INCIDENT RESPONSE & FIRELINE SAFETY POCKET GUIDE

Western Cape Government

DISASTER MANAGEMENT

FIRE RESCUE SERVICES

SIZE UP REMINDERS

As you respond and when you first arrive at the scene of an emergency, you should do a full size-up of the situation. Only then are you ready to develop your plan of action.

- **FIRE HISTORY** - WHAT HAVE FIRES DONE BEFORE?
- **STRUCTURES THREATENED** - DENSITY / ROOFING / CLEARANCE / LPG TANKS?
- **WEATHER CONDITIONS (ALWAYS ASK FOR AN UPDATE)** - TEMPERATURE / RELATIVE HUMIDITY / CURRENT (AND FORECASTED) WIND SPEED & DIRECTION?
- **FUELS** - HEAVY / LIGHT / LOADING / ARRANGEMENT?
- **TOPOGRAPHY** - KLOOFS / SLOPE /ASPECT?
- **FIRE BEHAVIOUR** - SPOTTING / CROWNING / RATE OF SPREAD (R.O.S.) / FIRE HISTORY IN AREA?
- **ACCESS (INGRESS) / EGRESS** - NARROW ROADS / DEAD ENDS / BRIDGES / 4X4 ACCESSIBLE ONLY?
- **WATER SOURCES** - HYDRANTS / DAMS / RIVERS / POOLS?
- **HAZARDS** - HAZMAT / EXPLOSIVES /HIGH-VOLTAGE LINES / FUEL STORAGE TANKS / PUBLIC?

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Prepared by

Provincial Veld Fire Work Group

The Western Cape Provincial Veld Fire Work Group has approved the contents of this publication for the guidance of its member organisations and is not responsible for the interpretation or use of this information by anyone else.

The intent of this guide is to provide a quick reference aid and training reference for operational personnel from Firefighter through Division Supervisor and Incident Commanders for wildland fire incidents. It also has a secondary application for all-hazard incident response.

It is not the intention of this guide to replace Standard Operational Procedures or local protocol, but rather provide guidance for Fire Fighters and first responders. It should be seen as a risk management tool for wildland firefighting aimed at furthering the provisions of act 85 of 1993, Occupational Health and Safety act. Firefighter safety, and the safety of the public, is a core value and are intrinsic in all areas of wildfire management. All fire management plans and activities must reflect this commitment. The commitment to and accountability for safety is a joint responsibility of all firefighters, managers, and contract crew.

Organisations may choose to adopt this guide as a Standard Operating Guideline if so decided.

INTRODUCTION

The following organisations have been involved in varying degrees to contributing towards and approving the content that has been compiled into this Incident Response & Fireline Safety Pocket Guide.

ACRONYMS

After Action Review	AAR
Agency Representative	AREP
Air Operations Branch Director	AOBD
Air Support Group	ASG
Air Traffic Control	ATC
Bag Valve Mask	BVM
Cardiopulmonary Resuscitation	CPR
Communications Unit Leader	COML
Crew Boss	CB
Crew Leader	CL
Division Supervisor	DIVS
Flight Duty Period	FDP
Finance Section Chief	FSC
Group Supervisor	DIVG
Hazardous Material	HAZMAT
Helicopter Personal Assistant	HPA
Helicopter Safety Leader	HSL
Incident Action Plan	IAP
Incident Commander	IC
Incident Command Post	ICP
Incident Command System	ICS
Incident Management Team	IMT
Integrated Fire Management	IFM
Joint Information Centre	JIC
Joint Operations Centre	JOC
Liaison Officer	LO
Logistics Section Chief	LSC
Medical Unit Leader	MEDL

ACRONYMS

Operations Section Chief	OSC
Personal Protective Equipment	PPE
Planning Section Chief	PSC
Preventative Maintenance Daily Inspection	PMDI
Public Information Officer	PIO
Rate of Spread	ROS
Resource Unit Leader	RESL
Safety Officer	SO
Single Resource Unit Leader	SRL
Situation Report	SITREP
South Africa	SA
Temporary Flight Restriction Zone	TFR
Unexploded Ordinance	UXO
Unified Command	UC

TERMINOLOGY

Back Burn (Wildfire term):

- A fire set along the inner edge of a fireline to consume the fuel in the path of a wildfire and/or change the direction of force of the fire's convection column. Normally carried out ahead of the approaching head of the fire.

Bar Scabbard (Chainsaw term):

- A sheath or cover used to protect the bar and chain of a chainsaw and prevent injury while transporting.

Box Valley (Wildfire term):

- A valley that is closed off by steep sides on all, or three, of the sides. Fire will accelerate when burning through a valley the same way water speeds up when in a narrow stream.

Burn Out (Wildfire term):

- Setting a fire inside a control line to widen it or consume fuel between the edge of the fire and the control line. Normally used on the flanks or at the base of the fire.

Control Line (Wildfire term):

- All built or natural fire barriers and treated fire edge used to control a fire.

Firing Operations (Wildfire term):

- Tactics that use fire to combat fire, such as a Back Burn or a Burn Out.

Kloof (Afrikaans term):

› A steep sided valley.

Scratch Line (Wildfire term):

› An unfinished preliminary fire control line hastily established or built as an emergency measure to check the spread of fire.

Scree (Geological term):

› A collection of broken rock fragments at the base of cliffs, crags or valley shoulders.

Slash (Forestry term):

› Coarse and fine woody debris that has accumulated on the floor of a forest. This will increase fire behaviour and can be a hazard to move through.

Sloot (Afrikaans term):

› A deep gully eroded by rainfall or a ditch for irrigation or drainage.

Snags (Forestry term):

› A standing, dead or dying tree, or dead or dying branches in trees that can become dislodged and fall.

CONTENTS

GENERAL INFORMATION

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OPERATIONAL LEADERSHIP

The most essential part of successful leadership in wildfire firefighting is competent and confident leadership. Leadership means providing Purpose, Direction and Motivation for wildland firefighters working to accomplish difficult tasks and objectives in dangerous and stressful situations.

An effective operational leader will always:
- TAKE CHARGE of assigned resources.
- MOTIVATE firefighters with a "can do safely" attitude.
- DEMONSTRATE INITIATIVE by taking action, while always EVALUATING the risk, when in the absence of orders.
- COMMUNICATE by giving specific and clear instructions and asking for feedback.
- SUPERVISE the scene of action.

Always remember LEADERS INTENT when giving instructions:
- TASK - What is to be done, what are the objectives?
- PURPOSE - Why is it being done?
- END STATE - What should it look like or what should be achieved?

COMMAND PRESENCE is transmitted by your ability to communicate effectively and developing subordinates decision making framework to support your own. Do not equate command presence with shouting orders. Contributing factors are:
- START EARLY.
- ESTABLISH ACCEPTABLE OPERATIONAL LIMITS.
- EXPLAIN YOUR THINKING.
- GET FEEDBACK OFTEN.
- RECOGNISE INDIVIDUAL DIFFERENCES.

