FRENCH ROPE TECHNICIAN CERTIFICATIONS
SPECIALISED ROPE ACCESS RESCUE (SRR) HANDBOOK

Rope Rescue Guidelines

Marc GRATALON, Thierry L'HER, Laurent BOUÉVIN, Fabien NADEAU

WARNING

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This document is intended for rope access professionals only and must be published in its entirety. Training given by a DPMC-accredited organisation is compulsory before use.

Translation - Julia DUBOIS - Final read through - Simon CHRISTY – Marc GRATALON - Damien PIAT.

Design & Réalisation : Proerig 06 30 53 59 21

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FOREWORD

Harness suspension is common place for rope access professionals who need to access work stations in order to perform their tasks, usually standing or on an ergonomic seat.

In practice, the specific risk of an incapacitated or unconscious rope access technician being suspended in a hanging position for a certain amount of time is to be considered, as this requires appropriate care.

Since many years, the industry has been addressing this issue and rope access staff has been trained in unhooking and rope evacuation techniques. However, as accidents involving the need to rescue injured suspended teammates are rare, the algorithms of action still required further development for accidents to be dealt with in all working circumstances.

After refreshing our knowledge and collecting reliable data from mountain medicine and applied research specialists (1), DPMC's technical commission in charge of first aid has written this material in order to improve assistance to injured rope technicians. Through this work conducted for several years, we have also been able to develop rescue techniques and associated best practices, in collaboration with SMPM (Rescue in Perilous and Mountain Environments), one specialised rescue unit of ECASC (School of Civil Security Application), as well as PGHM (French Helicopter Mountain Rescue) mountain rescue professionals who tested this module.

1/ Study conducted in October 2013 by IFREMMONT French Institute of Training and Research in Mountain Medicine 'Le Traumatisme de Suspension dans l'Activité Professionnelle des Travaux Sur Cordes' (The Suspension Trauma in Rope Access Work).

ACKNOWLEDGEMENTS

To the main authors: Thierry L'HER, Laurent BOUEVIN, Marc GRATALON, Fabien NADEAU

To the members of the GVC/Sauvetage focus group at DPMC's technical commission: Yann DECHAUX - Michel DENIEL - Jérôme DUCOL - Rémi GEROUDET - Tristan GODET - Étienne HOENRAET - Jean Baptiste HOAREAU - Jean Paul JARNIAS – Yann MILLOT - Philippe RONDEL - Jean Marc RIAS – Antoine HEIL

To all those who took part directly or indirectly to this research as well as to the creation of this 'Practical Handbook'

To François RANISE, President of DPMC, and Alain FORGEOT, former President. To DPMC managers for giving their trust to Marc GRATALON regarding this project's management and completion.

To Jacques BORDIGNON President of SFETH

To Joël Finiel from OPPBTP

To Anne ACHARD and Franck ARNAL from GRETA-VIVA5

To Stephane Pompier (Prométhée Conseil) for providing expert advice on the rescue and risk prevention industry

Thanks to ECASC, notably for taking part to this study, national Technical Advisors from Rescue in Perilous and Mountain Environment, Lieutenant Colonel Roland MIJO and Captain Guy POURCHOT, Head of the national training centre for Rescue in Perilous and Mountain Environment.

Petzl Foundation for the pictures,

Vue d'ici, photographer and film director specialised in rope access work: www.vuedici.org

INTEGRATION INTO A GLOBAL FRAMEWORK

Employers must ensure workers' health and safety through risk prevention and training actions, and by setting up a structure as well as appropriate means that comply with the general prevention principles.

They also must provide safety training to each worker. This must be adapted to working conditions and to the measures to be taken in case of an accident or damage.

According to the directive 2001/45/CE of european parliament French Decree 2004-924-Article R4323-89 "the work must be properly planned and supervised, so that a worker can be rescued immediately in an emergency". Consequently, rope access work can only be conducted by technicians working in pairs at least. They must hold a valid First Aid Certificate (French Requirement). Work must also be organised so that rescue can be anticipated quickly, within 3 minutes in case of life-threatening emergencies, according to INRS procedures.

Being familiar with first aid does not remove the need for prevention measures to be put into place beforehand, as employers are first and foremost responsible for accident and damage prevention.

The guidelines present in this handbook comply with the company's global risk prevention framework, in line with prevention key players. Our global approach is also based on the rope access work French skills references CQP rope access workers level 1&2 and TOTC (Rope Access Work Organisation Technicians).

The following measures are in line with the reflection TOTC (Rope Access Work Organisation Technicians) must hold during each safety operations. TOTC must define first aid protocols aiming at maintaining health and safety of the injured persons, as well as protecting first-aid workers.

This Specialised Rope Rescue training framework cannot in any circumstances relieve employers from their obligations regarding occupational accident prevention, and its outcomes will depend on the measures taken on-site within the company regarding health and safety protection.

Nota Bene: Occupational hazard identification and analysis can partly be conducted by an occupational health doctor, who will also be able to advise on first aid and emergency services structures, and to intervene in special risk and rescue training.

Our working environment requires workers to be physically active while suspended in their harness. However, accidents or other medical factors leading to suspension trauma with blackout are extremely limited and rare. Likewise, having qualified staff working in pairs and conducting a preliminary risk assessment prior to each operation help to prevent the need for rescue, through the anticipation of evacuation and rescue procedures on rope access sites.

Compliance with best practices described in DPMC's 'Ten Commandments for Rope Technicians' also prevents risks of falls from heights. These rules are integrated into the professional certifications rope technicians CQP and CATC.

Consequently, qualified rope technicians adopt the following behaviour in work situations:

» Keeping mobile while suspended in a harness for a long period of time;

» Using an ergonomic seat during free hanging work;

» Taking several parameters into account, such as accessibility and evacuation in case of rescue situation, while preparing rope access and workstation.

Nonetheless, the study conducted by DPMC along with IFREMMONT confirmed that in cases where the victim is hanging in a harness, a quick evacuation is preferable. This study also allowed us to identify measures to prevent. These are sometimes already informally integrated into company practices:

» Working on your feet or on an ergonomic seat;

» In case of a dizzy spell, trauma or loss of consciousness, anticipating and ensuring the person's comfort through sternal recovery position;

» Attending retraining courses regularly to maintain your knowledge and skills;

In this professional field, it is necessary to keep on training rope technicians to integrate new knowledge and skills to existing rope rescue techniques.

Given the diversity of working environments linked to the different sectors of rope work in France, risk prevention and the care of a victim at height are fully integrated into CQP training and certifications. In addition to the technical background, the related requirements of the CQP certifications allow rope technicians with a CQP1 or CQP2 to adapt to the different management systems of companies and to integrate specific work organization standards such as the IRATA standard.

Note that In France only CQP rope access worker have been trained in risk prevention and victim care in all the différent rope access work situations to ensure they are opérational in their own work environment.

Moreover, French CQP rope access certifications are issued to workers through repositories of activities and skills derived from the European reference framework EPCRA (European Professional Certificate for Rope Access : http://www.epcra.eu) but adapted for the different sectors of activity (Public Works, Buildings, Industry, Events, etc.).

ISSUS IN APPLYING THE FRENCH FIRST AID CERTIFICATE (SST) IN ROPE ACCESS WORK SITUATIONS

What makes the profession of rope access technician unique is the working context, in which everything happens at height, but also the diversity of victim care conditions prior to specialised rescue operations.

In case of an accident, first aid measures are defined by the First Aid (SST) programme, which is established by INRS (health and safety prevention Reference body in France). However, in rope access work, these different first aid measures stated in the SST reference document cannot always be taken in the right chronological order.

Consequently, launching a study was necessary in order to apply SST requirement to the rope access work activities.

The content present in this handbook is the result of the reflexion conducted by rope rescue and rope access work specialists. It defines the different actions to be taken in case of an accident at height, aimed at stabilising the victim's condition and at evacuating them in order to provide the first aid techniques stated in the SST technical reference document.

This handbook aims at basing rope rescue training and certificate requirements on well-known rescue protocols featuring a struggling or injured team member hanging in a harness. The same applies to skill maintenance once on the rescue field: rope technicians are educated to prevent risks linked with their intervention, and to the phenomenon of suspension trauma.

Our goal is to integrate profession-specific elements as a complement to the primary SST. This includes:

- Specific alert conditions, depending on the context (when and what?);
- The assistance protocol for victims on ropes;
- Emergency evacuation or safety procedures on ropes;
- Site access conditions for specialised rescue teams;

Services and collaboration with specialised rescue teams the SMPM (Rescue in Perilous and Mountain Environments) /PGHM (French Helicopter Mountain Rescue);

- Civil Security Helicopter or French national police force guidances.

Beyond the rope technician-oriented perspective of SST, the measures outlined in this handbook incite to create informative signage on rope access and work stations in order to anticipate first aid operations under any circumstances. The same applies for work site organisation. Depending on access complexity and on the task carried out, the presence of two, three or more rope technicians must be planned beforehand.

Rescue exercise at the French national training centre for Rescue in Perilous and Mountain Environment, Florac

Any work to be conducted by rope technicians requires a preliminary risk assessment, in order to specify the measures to be taken in case of evacuation and rescue. Consequently, access ropes are legibly equipped in order to facilitate their use by team members or specialised rescue teams.

WARNING, some work stations might be particularly isolated or difficult to reach. Special procedures regarding victim care are then compulsory and must be planned in advance. Staff must be trained to intervene according to the applicable procedure.

In case of an accident, rope rescue professionals must act according to the SST Intervention Plan set by INRS. However, rope access work might generate different issues. This is why experts have agreed on two intervention plans.

These intervention plans feature the pictograms present in the SST plan by INRS, adapted to the specificities of rope access work. They show the protocol that must be followed in case of an accident involving a rope technician at height.

