopter. Weather conditions influence the use of the hook use considerably. The turn out (preparation) time is prolonged by mounting the load hook.

## 5. Descend out of the helicopter

A good alternative for quick landing of rescue personnel without a rescue winch is the descend from the helicopter cabin.



The active descend at the double rope at rope lengths up to 80 m is exclusively performed by experienced special rescuers.

The mounting of a “hand off “ safeguarding device may cause side effects because the quick disconnection of the rope may be hampered.

### Cutting the devices

Cutting the winch cable as well as the long rope must be ensured in each of the techniques described by the winch technician. The triggering device must be in close proximity and be provided with a protection against activating unintentionally. Cutting of hanging persons is exclusively carried out in an absolute emergency. Even during an emergency landing one has to wait the moment until the persons are in immediate proximity of the floor.

## **Training**

A specific training of the pilots and the rescue personnel is essential for a safe work environment. Basic training, further education as well as continuous training of all intervention techniques must be ensured.

The minimal training frequency varies according to the requirements defined by the responsible aviation offices as well as the service instructions of the rescue organisation. With increasing difficulty degree of the intervention technique variant the number of training units should be increased correspondingly.

Records about training course and participants must be written by the responsible person.

## **Rules for training and intervention**

A thorough briefing of personnel involved must take place at the beginning of every training/intervention:

- Definition of the procedure to be performed
- Checking the radio communication
- Agreement on the hand signals
- Emergency procedures

A change of the intervention tactic during the intervention is only possible if all involved can be advised about this.

A debriefing after every intervention is not mandatory but raises the safety at future interventions and avoids creeping in of business faults.

## **General guideline for rescues by means of a helicopter**

In any case the safety must have first priority.

Helicopters which are equipped with the NOTAR system (no tail rotor), offer a fundamentally safer work environment than such with a conventional tail rotor.

All manufacturer advices for the handling of helicopter, Winches, load hooks, ropes, redundancy pieces of equipment and other rescue means must be followed without exception.

One must adhere to the terms (limitations and procedures) which are laid down in the instructions for use of the different helicopter echelons.

Not to adhere causes loss of insurance.