COMMUNICATION RESPONSIBILITIES

ALL personnel during an incident have five communication responsibilities.

- BRIEF others as needed.
- DEBRIEF your actions.
- COMMUNICATE HAZARDS to others.
- ACKNOWLEDGE that messages are understood.
- ASK if you do not know or understand.

Compose and send messages in accordance with the principles of the acronym C.R.A.C.C.

C - CURRENT
R - RELEVANT
A - ACCURATE
C - CONCISE
C - CLEAR

Remember to keep messages short and to the point, do not block airwaves with needless chatter. Make sure all messages are understood. Use PHONETICS when required in order to ensure names and place names are clearly understood.

Use English when communicating so that all involved can understand communications and obtain a clear picture of what is occurring during the incident.

PHONETIC ALPHABET

It is important to be able to use the phonetic alphabet correctly. Use of this should be practiced often.

A - Alpha
B - Bravo
C - Charlie
D - Delta
E - Echo
F - Foxtrot
G - Golf
H - Hotel
I - India
J - Juliet
K - Kilo
L - Lima
M - Mike
N - November
O - Oscar
P - Papa
Q - Quebec
R - Romeo
S - Sierra
T - Tango
U - Uniform
V - Victor
W - Whiskey
X - X-Ray
Y - Yankee
Z - Zulu

EXPECTED CONDUCT

DUTY

Be proficient in your job, both technically and as a leader.
- Take charge when in charge.
- Adhere to professional standard operating procedures.
- Develop a plan to accomplish given tasks and objectives.

Make sound and timely decisions.
- Maintain situational awareness.
- Anticipate needed actions.
- Develop contingencies and consider consequences.
- Improvise while still adhering to Leaders Intent in a rapidly changing environment.

Ensure tasks are understood, supervised and accomplished.
- Issue clear instructions.
- Observe and assess actions in progress.
- Do not micro-manage.
- Use positive feedback and encourage when appropriate.

Develop your subordinates to ensure future growth.
- Clearly state expectations.
- Delegate tasks that you are not required to do personally.
- Consider individual skill levels when assigning tasks.

EXPECTED CONDUCT

RESPECT

Know who is working with you and look-out for their safety.
- Ensure the safety of those working with you above all other objectives.
- Take care of the needs of those working with you.
- Resolve conflicts between individuals.

Keep all working with you informed
- Provide accurate and timely briefings.
- Explain the reason (intent) for tasks and assignments.
- Make yourself available to answer questions at appropriate times.

Build individuals and teams
- Conduct frequent debriefings to identify lessons learned.
- Recognise and reward individual and team accomplishments.
- Apply disciplinary measures equally.

Employ all working with you in accordance with their capabilities.
- Observe human behaviour as well as fire behaviour.
- Provide early warning to all working with you of tasks they will be responsible for.
- Consider individual and team experience, fatigue and physical limitations when assigning or accepting assignments.

EXPECTED CONDUCT

INTEGRITY

Know yourself and seek improvement.

- Know the strengths and weaknesses in your character and skill level.
- DO NOT allow pride or ego to influence decisions.
- Ask questions of peers and superiors.
- Actively listen to feedback from those working with you.

Seek responsibility and accept responsibility for your actions.

- Accept full responsibility for poor team performance.
- Credit those working with you for good performance.
- Keep your supervisors informed of your actions.
- DO NOT let pride or ego allow you to ignore criticisms.

Set an example.

- Share the hazards and hardships with those working with you.
- DO NOT show discouragement when facing setbacks.
- Choose the difficult right over the easy wrong.

SAFETY ON THE FIRELINE

Safety is of the utmost importance.

- Constantly review and apply the '10 Standard Orders' and 'Watch-Out Situations' to all tasks and objectives.
- Be particularly cautious with:
  - Unburned heavy fuel between you and the fire.
  - Fireline downhill towards the fire head.
  - Unburned area where terrain is difficult and slow.
  - Area and local factors influencing fire behaviour unfamiliar to firefighters.
  - Entering unknown terrain under cover of darkness.
  - Frontal assault, even with fire tankers.
  - Frequent spotting.
  - Rolling material on slopes.
  - Changes in wind speed and direction.
  - Burning snags allowed to continue burning.
  - Partially burned area as it can possibly burn again.
- Remember to disengage from the fire when you no longer feel alert or safe.

BARRIERS TO SITUATIONAL AWARENESS

- Limited experience with local factors.
  - Differing organisational structures.
  - Unfamiliar with the area, weather, terrain.

- Distractions.
  - Radio traffic.
  - Conflict.
  - Previous errors.
  - Incident within an incident.

- Fatigue.
  - Carbon Monoxide.
  - Dehydration.
  - Heat Stress.
  - Poor fitness levels can mean that fatigue is reached quicker than those with higher fitness levels.
  - A lack of sleep or being awake for 24 hours affects decision making capabilities the same way as 10% blood alcohol content.

- Reactions to stress.
  - Communication deteriorates or grows tense.
  - Habitual or repetitive behaviour rather than objective decision making.
  - Target fixation or locking into a course of action, whether it makes sense or not.
  - Tunnel vision by being absorbed in small tasks and ignoring the bigger picture.
  - Escalation of commitment, where increased risk is accepted as completion of task gets nearer.

- Hazardous Attitudes.
  - Invulnerability (that can't happen to us).
  - Anti-authority (Disregard of the team effort).
  - Impulsiveness (Making rash decisions).
  - Egotism (Trying to impress or prove something).
  - Complacency (Thinking things are just routine).
  - Resignation (Feeling nothing will make a difference).
  - Team Pressure (Feeling afraid to speak up or disagree).

Remember: Regardless of the strategy or tactics adopted, situational awareness can save your life.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The desired minimum standards for protective clothing and equipment for any person working on the fireline is as follows.

Helmet	High resistance to impact, resistant to high temperature, Polycarbonate shell. Chin strap compulsory.
Goggles	Polycarbonate, with melting resistance up to 350° C. Face hugging, non-vented (sealable) design. Must not interfere with Helmet use.
Flash Hood	Made of fire resistant material, such as 100% cotton or Nomex, double layer, knitted fabric with insert collar, minimum 185 g/m².
Flight/Jump Suit	One or two piece suit which must be long sleeved 100% cotton, minimum of 290 g/m².
Shirt	Long sleeved 100% cotton, minimum of 290 g/m².
Trousers	100% cotton, minimum of 290 g/m².
T-Shirt	100% cotton, minimum of 170 g/m².
Boots	Full grain leather upper, heat resistant sole to 300°C, ankle 200mm from base to heel with mid-sole protection. Kevlar inner sole recommended but optional.

RISK MANAGEMENT PROCESSES

Raise your Situational Awareness

Gather the following information.

- Who is in Command?
- Objective(s).
- Communication methods.
- Previous and current fire behaviour.
- Current and predicted weather forecast.
- Local factors.
- Scout and Size Up.

Hazard Assessment

Assess potential fire behaviour and incident hazards.