1. 'Easy Access' Intervention plan – 'Direct Evacuation' complies with Rope Technician CQP1 requirements;

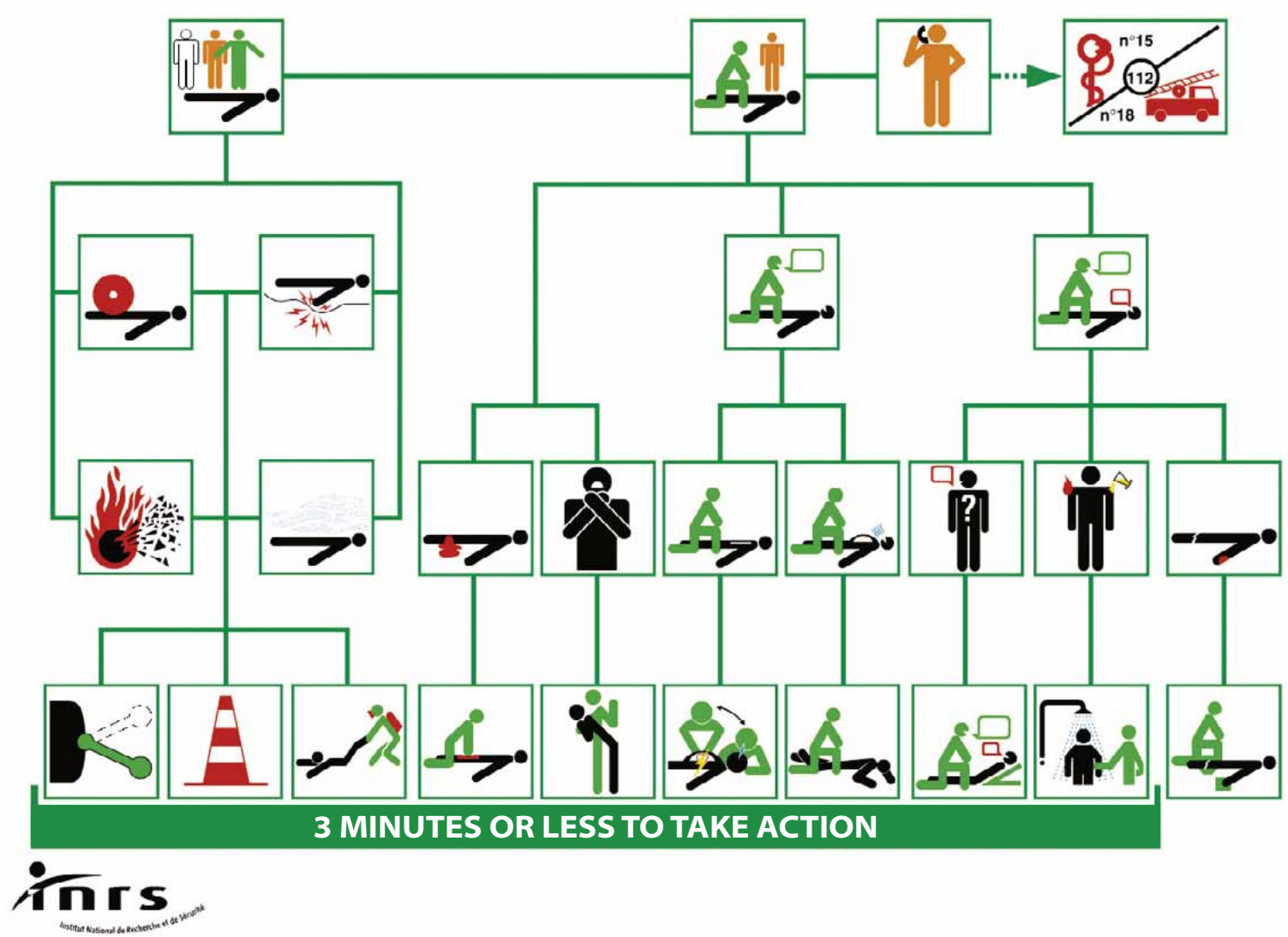
2.'Complex access' Intervention Plan – 'Indirect Evacuation' complies with Professional Rope Technician CQP2 requirements.

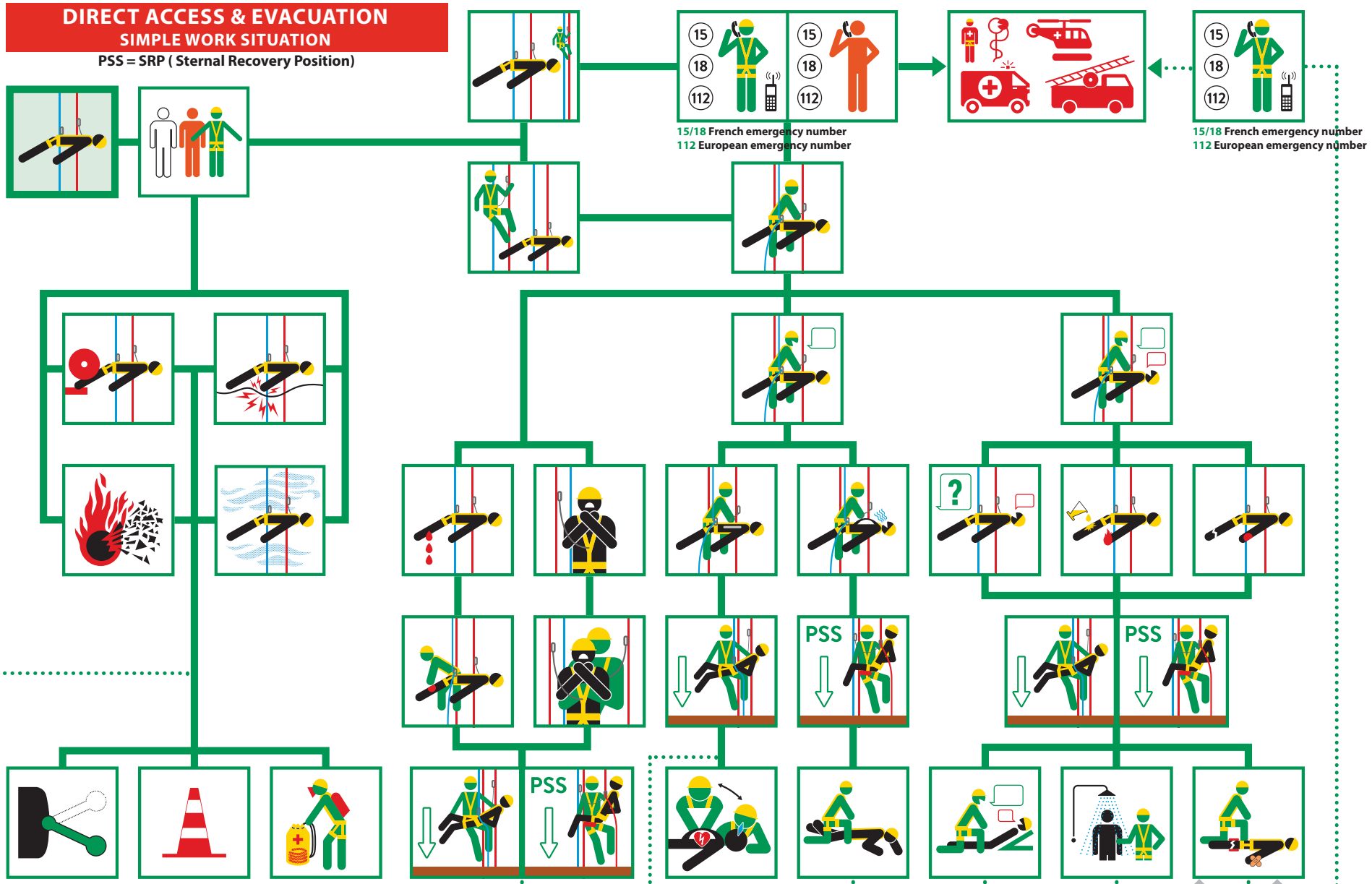
They are easily identifiable in order to enhance memorising of each rule, which are always based on the **4 main SST first aid actions:**