- Look Up, Look Down, Look Around.
- Identify tactical hazards.
- What Watch Outs are there?
- What other safety hazards exist?
- Consider the severity versus the probability.

Hazard Control or Mitigation

Consider the following with regards to mitigating hazards.

- 10 Standard Orders (Pg 25).
- L. A. C. E. S. (Pg 27).
- Have you an Anchor Point?
- Apply Downhill Checklist (Pg 35) if appropriate.

What other controls are necessary?

Decision Point

- Are controls in place for identified hazards?
  - NO - Reassess situation
  - YES - Next question.
- Are the tactics selected based on expected fire behaviour?
  - NO - Reassess situation
  - YES - Next question.
- Have instructions been given and understood?
  - NO - Reassess situation
  - YES - Initiate action.

Evaluate what is occurring

Consider the human factors that can affect actions.

- Low experience level.
- Distraction.
- Fatigue or stress.
- Hazardous attitudes.

Consider the situation as it unfolds.

- Is anything changing?
- What is changing?
- Are the tactics working?
- Is the strategy correct?
- What could be done differently and smarter?
- Is there a hazard or threat developing?
- Is there a risk to life or property developing?

10 STANDARD FIRE ORDERS

The 10 Standard Fire Orders are the rules of engagement on the fireline. They ALL need to be taken into account ALL the time. They can be split into sections that deal with Fire Behaviour, Fireline Safety and Operational Control.

FIRE BEHAVIOUR

1. Recognise current fire weather conditions and obtain forecasts.
2. Obtain current information and regular updates on fire status.
3. Initiate all actions based on current and predicted fire behaviour.

FIRELINE SAFETY

4. Determine escape routes and safety zones.
5. Establish lookouts in potentially hazardous or dangerous situations.
6. Stay alert, keep calm, think clearly and act decisively.

OPERATIONAL CONTROL

7. Remain in communication with your crew, your supervisor and all adjoining resources at all times.
8. Ensure that instructions are given, are clear and are understood.
9. Remain in control at all times.

Once ALL of these have been considered then one should...

10. FIGHT FIRE AGGRESSIVELY HAVING PROVIDED FOR SAFETY FIRST.

18 WATCH OUT SITUATIONS

1. Safety zones and escape routes not identified.
2. Terrain and fuels make escape routes difficult.
3. Unfamiliar with weather and local factors affecting fire behaviour.
4. Frequent spot fires occurring over the fireline.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. Fire not scouted or sized up.
8. Constructing or working on fireline without a safe anchor point.
9. Working a fireline downhill with fire below.
10. Attempting a frontal assault on the fire.
11. Cannot see the main fire and not in contact with anyone who can.
12. Unburned fuel between yourself and the fireline.
13. Weather getting hotter and drier.
14. Wind increases and/or changes direction, also dust and/or fire whirls occurring.
15. No communication link with crew members, supervisors or other resources.
16. Working in an environment not seen in daylight.
17. On a hillside where rolling material can ignite unburned fuel below.
18. Sleeping near or on the fireline.

L.A.C.E.S

As you begin to develop your operational plan, be sure that you have people and systems in place to deal with the unexpected. Keep LACES in mind as it is your quick check to safety on the fireline.

LOOKOUTS - Place experienced and knowledgeable people at strategic sites where they can see the fire and where you will be working. Make sure they understand Trigger Points. *These lookouts are your eyes and ears.*

AWARENESS - Know what is happening around you. Look up, look down, and look around!

COMMUNICATIONS - Can you communicate with your lookouts, crew, supervisor, etc.? Provide updates when any situation changes.

ESCAPE ROUTES - Do you have TWO escape routes? Does your team know where they are located? Consider that the team will move at the speed of the slowest person. Are the routes clearly marked or indicated?

SAFETY ZONES - Have you identified a safety zone(s) for your use? Does your team know of it? Do they know when to move into it for safe refuge? Are you taking advantage of natural barriers to heat? Is it large enough considering the fuels around? Remember the distance from you to all fuels must be 4 x predicted flame length.

COMMON DENOMINATORS OF TRAGEDY FIRES

There are four major common denominators of fire behaviour that have occurred on fires where there have been fatal or near-fatal incidents. These incidents often occur:

- On relatively small fires, or quiet areas of larger fires.
- In relatively light fuels, such as grass and light bush or veld.
- When there are unexpected shifts in wind direction or wind speeds.
- When fire responds to topographic conditions and runs uphill.

Beware of topography and wind aligning during a fire, this should be considered as a trigger point to re-evaluate tactics.

Common Tactical Hazards
Position related:

- Working a fireline downhill.
- Working on mid-slope firelines.
- When there is unburned fuel between you and the fire, i.e. indirect or parallel attack.
- Attempting a frontal assault on the fireline.
- Trooped by aircraft to the top of a fire.
- Relying on Escape Routes that are uphill or difficult to travel.

Situation related:

- Poor communications.
- Resources are fatigued or inadequate.
- Assignment or Escape Routes depend on aircraft support.
- Night-time operations.
- Wildland Urban Interface (WUI) operations.

When tactics put firefighters in these Positions or Situations, a higher level of risk is involved. Consider additional hazard mitigation.

PROCEDURE TO PROPERLY REFUSE RISK

Every individual has the right and obligation to report safety problems and contribute ideas regarding their safety.

When an individual feels an assignment is unsafe they also have the obligation to identify, as much as possible, safe alternatives for completing that assignment. A "Turn Down or No Go" is a situation where an individual has determined they cannot undertake an assignment as given and they are unable to negotiate an alternative solution. The turning down of an assignment must be based on an assessment of risks and the ability of the individual or organisation to control those risks.

An individual may turn down an assignment when:

- There is a violation of safe working practices.
- Environmental conditions make the work unsafe.
- The individual lacks the necessary qualifications or experience.
- Defective equipment is being used.

The procedure one should follow is detailed below:

1. The individual must inform their supervisor directly of their turning down of the assignment and the reasons (in accordance with the 10 Standard Order and the 18 Watch Outs).
2. The supervisor should immediately notify the SO once informed of this decision. If no SO then the OSC or IC should be notified.
3. If the supervisor then asks another resource to perform the assignment they are responsible to inform the new resource that the assignment was turned down and the reasons it was turned down.
4. The turning down of the assignment should be recorded (including date and time) in the individuals ICS 214.

SAFETY ZONES

A Safety Zone is an area where a firefighter/crew/resource can survive without being burned.

When choosing a Safety Zone consider the following.

- What is the type and density of the fuel surrounding the Safety Zone?
- What is the expected flame length you will be facing?
- How far away is the Safety Zone and how easily can you get to it?
- Can you take advantage of heat barriers such as large rocks or solid structures?
- Will you need to burn out vegetation or create a fuel reduced zone?
- How much time will you need to do this?
- How quickly will the burned out Safety Zone be safe to enter?

Separation distance between the firefighter and the flames should be NO LESS than 4 x the flame length on every side.