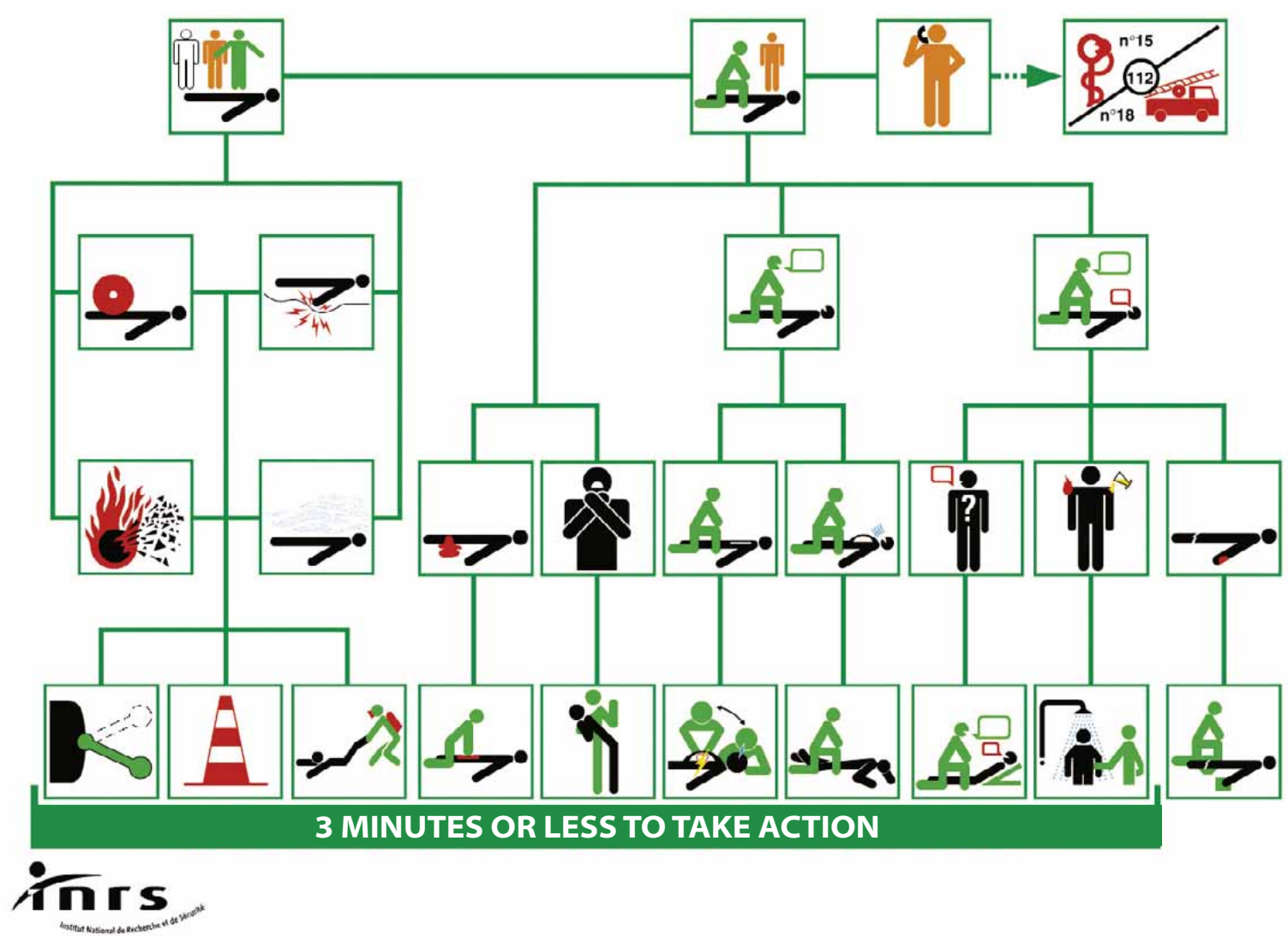
» PROTECT FROM HAZARD **» EXAMINE** **» GETTING SOMEONE TO RAISE THE ALARM or RAISING THE ALARM** **» RESCUE**	**3 MINUTES TO TAKE ACTION**

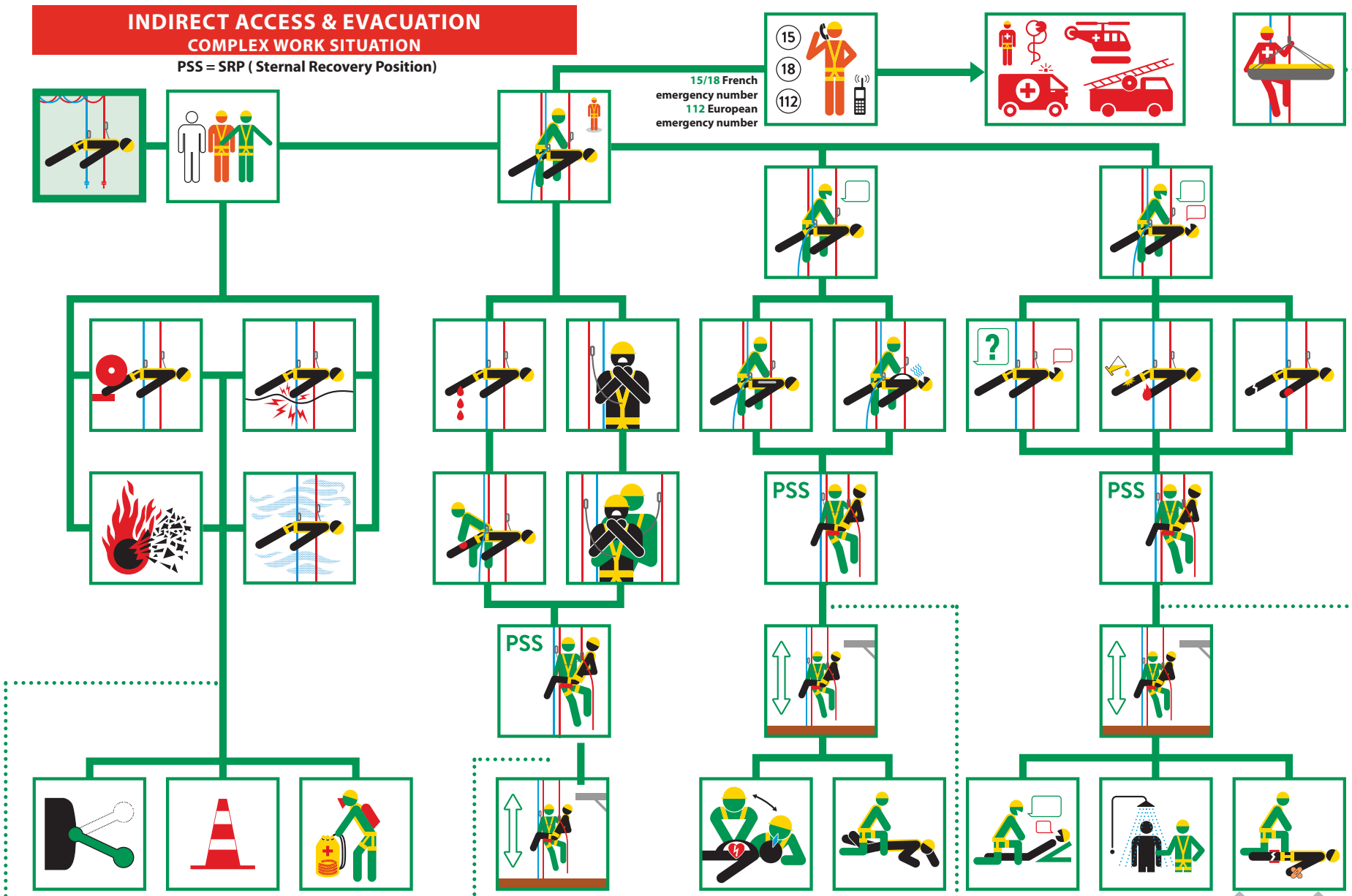
Nonetheless, the content of these actions can change, as well as the order of the steps to be taken, depending on the context, nature of accident, number of victims or their condition, available means and equipment, and the number of rope technicians present on site. Indeed, given the specific character of rope access work, and especially the risks involved in rescue operations at height, the alert message will be sent prior to the rope rescue intervention in case no relevant examination can be carried out quickly (this occurs for example if the victim is out of reach and unresponsive to the rescuer's calls and questions at a distance). If the victim is conscious, able to communicate and/or situated in immediate proximity, protection from danger and examination measures will be taken before the rescuer or witness launches the alert.

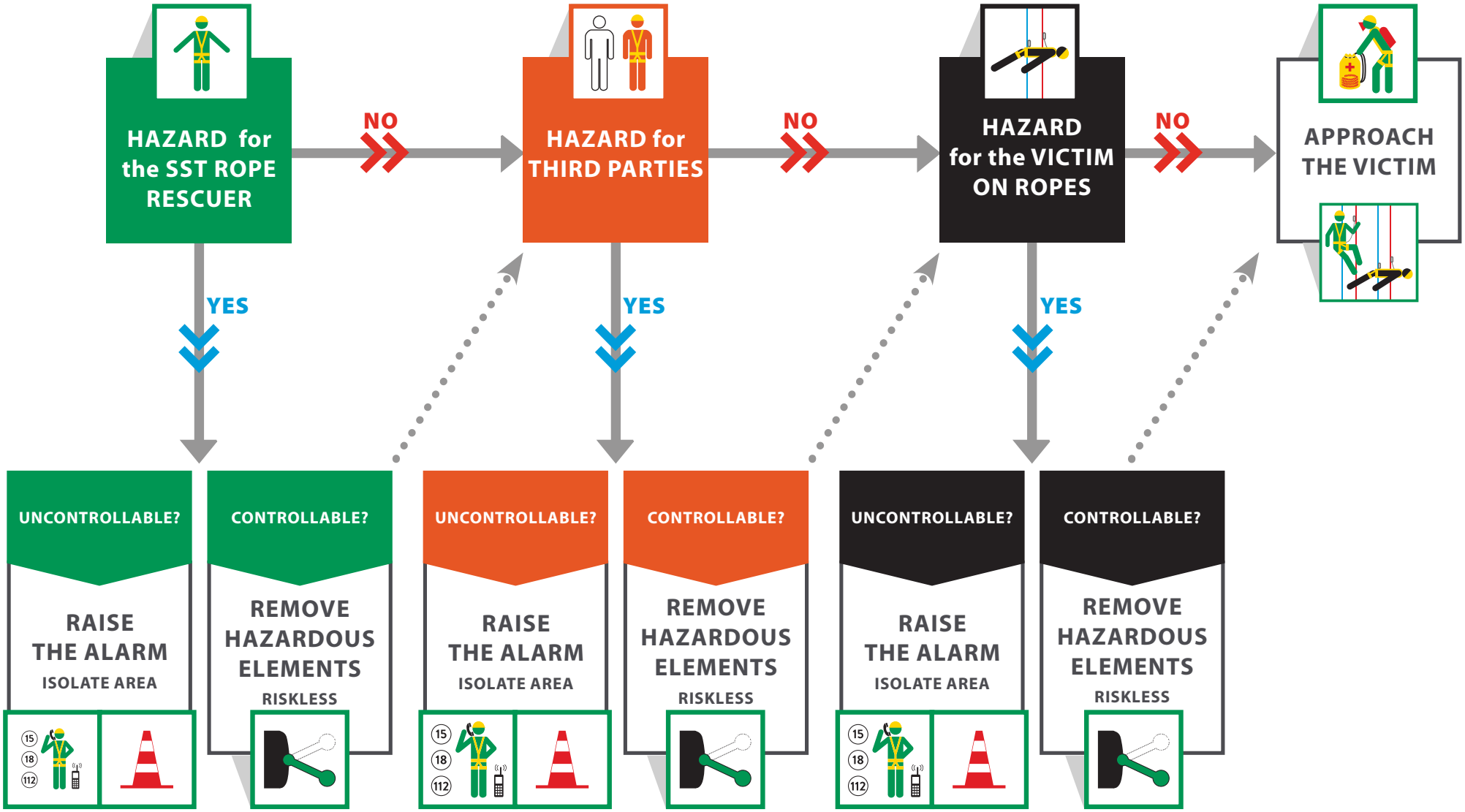
It is overly important to incorporate these measures in daily practice as in case of an accident, rope access technicians will need to rescue their partner.





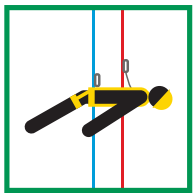






PROTECT FROM HAZARD

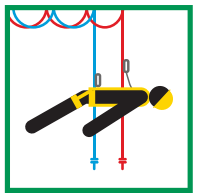
ASSESSMENT PHASE



SITE WITH EASY ACCESS AND EVACUATION

The rescuer can reach the victim directly (with no technical difficulties) from the top, from the bottom or on the worksite, using installed ropes, or rescue devices available or planned in the Rescue procedure.

Direct access to the ground with a descender.



SITE WITH COMPLEX ACCESS AND EVACUATION

The victim must be conveyed or pulled up.

Before reaching the victim, rescuers must:

- Go through a complex and/or long rope course,
- Set up evacuation facilities, in compliance with the planned Rescue procedure,
- Secure the site prior to intervention

ROPE RESCUER WORKING IN PAIR

This measure implies two successive phases:

- An accident assessment phase (detailed assessment),
- A phase of action resulting from the previous assessment phase.

The person in green is the rope rescuer; the person in orange is a witness; the person in white is a third person.

ROPE RESCUER WORKING IN A TEAM OF AT LEAST 3 PEOPLE

This measure implies two successive phases:

- An accident assessment phase (detailed assessment),
- A phase of action resulting from the previous assessment phase.

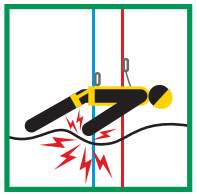
The person in green is the main rope rescuer, in charge of the victim; the person in orange is a worker, preferably from the rope access team; the person in white is just a witness.

PROTECT FROM HAZARD

ASSESSMENT PHASE

PERSISTING MECHANICAL HAZARD

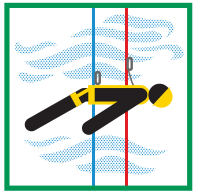
Crushing, fall from height, strong kinetic effects, impact, falling objects, burying, etc.



PERSISTING ELECTRICAL HAZARD

Direct or indirect contact

PERSISTING THERMAL HAZARD
OR FIRE/EXPLOSION HAZARD

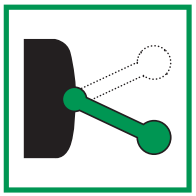


PERSISTING HAZARD COMING FROM TOXIC OR UNBREATHABLE ATMOSPHERE

Confined, water, unbreathable environment

PROTECT FROM HAZARD

ACTION PHASE



REMOVE HAZARDOUS ELEMENTS

- Identified hazard is removed permanently
- The action taken cannot worsen the victim's condition or be of any risk for the rescuer

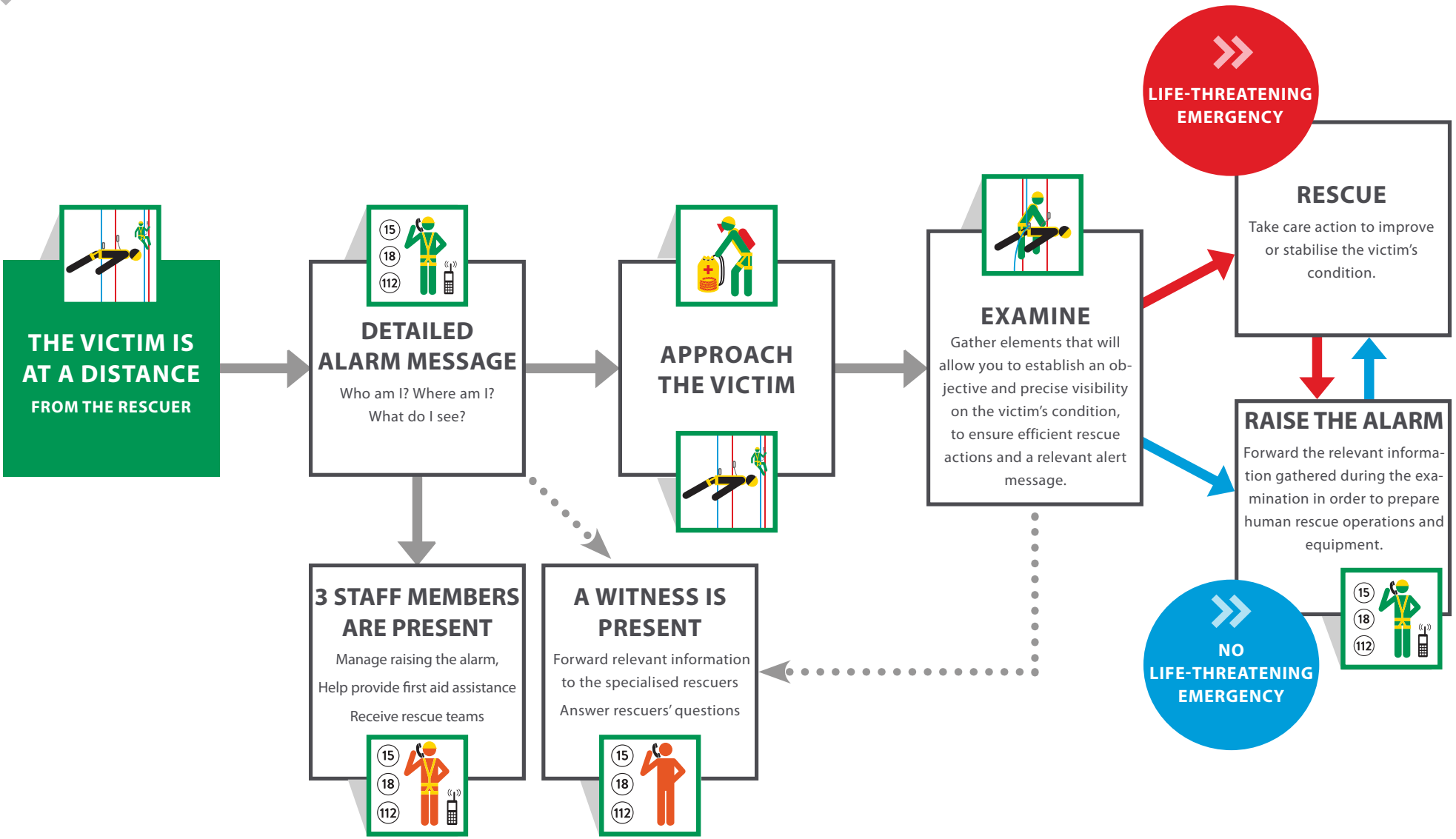
ISOLATE HAZARD AREA

- Identified hazard is permanently isolated
- The action taken cannot worsen the victim's condition or be of any risk for the rescuer