E.G.: 3 metre high flame front will require a minimum distance of 12 metres from the flames in all directions for all people and resources.

The calculation is based **on radiant heat only** and does not account for convective heat from wind and/or terrain influences. Safety Zones downwind or upslope of the flames will require much larger separation distances from you to the flames.

FIRE SURVIVAL (ENTRAPMENT)

BASIC PRINCIPLES

- Immediately inform your supervisor or IC of the situation.
- Remain calm and don't panic.
- Take note of the vegetation type around you, this will dictate your choice of safety zone and action to take.
  - › In grass or fine fuels you may be able to burn out a safety zone or a corridor to move through.
  - › In medium to heavy fuels you will need to ensure that you select an area with the least amount of combustible material; try to reduce fuel loads as much as possible.
- Use the principles of the Safety Zone to ensure the area you have chosen is as safe as possible.
- Use every means possible to protect yourself from the radiant heat of the flames.
- Make sure you have water and a first aid kit close at hand in order to deal with any burns.

Fire survival in the open.

- Don't panic.
- Find a safety zone or an area with little fuel loading.
- Burn out an area between yourself and the flame front.
  - › Light as large an area as possible and let it burn away from you.
  - › Extinguish the smaller flames on the windward side.
  - › As the larger flames burn away from you, follow them at a safe distance.
  - › When the burned area is large enough, and cool enough, to keep you safe lie down flat as the main flame front burns past.
- Protect yourself against radiant heat by wearing all your PPE.

- Lie prone in a depression as a last resort.
- Don't run unless you see a clear avenue of escape (generally best to go downhill or towards the flank).
- If you have to drop your tools and pack to move faster, do so.
- Try and keep drinking water and a medical kit with you.
- Regulate your breathing; cover mouth and nose with 100% cotton material.
- Try to avoid breathing in super heated air by staying low to the ground or even digging a shallow hole for your face.

- Take cover:
  - › Away from areas of dense fuel loading.
  - › In a shallow trench, culvert or crevice.
  - › Behind a wall, a large rock or the other side of a rock scree slope from the flames.
  - › In a vehicle (see below).
  - › In running streams or dams (as a last resort only as the flames may take a while to pass and you could drown).
- Stay away from:
  - › Edges of slopes.
  - › Heavy fuels and areas with slash on the ground.
  - › Chimneys, sloots or the tops of kloofs.
  - › Being caught in a box valley.
  - › Saddles on ridge lines.

Fire survival in a vehicle.

- Don't drive a vehicle blindly through heavy smoke.
- Park in a clear or burned area and switch on headlights, hazards and flashing lights.
- Role up windows and shelter yourself from radiant heat beneath the dashboard and with a woollen blanket or similar flame resistant item.

- If the vehicle catches fire, leave it once the main flame front has passed but keep your skin covered as much as possible.
- Remain calm and remember that the fuel tank won't explode and that even in the worst situation, it will be some minutes before the vehicle catches fire.
- In forest/fynbos fire, the flames will last 3-4 minutes or longer and, although your chances for survival are lower, you are safer in a vehicle than in the open.

Escaping through a fireline.

If at all possible try and avoid running through a fireline. Not every fireline can be run through, judge the flame height and depth of the fireline before deciding to attempt it.

- Stay calm and think clearly.
- Look for a break in the fireline and if possible use this to get to the burned area beyond the fireline.
- Should there be no break in the fireline, look for a place where the fire is burning less intensely such as rocky areas or areas of low vegetation.
- Use natural breaks such as roads, rocky ridges, streams etc.
- Review your route.
- Make sure all your PPE is on properly and there are no exposed areas of skin.
- Take three deep breaths and one shallow. Hold your breath
- Watch where you are running.
- There is safety in numbers so stick together and assist one another.
- Burst through the flames, use a fire beater or even a backpack to protect your face.
- Stay on your predetermined route and stop only once you have reached the burned veld.
- Move as fast as necessary but as carefully as possible.

- Should you stumble and fall - do not use your hands to stop your fall but roll and get back on your feet and continue moving.
- Hold your breath when running through the fireline so you do not inhale superheated air. This will kill you.
- You can breathe only once reaching the burned veld.
- Once through the fireline check yourself/each other to ensure that your clothing is not on fire. Check yourself/each other for burns.
- Remember L. A. C. E. S. and the 10 Standard Fire Orders at all times.

What to expect when running through the fireline:

- Expect intense heat.
- Expect choking smoke.
- Expect to be fearful.
- Expect some crew members to panic.
- Expect vision to be difficult.

If a crew member is trapped?

- Inform your supervisor or IC immediately.
- Stay calm and think clearly how best to assist.
- If you cannot assist without endangering yourself or the rest of the crew do not attempt assisting.
- Try and keep communicating with the trapped member to keep them calm and inform them of what is being done to help them.
- Advise them on the basic principles of entrapment procedures and what to do if they are required to run through a fireline.

WORKING DOWNHILL CHECKLIST

Working a fireline downhill is a hazardous task, especially in steep terrain, fast burning fuels or rapidly changing weather.

The following should be considered when attempting this:

- The assignment should be discussed with your supervisor or IC prior to committing to the task. A responsible supervisor is required to oversee actions until the task is completed.
- The decision will be made only after the fireline has been scouted by the supervisor of the crew assigned to the task.
- A supervisor must be in direct contact with a lookout who can see the fire.
- Clear communication between crew and supervisor must be confirmed before assignment begins, and continually checked while task is undertaken.
- Crew must have quick access to Safety Zones should the fire threaten from below.
- Use direct attack whenever possible. If this is not possible, complete the indirect control lines between anchor points before moving forward or using any firing tactics. (Remember that the IC or OSC normally determine the most appropriate tactics and must be consulted if changes are to tactics are required, this is especially important when firing operations are to be proposed).
- Avoid working a fireline through, or adjacent to, a chimney or a sloot.
- The starting point MUST be anchored securely before progressing.
- Ensure a lookout is monitoring the fire behaviour below; if the potential exists for the fire to spread, take early action to secure the edge of the fireline. This may mean widening existing control lines.

SAFETY DURING AERIAL WATER DROPS

A water drop from a Bambi bucket underneath a helicopter can be moving at speeds up to 100km/h and water drops from the Fixed Wing 802 can exceed 200km/h and contain as much as 3000 litres, the impact from these can cause death.

To avoid injury when in the line of an incoming water drop:

- Alert the rest of the crew and other crews in the area of aerial water drops.
- Use a whistle to warn the crew of an approaching bomber.
- When in close proximitity to an operating fire truck the sound of an approaching bomber may be drowned out, ensure you have lookouts watching for bombers.
- If possible move at least 10 metres adjacent to the aerial water drop line chosen by the pilot.
- DO NOT attempt to endure a water drop if on the edge of rocks, cliffs or on steep slopes.
- Lie or crouch down facing towards the incoming aircraft with your helmet strapped on and firmly in place.
- Keep watching the incoming aircraft.
- Ensure you are firmly balanced and tuck your head down only as the water hits.
- Place your handtool beside you but keep it held firmly so that it cannot fly into others when the water hits.
- Be aware that Bambi buckets can hit the ground.
- Be aware of loose objects (branches/young tree tops/rolling rocks) that may be thrown around from the falling load of water.
- Be aware that the ground can become slippery if water wetting agents or retardants are used and care should be taken when working in these areas.
- Be aware that flare ups can happen from the down draft of rotor blades.

VEHICLE AND ROAD SAFETY

Think Safety

- ALL people driving or riding in vehicles must wear safety belts.
- Ensure that you are trained in and fully capable of operating the vehicle you are driving.
- Slow down; slower means safer when responding. A good safety guideline is not exceeding the posted speed limit, especially in poor visibility conditions.
- Always stop at intersections with a negative right of way. Proceed only after coming to a complete stop and when you are sure other vehicles have stopped and given you the right of way.
- At an unguarded railway crossing, or when your view is obscured, lower your window, turn off all radios, fans, wipers and sirens in order to listen for on-coming trains before proceeding.
- Never assume that another vehicle is aware of your presence, despite your lights and sirens.

Incident Parking

- Always park your vehicle facing the route of escape.
- Park vehicles on the same side of the roadway, so you do not block traffic flow.
- Always park your vehicle away from any potentially hazardous areas.
- If parking on a road make sure your vehicle is visible by using its emergency warning lights to warn others of its presence.
- Always use the parking brake and appropriately chock the wheels of parked vehicles, especially on a slope.
- Always use a competent observer when backing your vehicle in situations where visibility is reduced, or when other vehicles are around or on narrow roads.

Scene Management and Roadside Safety

- Anytime traffic flow is affected by the incident, contact the local traffic services for assistance.
- Conduct all operations as far from traffic lanes as possible.
- When assisting in incident traffic control and not involved in fire suppression activities, approved high visibility vests must be worn.
- Exit the vehicle away from the roadway whenever possible.
- Post lookouts to watch for and control traffic in both directions.
- Operate pumps from the non-traffic side or from the cab of the fire apparatus.
- Keep all hose, fire tools, and equipment out of traffic lanes.
- Deploy flagging or road cones. Use the rule of thumb to work out the distance that they should be placed from the incident using the speed limit, i.e. 100kmh = 100 metres. Ensure you place reflective warning signs, reflective traffic cones, road flares or hazard triangles far enough upstream from the incident that approaching drivers can be warned and given enough time to slow down or be channelled around the incident.

Vehicle Accident (Incident Within Incident Procedures)

- Immediately inform your supervisor, OSC or IC.
- Report on Incident Within Incident conditions:
  - What hazards are present (fuel, electrical, traffic, access, etc.)?
  - What emergency services (law enforcement, ambulance, helicopter, tow truck, extrication tools) are required?
  - What injuries have been sustained (number of victims, perform initial triage assessment on severity)?

  - What type of vehicles and how many?
- Establish Traffic Control
  - Place your vehicle or rescue vehicle between oncoming traffic and rescuers. Keep exhaust from pointing at the scene and the victims.
  - Place warning devices (reflective signs, traffic cones, road flares or hazard triangles) far enough upstream from the incident that approaching drivers can be warned.
  - Establish positive communications.
  - Use approved high visibility vests.
- Assess Fire Hazard or Potential
  - Take suppression action as needed if trained, equipped, and authorized.
  - Be aware of fuels running downslope.
- Perform Patient Assessment
  - Provide patient first aid as described on pages 49 - 53.
  - Keep dispatcher advised of changes.
  - Document all actions taken.

Fatality Procedures

- DO NOT move the body unless it is in a location where it could become burned or otherwise destroyed.
- DO NOT report victims name except to the relevant authorities, normally Incident Command. This procedure should be in your IAP as Form ICS 206 and should be part of your operational briefing.
- DO NOT allow unauthorised photographs to be taken.
- Notify the IC, who will:
  - Assign someone to start investigations until relieved by appointed investigation team.
  - If requested, assist authorities with transporting remains, marking location of victim, location of tools and PPE.
  - Retain PPE as evidence.

THUNDERSTORM SAFETY

Approaching thunderstorms may be accompanied by sudden increases in wind speed, reversing of wind direction and erratic fire weather.

Situation Awareness
If you see lightning and hear thunderclaps following in less than 30 seconds take the precautions listed below.

Hazard control.
- Take shelter in a vehicle or building if possible.
- If outdoors, find a low position away from tall trees, wire fences, aerials, electricity lines and other elevated structures.
- If in forest, move to an area of shorter trees.
- If near isolated trees, keep a distance away of at least twice the tree height.
- If in an open environment, crouch low (do not lie on the ground) with your feet together, minimising contact with the ground.
- If you feel your skin tingle or your hair stand on end, immediately crouch low to the ground, making yourself the smallest target possible.
- Do not group together.
- Do not stay on ridge tops, in wide open areas, near ledges or rocky outcrops.
- Do not operate telephones, machinery or electric motors.
- Beware of handling flammable materials in open containers or metal hand tools.

POWER LINE SAFETY

Being close to power lines during a fire is dangerous. Not only is there a danger of downed power lines but the conductive property of smoke can cause power lines to arc. This can pose a serious danger to crew or personnel working close by.

Situational Awareness

- Always treat power lines as live.
- Inform your supervisor, OSC or IC of power line hazards so that all resources are informed.
- Request that the power lines be switched off, and do not work near them until you have a guarantee that they are off.

Downed power line procedures.

- Communicate: Notify all responders of downed power lines and obtain confirmation that the message was understood.
- Identify: Determine the entire extent of the hazard by visually tracking all lines, in each direction, from the downed line.
- Isolate: Flag the area around the downed lines with Warning or Hazard Tape. Post someone to alert others.
- Deny Entry: Delay firefighting actions until hazard identification and flagging is complete, or confine actions to safe areas only.

Downed power line procedures if in a vehicle.

- Inform supervisor or Incident Command of situation.
- Stay in vehicle until the power company arrives.
- If vehicle is on fire, jump out with both feet together.
- DO NOT touch the vehicle.
- Keep feet and arms close to body and move away quickly but safely.

Ground tactics around power lines.

- Normal tactics apply when the fire is more than 30 metres from power lines.
- Remember heavy smoke and flames can cause arcs to the ground.
- DO NOT perform any direct attack closer than 30 metres from power lines.
- Spot fires or low ground fires may be fought with hoses as long as there is no heavy smoke or flame within 30 metres of power lines.
- Never use jet streams or foam, use fog settings only.
- Always maintain a distance of 10 metres or more from transmission towers.
- Use extreme caution if engaged in tactical firing operations near power lines.
- Extinguish wooden power line poles burning at the base to prevent future downed line hazards.

Aerial tactics around power lines. Applicable to Air Operations Branch Director (AOBD) or Aerial supervisor.