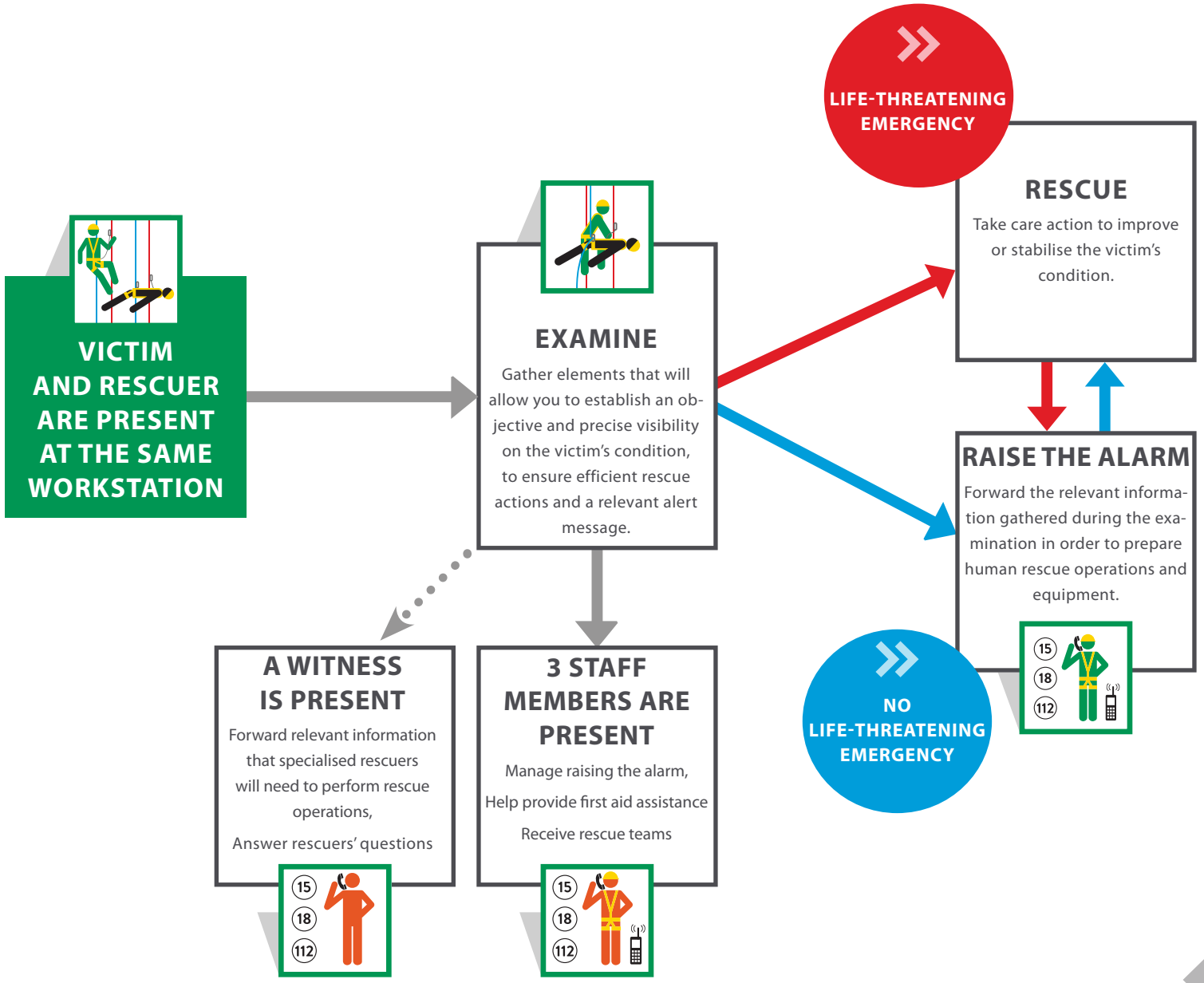
REMOVE VICTIM

- Victim is removed from the identified hazard
- The action taken cannot worsen the victim's condition or be of any risk for the rescuer
- Prepared rescue equipment is used (first aid kit, immobiliser, EEBD, winch, etc.)

GETTING SOMEONE TO RAISE THE ALARM– RAISING THE ALARM



GETTING SOMEONE TO RAISE THE ALARM– RAISING THE ALARM



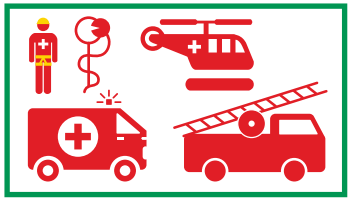
GETTING SOMEONE TO RAISE THE ALARM – RAISING THE ALARM

YOU ARE THE ROPE RESCUER IN CHARGE OF THE VICTIM – RAISE THE ALARM

- Give the alert message via the means of communication planned in the rescue structure
- Information given must be necessary and sufficient in order to organise specialised rescue

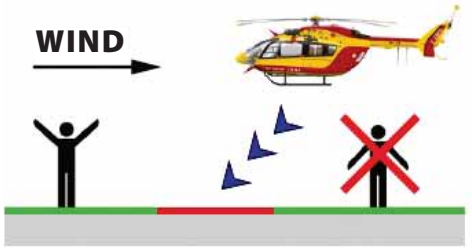
YOU ARE A MEMBER OF THE ROPE RESCUE TEAM – RAISE THE ALARM

- Give the alert message via the means of communication planned in the rescue structure
- Gather or forward the information you got from the rescuer in charge of the victim
- Information given must be necessary and sufficient in order to organise specialised rescue



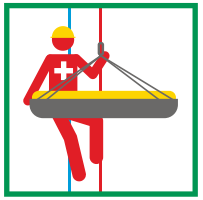
RAISE THE ALARM OR GET SOMEONE TO RAISE THE ALARM TO SPECIALISED RESCUE UNITS

- Get in touch with rescue units and/or people involved in the work site structure (PPSPS–Individual Health and Safety Protection Plan–for example)
- Firefighters, paramedics, Mountain Rescue, control station, safety administrator, etc.



YOU ARE A WITNESS, WHETHER YOU ARE A RESCUER OR NOT – GET SOMEONE TO RAISE THE ALARM

- Forward the information you got from the rescuer in charge of the victim
- Information given must be necessary and sufficient in order to organise specialised rescue



CARE OPERATIONS BY SPECIALISED RESCUE UNITS

RESCUER AND/OR DOCTOR

Staff equipped with specific means of evacuation (GRIMP or SMPM–Interventions in Perilous Environments, CRS–French riot squad, PGHM–Alpine police rescue unit, SAMU–paramedics)

NOTA:

15/18 French emergency number

112 European emergency number

HOW TO LAUNCH AN ALERT AS A ROPE ACCESS RESCUER

Rope rescuers must respect the obligations that apply to first aid workers regarding alerts, and thus communicate an accurate picture of the accident situation to the Alert Treatment Centre, dialling 112.

They must be able to specify:

- The circumstances of a work-accident;
- The condition of the victim(s);
- The exact intervention site;
- Conditions and obstacles that might hinder access to the victim;
- Ongoing or planned rescue actions.

From then on, as a rescuer, you are becoming the Alert Treatment Centre (CTA)'s eyes by describing the characteristics of a particular site in a simple and concise manner. You must not only indicate several elements such as means of access to the site, specific hazard and height, but also point out that someone is being held suspended in a harness.

Getting all this information will allow the controller to send the right rescue team for these particular intervention settings, with the right equipment.

STRUCTURE TO FOLLOW AS A FIRST AID WORKER WHEN SENDING AN ALERT MESSAGE:

1. **Tell who you are and give your telephone number**
2. **Indicate the accident location**
3. **Type of accident**
4. **Number of victims**
5. **Condition of the victim**
6. **Actions taken**

The rope rescuer-specific alert message is structured according to the SST–First Aid general framework, but there can be some specificities, according to some factors linked to: work environment, specific characteristics of work carried out at height, potentially long or complex access to site (approach walk; difficulties in communicating the address; underdeck rope systems, confined environment, etc.); weather conditions.

HOW TO LAUNCH AN ALERT AS A ROPE ACCESS RESCUER

ADDITIONAL INFORMATION TO BE GIVEN BY ROPE RESCUERS

1. Introduce yourself as a rope rescuer

2.Indicate conditions and means of access: by land or air; and site, access or DZ GPS position

3. Give a rough estimation of the exerted forces and the mass movement applied when the person or an object falls from height, evaluate the severity level and residual hazard induced by the fall, give objective information.

4. If there is more than one victim, are they still suspended in their harness? Depending on whether the emergency is life-threatening or not (is the victim conscious?), indicate the planned rescue actions and the way victims will be moved to an area that can be reached by specialised rescue units.

RULES FIRST AID RESCUERS ON ROPES MUST FOLLOW :

» Do not hang up first and answer all the questions asked by rescue services;

» If you are unable to launch the alert yourself, make sure the appointed person has understood and rephrased the message properly. Ask them to report what they said.

» Anticipate rescue units' arrival by preparing their reception and facilitate the closest access possible to reach the victim (e.g. road or pedestrian traffic, DZ, rope equipment, etc.);

» Follow the instructions given by rescue units over the phone or radio, or by the Chief or Rescue Operations on site at all times;

» BEFORE you launch the alert, ensure your own safety as well as other people's. Do everything in your power to avoid a secondary accident.

WHEN TO LAUNCH THE ALERT?

In most cases, rope rescuers request a third person present on site to launch the alert, so they can get closer to the victim. Rescuers must take the usual precautions and make sure the forwarded message is relevant. Generally, it is also possible to examine the victim before launching the alert, as rope technicians usually work besides each other.

Given the specific character of rescue operations at height and in order to take action within 3 minutes, rope rescuers preferably launch the alert—or get someone else to do it - once they have analysed the situation, removed hazard or isolated hazard area, and estimated whether the emergency is life-threatening or not, all of this through remote questioning.

Nonetheless, if the victim is unresponsive to questions asked remotely and in some particular circumstances or environments, reaching the victim before launching the alert can be challenging, as rope access will put rescuers at risk of fall from height. In that case, risks of aggravation need to be considered, and rope rescuers will launch an alert before approaching the victim. This is called a 'Flash Alert'.

'FLASH' ALERT

A first alert (also called a flash message) must be launched before approaching the victim if the estimated time needed to get to the victim's location exceeds 3 minutes and/or if accessing the location implies risks of fall from height. That can be due to the remoteness of a worksite, a complex rope access, obstacles resulting from the accident that hinder direct access, residual risks to manage before getting on ropes, ropes that need to be re-equipped, etc.

An additional message will have to be passed on to rescue units once the victim has been examined and, ideally, secured.

The message structure to follow remains the same:

1. Tell who you are and give your telephone number

2. Indicate the accident location

3. Type of accident

4. Number of victims

5. Estimated condition of the victim

At this stage, you must insist on the need to act quickly in order to release the suspended victim, and indicate that you are going to call a second time once the victim has been examined or rescued.