- Communicate locations of all power lines to IC, Air Operations Branch Director Aerial supervisor.
- DO NOT perform aerial water drops onto power lines as this will cause arcing to the ground.
- Water drops should be made parallel to power lines.
- Avoid drifting water making contact with the power lines.
- When flying across power lines, cross above the towers.

HAZMAT INCIDENT SAFETY

Always use ERG SABS 0232-3 for specific information if available.

Think Safety

- Assess situation.
- Safe approach; upwind/uphill/upstream.
- Stay clear of vapour, fumes, smoke and spills.
- Identify, isolate, and establish perimeter; deny entry.
- Notify immediate supervisor or IC.
- Notify all other resources.
- Exact location; use GPS.
- Request needed assistance; identify a safe route in and out.

Scene Management

- Goal is to protect life, environment, and property.
- Attempt to identify substance using Emergency Response Guide (use binoculars, placards/labels, container shapes/colours, Material Safety Data Sheets, shipping papers, or license plate).
- Is there a fire, a spill or a leak?
- Assess quantity of material involved.
- What resources are required?
- Identify exposures and hazards surrounding the site.
- What actions should be taken - evacuation, shelter or dam?
- Anticipate weather influences.

Organizational Responsibilities

- Establish command including an IC and Safety Officer.
- Develop action plan for area security and evacuation.
- Advise all on scene and responding resources of changes in situation.
- Keep dispatcher advised of changes.
- Document all actions taken.
- Make special note of any responder exposures.

HazMat Isolation distances
The distances suggested are an approximation and each situation should be dealt with in regards to the specific hazards that are present.
Suggested distances from hazard are:

- Minor event e.g.: 1 drum/bag/etc = 50 metres isolation.
- Major event e.g.: Multiple drum/bag/etc = 200 metres isolation.
- Residential and light commercial = 100 metres isolation.
- Open areas = 300 metres isolation
- B.L.E.V.E (Boiling Liquid Expanding Vapour Explosion) potential = 800 metres isolation.

Stage all arriving resources at least 800 metres UPWIND.
All vehicles should be positioned facing the exit direction.

HAZARDOUS INSTILLATIONS SAFETY

Be aware when responding to fires near refineries, factories or in processing plants that there may be hazards such as toxic gases, flammable gases, pressurized gas installations, electric fencing, razor wire and industrial operations.

HAZMAT SIGNAGE IDENTIFICATION (U.N. CLASSIFICATIONS)

CLASS 1 - Explosives

CLASS 2 - Gases

CLASS 3 - Flammable Liquids

CLASS 4 - Flammable Solids

CLASS 5 - Oxidisers and Organic Peroxides

CLASS 6 - Toxic and Infectious Substances

CLASS 7 - Radioactive Materials

CLASS 8 - Corrosive Materials

CLASS 9 - Miscellaneous Dangerous Goods

UNEXPLODED ORDNANCE (UXO) SAFETY

Unexploded Ordnance (UXO) are most likely to be encountered on or near military or former military sites, though you should keep a lookout on all properties and open areas.

Situation Awareness

- Early detection of potential UXO is the first and most important step in reducing risk posed by UXO.
- There are many types of UXO, such as small arms munitions, mines, mortars, grenades, projectiles, bombs, etc.
- UXO might be found fully intact or in fragments.
- All UXO, whether intact or in fragments, can pose a hazard and should be treated as such.
- Deteriorated UXO presents a particular hazard as it may contain chemical agents that could become exposed.

Hazard Control

- If you come across UXO, stop and DO NOT move closer.
- Immediately report the UXO to your supervisor, OSC or IC.
- Isolate and clearly flag the area with Hazard or Danger tape.
- Close entry to others.
- DO NOT use radios near the UXO.
- DO NOT remove anything that is near to the UXO.
- DO NOT touch, move or disturb the UXO.
- Keep a minimum of 300 metres away from areas on fire that contain suspected UXO.

NOTES

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MEDICAL SITUATION GUIDELINES

Injuries can and do occur on the fireline. Do only what you know and keep records of your actions taken. Use PPE (latex gloves/goggles/pocket mask) if contact with body fluids is possible.

Medical Situation Response Procedures

- Report the injury to your direct supervisor.
- In case of a medical emergency, contact the OSC/IC immediately.
- Allow first aiders to assist the patient while the supervisor supervises the rest of the crew, maintaining lookouts for any danger.
- Identify nature of injury, number injured, patient assessment and the location (preferably using GPS coordinates).
- Avoid using patient names on the radio.
- Liaise with supervisor, OSC or IC on most appropriate transportation options.

Treatment Principles

- Prevent further injury by removing the patient from danger.
- Perform an initial assessment.
  - › Check airways are clear.
  - › Check breathing.
  - › Check circulation.
- Look for the method of injury by checking for punctures, burns, deformities, contusions, abrasions, tenderness, lacerations or swelling.
- Stabilise the patient and decide on transportation options.
- Document observations of patients injury, state and the treatment given.

EMERGENCY PH No.	

SPECIFIC FIRST AID TREATMENT

This is a quick guide for specific first aid situations commonly found on the fireline. For any injury that occurs you must inform your supervisor immediately.

- Bleeding: Direct pressure, elevate and pressure point.
- Shock: Lay patient down, elevate feet, keep warm and replace fluids if conscious.
- Fractures: Splint joints above and below injury and monitor pulse past injury, away from body.
- Bites and Stings (Anaphylaxis): If life threatening, see if the patient has a sting kit (EpiPen or Antihistamine) and transport immediately.
- Burns: Remove heat source, cool with water, wrap in burnshield and replace fluids.
- Diarrhoea: Drink fluids in large quantities.
- Eye Injuries: Wash out foreign material, don't open swollen eyes, leave impaled objects, pad and bandage both eyes.
- Heat Exhaustion: Confusion, dizziness, nausea, pale skin, fatigue, cramps. Rest in cool place, loosen clothing and replace electrolytes.
- Heat Stroke: Skin dry, flushed skin, temperature hot, nausea and vomiting, racing heart rate. Cool and transport immediately. Treat for shock.

BURN INJURY TREATMENT

Burns to head, face and neck are a medical emergency. Any signs of inhalation burns such as blistering, singed hairs, inflammation in mouth/nose indicate a life threatening burn. If dealing with a burn patient provide the following basic first aid:

- Cool burn immediately.
- Maintain airway, breathing, circulation (ABC's).
- Treat for shock by keeping person warm, feet elevated.
- Provide oxygen if available and trained to administer.
- Assess degree of burn and area affected.

Assess the degree or type of burn.

- A Superficial Burn affects the skin's outer layer resulting in redness, mild swelling, tenderness and mild to moderate pain:
- Partial Thickness extends through the entire outer layer and into inner layer of skin, will result in blisters, swelling, weeping fluids and severe pain.
- Full Thickness extends through all skin layers and into underlying fat, muscle and bone, will result in discoloration (charred, white or cherry red), leathery, parchment like, dry appearance and pain is absent.

Determine the area burned on the patient using the Rule of Nine.
Use the percentages below and add them up as appropriate.