ALERT IN CASE OF A LIFE-THREATENING EMERGENCY

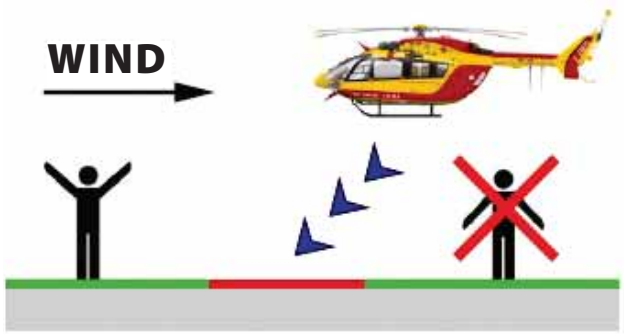
If the victim is choking or bleeding abundantly, you must intervene within 3 minutes and launch the alert afterwards. However, risks of fall from height induced by moving on ropes must be taken into account in order to prevent secondary accidents.

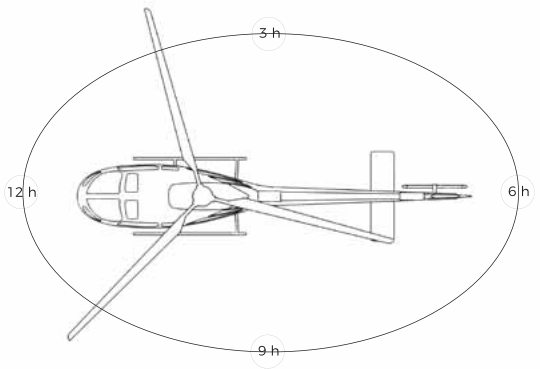
HELICOPTER RESCUE

Given the diversity of the profession, rope technicians are required to work in unusual places such as silos, mountains and high mountains, pylons, dams, pressure pipes, bridges, etc. In some cases, helicopter intervention will be the most appropriate way to evacuate an injured person. Rope rescuers must then be able to set up on-site precautions to ensure safety to the rescue aircraft and provide useful information to the pilot or other people involved.

What you should know:

- Spot a landing zone - DZ for the helicopter (it should be flat, with no obstacle on the way);
- Warn of the presence of cables and other air navigation obstacles such as paragliders, pylons, power lines, etc.;
- If required by the pilot, provide information on weather conditions (wind speed and direction);
- Tell them if the DZ is clear from sand, fresh snow, etc.;
- Learn the Y position: standing, then knees on the ground for landing, and keep the wind at your back;
- Lead landing on the DZ to ensure safety in manoeuvre, and pay particular attention to the tail rotor;
- Let the pilot know of any particular clothing elements that could help spotting you and the victim if exact location is unclear;
- Make sure no cover, bag, clothes, etc can be blown away by the air sent by the rotor;
- In case of winching operations:
  - Ballast or fasten ropes and any other element that can be whipped up;
  - Make sure no one stands uphill against the helicopter intervention zone, as there might be very high cliffs and rocks falling on the aircraft;
- In case of direct radio communication, you should be able to guide the pilot by giving the altitude, as well as clock face direction indications if possible.





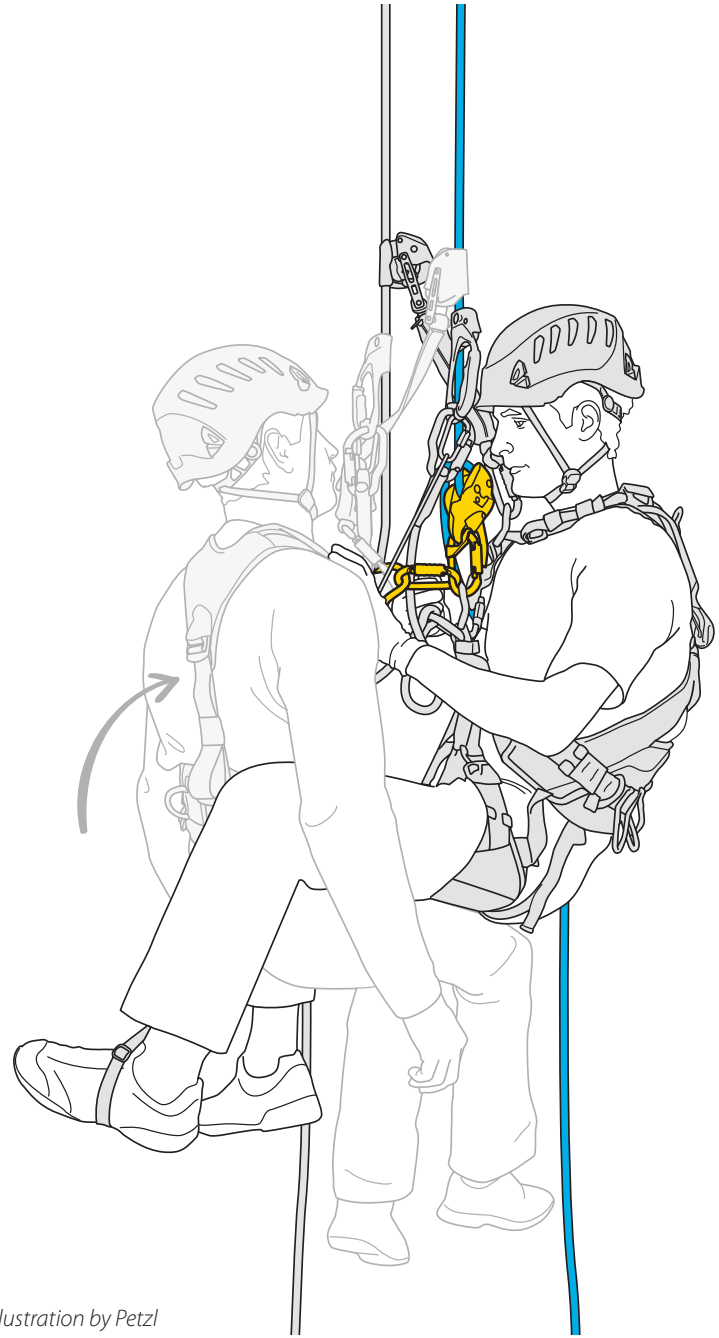
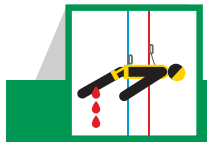


Illustration by Petzl



IS THE VICTIM BLEEDING ABUNDANTLY?

NO

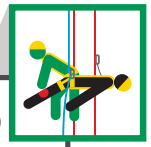
IS THE VICTIM CHOKING ?

NO

IS THE VICTIM ANSWERING YOUR QUESTIONS?

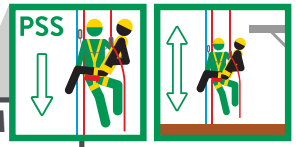
NO

YES



STOP THE BLEED

Manual compression, Compression dressing/Haemostatic dressing



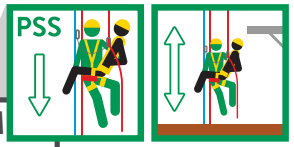
PLACE THE VICTIM IN STERNAL RECOVERY POSITION (SRP = PSS)

CONDUCT HIM OR HER TO AN APPROPRIATE PLACE WHERE YOU CAN PROVIDE FURTHER CARE

YES

UNBLOCK AIRWAYS

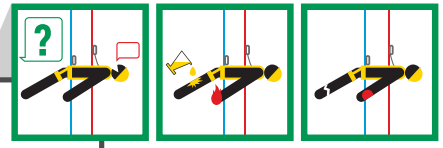
Abdominal compression while on ropes



PLACE THE VICTIM IN STERNAL RECOVERY POSITION

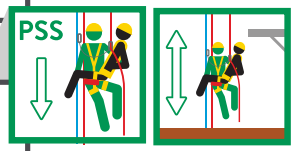
CONDUCT HIM OR HER TO AN APPROPRIATE PLACE WHERE YOU CAN PROVIDE FURTHER CARE

YES



OBSERVE, QUESTION AND LISTEN

WHAT IS THE VICTIM COMPLAINING ABOUT?



PLACE THE VICTIM IN STERNAL RECOVERY POSITION

CONDUCT HIM OR HER TO AN APPROPRIATE PLACE WHERE YOU CAN PROVIDE FURTHER CARE

TREAT

FAINTNESS, BURNS, WOUNDS, FRACTURES, ETC.

THE VICTIM IS NOT ANSWERING THE QUESTIONS

IS THE VICTIM BREATHING?

NO

CARDIOPULMONARY ARREST: IS EVACUATION POSSIBLE?

NO

LAST OPTION IF EVACUATION TO A FLAT SURFACE IS IMPOSSIBLE AND VICTIM IS IN CARDIOPULMONARY ARREST

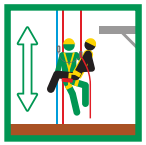
THE SITUATION IS CRITICAL. YOU CAN TRY PERFORMING CHEST COMPRESSIONS ALONE, AND MAINTAIN THEM UNTIL SPECIALISED RESCUE UNITS ARRIVE.

YES

PLACE THE VICTIM IN SRP (PSS)

CONDUCT THE VICTIM

TO AN APPROPRIATE PLACE WHERE YOU CAN PROVIDE FURTHER CARE



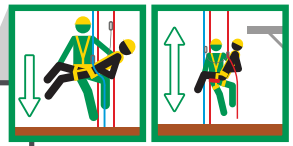
PLACE THE VICTIM IN RECOVERY POSITION

MONITOR THE VICTIM'S CONDITION

YES

REMOVE THE VICTIM

AND CONDUCT HIM OR HER TO AN APPROPRIATE PLACE WHERE YOU CAN PROVIDE FURTHER CARE

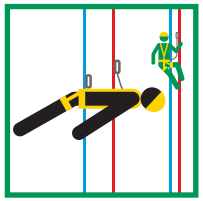


PERFORM CARDIOPULMONARY RESUSCITATION

+ USE AED IF POSSIBLE

EXAMINE

SITUATION



VICTIM LOCATED REMOTELY

Moving on ropes is necessary in order to reach the victim and perform an objective examination. Reaching the victim can take a certain amount of time.

RESCUER AND VICTIM ARE LOCATED ON THE SAME WORKSITE

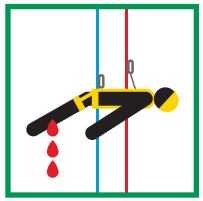
- Rescue actions do not require long or complex transitions on ropes
- Rescuer is close to the victim (same area or worksite)

APPROACHING AND EXAMINING THE VICTIM

- This will allow you to gather information on the victim's condition
- Determine whether the emergency is life-threatening or not
- Define life saving actions if you detected a life threatening emergency
- Gather useful information to help specialised rescue units organise the intervention

EXAMINE

DETECT A LIFE-THREATENING EMERGENCY



ABUNDANT BLEEDING

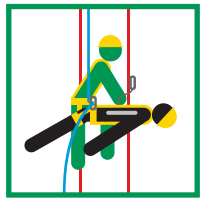
Life-threatening emergency which requires immediate wound compression

COMPLETE AIRWAY OBSTRUCTION

Life-threatening emergency which requires immediate clearing of the airway

UNCONSCIOUSNESS

- Life-threatening emergency which requires breath monitoring
- No response to simple instructions, no muscle tone



UNCONSCIOUSNESS + RESPIRATORY ARREST
(CARDIOPLUMONARY ARREST – CA)

Life-threatening emergency which requires cardiopulmonary resuscitation + automated external defibrillator (AED) if within reach

UNCONSCIOUSNESS + PRESENCE OF BREATHING

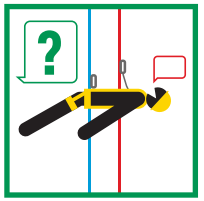
- Life-threatening emergency which requires placing the person in sternal recovery position before reaching stable ground contact. In simple situations, you should only place the person in sternal recovery position if rope-to-rope transfer is necessary.
- Place the person in recovery position as soon as you reach an adequate stable ground contact.

EXAMINE

DETECT A NON LIFE-THREATENING EMERGENCY

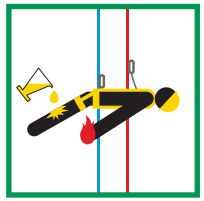
CONSCIOUSNESS AND RESPONSIVENESS

- The victim answers to your questions
- The victim reports the cause of the incident



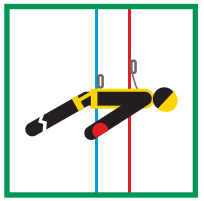
SIGNS OF MALAISE

- The victim is responsive and answers to your questions, but there are unusual or abnormal symptoms
- Different types of situations of varying severity (i.e. mild heart attack)
- Medical advice is required in most cases



BURN

- Severe or slight chemical, thermal, electrical or internal (caused by ingestion or inhalation) burn
- Remove the cause before assisting the victim



MOVEMENT-RESTRAINING PAIN
AND/OR WOUND
WITH NO ABUNDANT BLEED

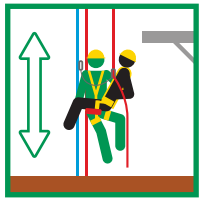
- Back, head, neck, lower/upper limbs injuries
- Severe or slight wound. The degree of severity depends on mechanism, appearance and location

SETTING DOWN DIRECTLY ON THE GROUND

The victim can be assisted on their own descender and taken down directly to a stable ground surface that can easily be reached by specialised rescue units

PLACING THE VICTIM IN STERNAL RECOVERY POSITION

- Suspend the victim on the sternal attachment point
- Maintain head in a neutral position (alignment of the head, neck and trunk)
- Arms must be kept flat on the abdomen
- If possible, wedge the seat under the victim's upper thighs



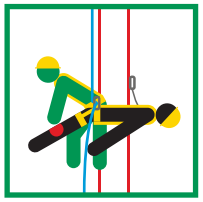
DESCENDING OR PULLING THE VICTIM UP WHILE IN STERNAL RECOVERY POSITION

- Transfer the victim on a stable contact surface
- The ground surface must be easily reachable by specialised rescue units
- The ground surface must be accessible to specialised rescue units with Personal Protective Equipment (PPE) preventing falls from height

PLACING THE VICTIM IN RECOVERY POSITION

- Place the victim on the side
- Monitor the victim until assistance by specialised rescue units

RESCUE



MANUAL COMPRESSION

- Life-threatening emergency that requires wound compression
- Apply haemostatic compression dressing

CLEARING THE AIRWAY

This is a life-threatening emergency, as the dorsal attachment point hinders back slaps (making the victim lean forward to receive back slaps is more difficult). Abdominal compression seems to be the most appropriate technique here

MANAGING A WOUND, AN INJURY, OR A SEVERED LIMB

- The victim should be placed in an adapted position, depending on where the wound is located (thorax, abdomen, eye)
- Immobilize head or injured limb
- Clean and protect minor wounds
- Apply covering on the severed limb

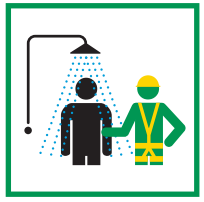
CARDIAC MASSAGE ON THE GROUND + ARTIFICIAL RESPIRATION + DEFIBRILLATION

- Switch between chest compression and mouth-to-mouth (cardiopulmonary resuscitation – CPR)
- Keep on performing CPR until specialised rescue units take over
- If possible, use a defibrillator as soon as you can

RESCUE

RESTING IN AN ADAPTED POSITION DEPENDING ON INJURY

- The victim should be placed in a comfortable position while waiting for rescue units
- In case of breathing discomfort, place the victim in a half sitting position
- Lay the victim down in case of circulatory defects



COOLING OR RINSING A BURN

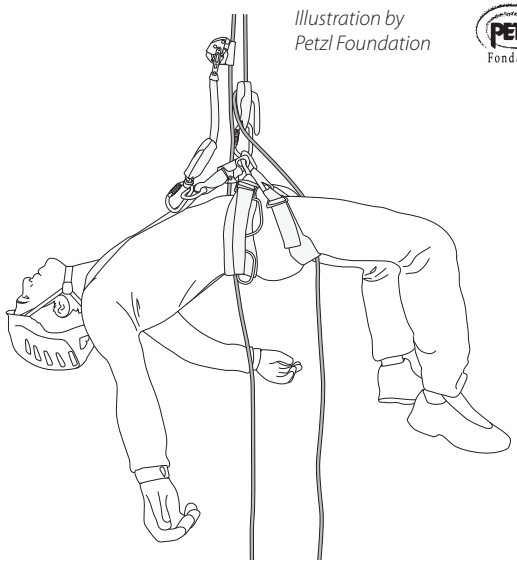
- Extinguish or cool thermal burns
- Rinse chemical burns

Ventral suspension position

Ventral suspension with no thorax support—the person hangs horizontally with legs dangling—is the most likely to worsen the condition of a fully suspended victim. The situation can deteriorate very quickly if the person is unconscious and limp due to absence of muscle tone, with outspread arms and shoulders externally rotated, in a similar way as a crucified person.

Once in a horizontal position, everything happens quickly and disruptive factors of vascular, then cardiovascular fonction, come one after another with growing severity. Therefore, if the victim is in a vertical position and conscious despite being exhausted, preventing him or her from tipping over in a horizontal position seems to be imperative. Tell the victim to get into high sternal recovery position and to stand on a contact surface. If this is not possible, the victim can use etriers (footloops) or a sling to stand on.

Illustration by Petzl Foundation



» *Victim in a horizontal crucified position, on the ventral attachment point='Victim with no muscle tone, awaiting rescue. Descender is connected to the ventral attachment point'*

Sternal Recovery Position (SRP = PSS)

This waiting position intended for victims on ropes has been developed by a study conducted in 2013 by the DPMC technical commission along with IFREMMONT doctors.

The victim is suspended on the descender which is connected to the sternal point of the harness. It is preferable to keep the seat under the bottom, mid-thigh, rather than under the knees. One advantage of this method is that it makes it possible to fold arms on the chest. It also enables to place an Aluform type of splint or any improvised support device around the helmet, in order to prevent neck hyperextension.

According to medical staff and the subjective point of view of conscious trial participants, casualty comfort has improved significantly using this method. In other positions, immobility remains an aggravating factor and an unconscious victim must be descended as quickly as possible after being placed in sternal recovery position.

The sternal recovery position prevents the victim's condition from worsening quickly due to being suspended in the harness, and enables smooth evacuation. In practice, sternal recovery position should be the first choice in order to maintain comfort for the victim, whatever their initial condition. Doing without it is possible in case of accidents occurring close to the ground, where descending directly and quickly is feasible, or when the victim in the harness has got sufficient muscle tone to go through the evacuation.

WHAT

Advantages of sternal recovery position:

- Reduces muscular effort for rope workers, who are generally suspended from the ventral attachment point;
- Enables to maintain a semi-sitting position;
- Enhances blood circulation and respiratory ventilation.

WHEN

Sternal recovery position should be preferred in the following cases:

- The suspended victim is unconscious;
- The victim is conscious but pain management is necessary (i.e. injuries);
- The victim cannot be evacuated directly (rope-to-rope transfer, complex rescues, etc.);
- Forced or extended waiting time due to the victim's condition and/or access complexity.