- Head 9%
- Front torso 18%
- Back torso 18%
- Left arm 9%
- Right arm 9%
- Left leg 9%
- Right leg 9%
- Perineum 1%

BURN INJURY PROCEDURES

Immediately inform supervisor and/or Incident Command.

- Move patient away from danger.
- Cut away only burned clothing.
- DO NOT cut away clothing stuck to burned skin.
- Apply cool, clear water over burned area.
- Cool burn for 20 mins using cool water.
- Be careful to watch the patient for hypothermia while they are being cooled.
- Cover burned area with burnshield.
- Use the burnshield packaging to cover the applied gel as burns are prone to infection.
- Then apply a dry dressing over the burnshield packaging to hold this in place.

For severe burns or burns covering large area of body:

- Treat as above and wrap in clean, sterile sheet followed by plastic sheet.
- Place inside sleeping bag or cover with insulated blanket.
- Monitor Airway, Breathing, Circulation (ABC's) and keep burn areas moist.
- Avoid hypothermia and overheating.
- Medivac immediately.

CPR (Cardiopulmonary Resuscitation)

The following procedures apply to performing CPR on a patient.

Scene Safety
- Look for any hazards or dangers.

Recognition of Cardiac Arrest
- Check for responsiveness.
- There is no breathing or only gasping.

Activation of Emergency Response System
- Inform supervisor or Incident Command immediately that you suspect cardiac arrest and request emergency services.
- If available obtain an Automatic External Defibrillator (AED).

Begin CPR immediately

Compression to Ventilation Ratios
If you do not have one-way-valves or a Bag Valve Mask (BVM) do only compressions and not compressions with ventilations.
- Use a ratio of 30 compressions to 2 ventilations.
- Do 100-120 compressions per minute.

Hand placement
- Adults: Two hands on the lower half of the breast bone.
- Children: Two hands (one hand for small child) on lower half of breast bone.
- Infant: Two fingers in centre of chest just below nipple line.

Push down one third of chest depth (measured from front to back).
Allow full recoil of the chest after each compression.
Continue CPR until help arrives.

VENOMOUS BITES AND STINGS

Injection of venom by stings and bites from reptiles and insects, while not normally life-threatening, can cause an acute allergic reaction that can be fatal. Any allergic reaction can develop into anaphylactic shock. In all cases immediately inform your supervisor and/or OSC or IC of the bite or sting. Try and identify what made the bite or sting, if possible take a photograph of the reptile or insect. This will help the medical staff know how to treat the casualty.

Snake Bite

- Move the casualty away from (the snake) danger.
- Calm and reassure the casualty, keep them lying down, quiet, and warm.
- Do not give the casualty anything to eat or drink.
- Immobilise the casualty's affected extremity, keeping the area below the level of the heart.
- Remove jewelery or any other potentially constricting items from affected area as swelling can cause difficulty in removing them later.
- Monitor the airway, breathing, and circulation (ABC's).
- Complete rest.
- Call ambulance urgently.
- Obtain a history.
- Treat for shock.
- Apply a firm bandage (pressure immobilisation bandage) starting from just above the fingers or toes, and wind as far up the limb as the armpit or groin to immobilise the limb.
- DO NOT use a tourniquet.
- DO NOT remove the bandage and splint once it has been applied .
- DO NOT try to capture the snake.
- DO NOT apply ice to afflicted area.
- DO NOT try and suck the venom out of the bite.

Spider Bite

A doctor should treat bites from spiders and assess the bitten area over a period to observe for any detrimental effects.

Signs and Symptoms
- Vomiting.
- Abdominal pain.
- Anxiety, fever, sweating, and rash.
- Copious production of saliva and pulmonary fluids
- Mental confusion.
- Intense pain at the site of the bite.
- There may be localised redness, swelling and sweating.
- Nausea, vomiting and abdominal pain, rigid abdomen.
- Rapid pulse and/or rapid, shallow breathing.
- Collapse - coma - death.

If you suspect a Spider Bite
- Move the casualty away from (the spider) danger.
- Calm and reassure the casualty, keep them lying down, quiet, and warm.
- Do not give the casualty anything to eat or drink.
- Immobilise the casualty's affected extremity, keeping the area below the level of the heart.
- Remove jewelery or any other potentially constricting items from affected area as swelling can cause difficulty in removing them later. Monitor the airway, breathing, and circulation (ABC's).
- Obtain history.
- Cold compress to relieve pain.
- Apply cold packs to affected area, do not apply ice.
- Observe casualty for any sign of deterioration.
- Transport the casualty for professional medical treatment as soon as possible.

Bee or Wasp Sting

Bee stings have the potential to cause death. The venom associated with bee stings causes a severe allergic reaction in susceptible people, and can cause respiratory and cardiac arrest.

The Wasp comes in many different shapes, colours and sizes. It can be coloured yellow and black, with stripes similar to those of a bee though the yellow stripes are often brighter in colour than those on a bee. Wasps are generally slim-bodied and can appear non-hairy or shiny. Some forms of wasps are a drab orange colour and some are black, and generally the insect is slightly larger than a bee. Similar to bees, the wasps become aggressive when their nest is disturbed and can sting multiple times.

Signs and Symptoms

- Evidence of bee sting with the barb present.
- Pain and itching at the site.
- Swelling of the stung area.
- In allergic casualties look out for:
  - Onset of wheezing and breathing difficulties.
  - Facial swelling and hives.
  - Rapid pulse.
  - Collapse.

If you suspect a Bee or Wasp Sting

- Remove bee sting by scraping with fingernail or similar.
- Avoid squeezing or touching the barb.
- Cold compress for both bee and wasp stings to reduce swelling and pain
- If there is an onset of allergic reaction:
  - Pressure immobilisation bandage.
  - Call for an ambulance urgently.

Scorpion Sting

Most scorpions are harmless though the sting is painful, with less than 5% of stings resulting in signs or symptoms requiring medical attention. The potentially dangerous species all belong to the Buthidae family. The Buthidae are easily distinguishable from the Scorpionidae by their thick tails and slender pincers, whereas the relatively harmless Scorpionidae have large, powerful pincers and thin tails.

Scorpions are mostly ambush and nocturnal predators so exercise caution (and wear gloves) when lifting or moving rocks and logs on the fireline.

Signs and Symptoms

- Intense and burning pain at the affected site
- Mild inflammation, with sting mark not always visible.
- Signs and symptoms only develop after 30 mins and then with increasing severity.
- Abdominal cramps, pins and needles in hands, feet and head.
- Lack of muscle coordination, involuntary movements, tremors and muscle weakness.
- Increased pulse rate.
- Difficulty in breathing, swallowing and speech.
- Excessive perspiration, nausea, vomiting and diarrhea.

If you suspect a Scorpion Sting

- Cold compress to reduce swelling and pain.
- Monitor cardiac and respiratory functions and treat as required.
- Immobilise and clean wound.
- If there is an onset of allergic reaction:
  - Pressure immobilisation bandage.
  - Call ambulance urgently.