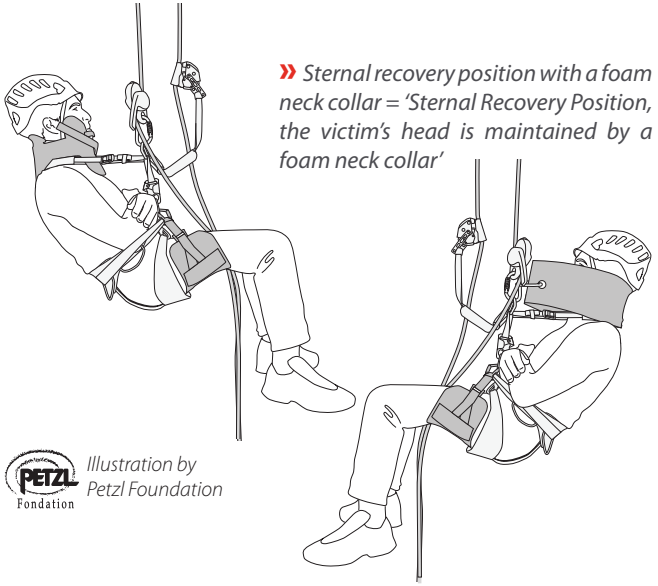


Illustration by Petzl Foundation

» *Sternal recovery position with a foam neck collar = 'Sternal Recovery Position, the victim's head is maintained by a foam neck collar'*

» *Sternal recovery position with a headband = 'Sternal recovery position, the victim's head is maintained by a makeshift object such as a rope protector, a scarf, etc.'*

HOW

Sternal recovery position requires:

- Attachment via the harness sternal point;
- Head, neck and trunk alignment must be maintained with a foam neck collar or any similar device;
- Upper limbs must be maintained on the abdomen;
- Seat must be placed in the crease between buttocks and thighs (2/3 thighs, 1/3 buttocks).

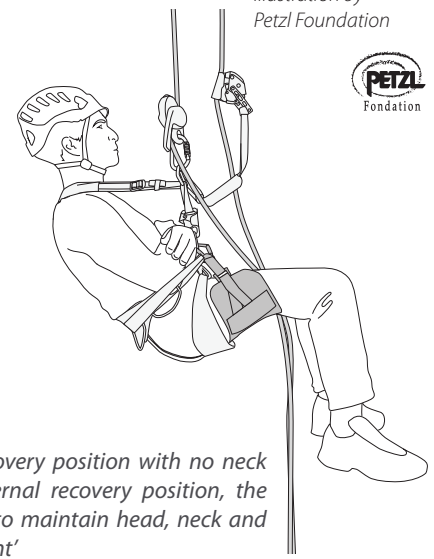


Illustration by Petzl Foundation

» *Sternal recovery position with no neck support = 'Sternal recovery position, the victim is able to maintain head, neck and trunk alignment'*

WHY

SRP enables to:

- Maintain head above heart;
- Prevent head hyperextension in case of unconsciousness;
- Improve breathing via semi-sitting position;
- Remove muscle pain on the rib cage;
- Improve venous return in the lower limbs.

HANDLING A VICTIM ON THE GROUND AFTER SUSPENSION

The right position to maintain after being suspended on ropes has been a controversial subject for a long time, as people are still mixing up suspension trauma and rhabdomyolysis, which is a consequence of 'Crush Syndrome'—medical condition characterized by muscle fibre damages after a crushing/compression injury. Indeed, temporary vascularisation failure in any part of the organism causes a sudden release of toxins. This is due to a SUBSTANTIAL and extended crushing force, which is not comparable to the symptoms of suspension trauma.

A quick and optimal revascularisation remains crucial after being suspended for a long time. To do this, the only solution is to place the victim in a horizontal position, lying on the side or on the back (the victim must be conscious). Gravity will then facilitate an even blood flow distribution in the body.

THE GENERAL ACTION PLAN IS OUTLINED AS FOLLOWS:

- The victim is unconscious and breathing = Recovery position and monitoring (remember to remove all harness elements from the side on which the victim is lying);
- The victim is conscious and shows rib cage injuries or breathing discomfort (malaise) = Semi-sitting position;
- The victim is conscious and shows abdominal injuries = Legs slightly bent in order to relax abdominal muscles;
- Victime The victim is conscious and shows injuries = Immobilise the injured limb/disinfect wounds;
- The victim is conscious and shows a severed limb = Immobilise, protect from infections and/or apply a tourniquet in case of haemorrhage (write down the starting time and do not remove the tourniquet).

HANDLING A VICTIM ON THE GROUND AFTER SUSPENSION



CONCLUSION

Assisting an ill or injured team mate on ropes implies considering every possible scenario which may occur at height, whatever the circumstances or severity of the rope technician's condition. Therefore, rope rescuers will have to combine the skills gained during their First Aid training (SST) and the rope technician CQP rescue techniques, while integrating the environmental characteristics of the site they are working on.

As rescuing an injured colleague is likely to trigger strong emotions, self-control and skills gained through appropriate training are crucial to ensure safety during the intervention, while integrating the interaction of specialised rescue units.

Therefore, it is necessary for rope technicians—all of whom are SST-certified—to gain insight into rope rescue specificities through proper training, and by maintaining knowledge and skills throughout their career.

The preliminary risk assessment and implementation of adapted preventive measures remain the best way to avoid rescue situations. However, even though professional rope technicians must master the preventive measures stated in the work site document, they also must be prepared to face the unexpected and update their skills on a regular basis to be able to rescue a rope technician in difficulty.

SST: SAUVETEUR SECOURISTE DU TRAVAIL = FIRST AID TECHNICIANS

INRS: HEALTH AND SAFETY PREVENTION REFERENCE BODY IN FRANCE

SSC: SECOURS SPECIFIQUE CORDISTE = **SRR** - SPECIALISED ROPE RESCUE

PSS: Position Sternale de Sécurité = **SRP** Sternal Recovery Position

IFREMMONT: FRENCH INSTITUTE OF TRAINING AND RESEARCH IN MOUNTAIN MEDICINE

CA : CARDIAC ARREST

TFA: ACTION TO BE TAKEN

EASY ACCESS:

The rescuer can reach the victim location directly (with no technical difficulties) from the top or from the bottom, using installed ropes or the available rescue devices stated in the Rescue procedure.

Easy access – Direct evacuation:

The assisted victim can be descended directly to a stable contact surface in order to receive first aid and/or wait for specialised rescue units.

COMPLEX ACESS:

The victim cannot be reached directly. Restrictive access to the victim's location for rescuers:

» Rescuers must go through a technically complex or long rope course. Ropes might need re-installing;

» Evacuation facilities that comply with the planned Rescue procedure must be set up;

» The site must be secured prior to intervention

Complex access – Indirect evacuation:

The assisted victim needs to be conveyed to different spots before being placed on a safe and stable contact surface where they can receive First Aid or to wait for specialised rescue units.

Various pieces of equipment and devices might be necessary to convey the victim and/or to perform emergency removal.

SERIOUSLY INJURED PERSON:

The victim must be assisted immediately on site or within the shortest possible time, depending on condition and available facilities.

One of the vital functions is seriously damaged, i.e. haemorrhage/loss of consciousness/unconsciousness/CA, etc.

In general terms, the victim is facing immediate and short term vital distress which requires prompt first aid treatment before any other action is taken.

Therefore, the examination or assessment must be conducted by a rescuer as soon as safety is ensured in the intervention area. A medical team such as paramedics (SAMU) must be present in the intervention area.

SLIGHTLY INJURED PERSON:

The victim is stable and can be transported, no vital function is damaged.

The victim can either be evacuated towards a general health care structure such as a doctor's surgery or emergency services, or be kept waiting to be assisted by firefighters, paramedics or any other qualified rescuing team.

SUSPENSION TRAUMA:

Given the current knowledge on the suspension trauma, often referred to-incorrectly-as harness hang syndrome, we can define it as a circulatory shock which occurs when the body is held upright without any movement.

NOTES

NOTES

SPECIALISED ROPE RESCUE (SRR = SSC) HANDBOOK

FRENCH ROPE TECHNICIAN CERTRIFICATIONS / ROPE RESCUE GUIDELINES

This the second practical guide published by DPMC. It is made available free of charge by industry professionals with the aim of working toward harmonised technical standards and mastering safety in our work. It is addressed to all players in the rope access industry, but also to risk prevention staff, project managers and contracting authorities.

Rope access work has always been present in the construction industry, but the actual profession of Rope Access Technician truly emerged in the 70's, with the rise of modern rope techniques inspired from mountaineering or speleology. In France, the scope of rope access intervention soon spread itself to all building, public works, industrial maintenance, cleaning, and event planning sectors. Throughout its history, our activity became a fully-fledged profession and found its own identity. In 2002, French social partners founded the organisation DPMC 'Développement et Promotion des Métiers sur Cordes' (Development and Promotion of the Rope access works) to promote the profession. Using this extensive experience gained in various sectors, DPMC optimised reliable techniques, which can be adapted to all working situations. These techniques are taught by certified training centres and the Certificates of Professional Qualification (CQP), as well as the Certificate for Technical Rope Agent (CATC) allow DPMC to attest the skills acquired by rope technicians. These certifications were introduced by French industrial professionals. They certify technical skills and determine someone's ability to work in our specific field. Today, DPMC wants to prove that its working practices are reliable and contribute to safety reinforcement while at height, provided that trained staff makes use of the outlined techniques within the limits set by the preliminary enterprise risk assessment. Additionally, techniques and rules gained from our European counterparts during transnational exchanges within the European Commitee for Rope Access (ECRA) enriched DPMC's technical commission. This publication consolidates DPMC's credibility on working practices from rope technicians. Other practical guides resulting from work carried on by the technical commission and including guidelines on equipment issues will soon be published.

DEVELOPPEMENT ET PROMOTION DES METIERS SUR CORDES
ZAC Saint Martin – 240 Rue François Gernelle
84120 PERTUIS – France
+33 (0)4 90 79 74 84 - contact@dpmc.eu
www.dpmc.eu / www.cqpcordiste.fr