MULTI-CASUALTY TRIAGE SYSTEM

COLOUR CODE	PRIORITY	DESCRIPTION
RED	IMMEDIATE	• Serious, life-threatening injury. • Breathing but unconscious, respirations more than 30 per minute. • Radial pulse absent, capillary refill more than 2 seconds. • OR can't follow simple instructions.
YELLOW	URGENT	• Treatment and transport delayed. • Respirations less than 30 per minute. • Radial pulse present. • AND can follow simple instructions.
GREEN	STABLE	• All walking wounded, treatment can be delayed.
BLUE	DECEASED OR DYING	• Dead or with injuries likely to result in death. • No respirations after repositioning airway.

MISSING PERSONS SEARCH URGENCY RATING

FACTOR		RATING
Age	• Very young • Very old • Other	1 1 2-3
Medical condition	• Known/suspected injured/ill/mental problems • Healthy • Known fatality	1-2 3 3
Number of subjects	• One alone • More than one (unless separated)	1 2-3
Subject's experience	• Inexperienced - does not know the area • Not experienced - knows the area • Experienced - does not know the area • Experienced - knows the area	1 1-2 2 3
Weather	• Past and/or existing hazardous weather • Predicted hazardous weather (< 8 hours away) • Predicted hazardous weather (> 8 hours away) • No hazardous weather predicted	1 1-2 2 3
Equipment	• Inadequate for environment/weather • Questionable for environment/weather • Adequate for environment/weather	1 1-2 3
Terrain/ Hazards	• Known terrain or other hazards • Few or no hazards	1 2-3

Range is between 7 and 21. Highest urgency = 7 Lowest urgency = 21	TOTAL =

RESCUE CARRIES

FIREMAN'S LIFT

Kneel by patient's head, hook your elbows under patient's shoulders.

Lift slowly, using your legs, not back, to lift and support the patient's weight until they are almost in a standing position.

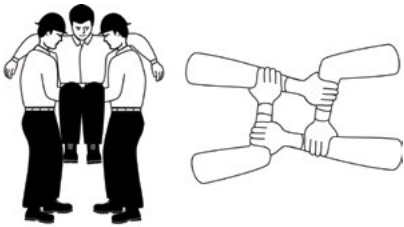
Place right leg between patient's legs to aid support. Grab patient's right hand with your left. If you are left handed use the opposite leg and hand.

Drape patient's right hand over your left shoulder. If left handed reverse this. Squat down and place their upper body over your shoulder so it is balanced.

Wrap your right arm around the back of the patient's right knee by moving it between their legs. Grab their right arm by the wrist and stand up slowly using your legs to straighten and keeping your back straight. If you are left handed you should reverse this and wrap your left arm around the back of their left knee, then grab their left arm by the wrist.

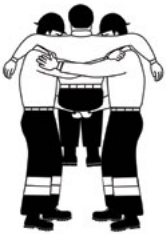
RESCUE CARRIES

FOUR ARM SEAT CARRY



For a conscious patient who is able to assist. Two people cross arms as in the illustration. Lower your bodies allowing patient to be able to sit back on your forearms. Patient should place their arms on your shoulders for support.

TWO ARM SEAT CARRY



For a conscious patient who is able to assist. Two people cross arms as in the illustration, gripping each other shoulders with their other crossed arms lower down forming a seat. Lower your bodies allowing patient to be able to sit back on your forearms. Patient should place their arms on your shoulders for support.

DRAG CARRY

For an unconscious patient. Ease your hands under patient's shoulders and grip clothing on each side, supporting their head between your forearms. Drag patient backwards, but only as far as is required for safety. Be careful not to choke patient when pulling on their clothing.

NOTES

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FIRE WEATHER

The weather is used to detect changes that may impact fire behaviour. At a minimum, the following weather factors should be recorded every hour.

- Temperature.
- Relative Humidity (RH).
- Wind speed and direction.

Unstable Air Conditions

Unstable air will intensify fire behaviour. Indicators are:

- Clouds growing vertically to great heights.
- Upward and downward currents causing gusts.
- Surface winds.
- Good visibility.
- Smoke column rising to great heights.
- Dust devils and/or fire whirls observed.

Smoke column

Reading the smoke column can tell you a lot about the fire behaviour.

- Leaning Smoke Column: A wind driven fire; rapid rate of spread (ROS); short range spotting.
- Sheared Smoke Column: Smoke rises straight up; column is sheared off by strong winds aloft; potential for long range spotting; strong winds could surface.
- Well-Developed Smoke Column: Intense burning conditions; unpredictable fire spread in all directions; lookout for a capped top; strong down burst potential; light rain indicates possible down bursts imminent.
- Changing Smoke Column: Beware when the column begins to change colour or rotate; this means the fire behaviour is becoming more aggressive.

FLAME LENGTH
Recommended suppression actions.

Less than 1m.
- Fires can generally be attacked at the head or flanks by firefighters using hand tools.
- Handline should hold fire.

1 to 2m.
- Fires are too intense for direct attack on the head with hand tools.
- Handline cannot be relied upon to hold the fire.
- Bulldozers, engines, and aerial drops can be effective.

3 to 4m.
- Fires may present serious control problems: torching, crowning, and spotting.
- Control efforts at the head will probably be ineffective.

Over 4m.
- Crowning, spotting and major fire runs are probable.
- Control efforts at the head of the fire are ineffective.

FIRE SUPPRESSION STRATEGY

While there are countless ways to fight wildfires, you want to use those that maximise the safety of firefighters and makes the best use of the resources available.

The suppression tactics implemented during Initial Attack will be based on:

- The location of the fire.
- The fire weather.
- The fuels and fuel loading.
- The topography.
- The resources available.

After assessing the fire, the strategy decided on will include appropriate tactical methods of either Direct or Indirect Attack that may be used on their own or in combination.

When deciding how to suppress a fire take into account.

- Actual or potential life hazard and risk.
- Threatened properties, assets or resources.
- Fuel types, topography, weather and fire behaviour.
- Anchor points.

Tactical methods of suppression are:

- Creating control or scratch lines.
- Smothering with beaters.
- Wet lines using water via vehicle or aircraft.
- Firing operations (Back Burn or Burn Out).

NOTE: Firing Operations are very dangerous tactics and must ONLY be carried out by trained experienced personnel and ONLY with the express permission of the Incident Commander.

Direct Attack

This is when resources work directly on the fireline in an attempt to suppress the flames whether by use of hand line or wet lines. Direct attack works well on flame lengths less than 2 metres.

Advantages

- Minimal area is burned, no additional area is intentionally burned.
- Safest place to work, as the firefighters can move into the already burned area if needs be.
- The uncertainty and danger of firing (back burning or burning out) operations can be avoided.

Disadvantages

- Firefighters can be hampered by heat, smoke and when flames grow larger.
- Control lines can be long and irregular.
- On slopes burning material can easily spread across control lines.
- Resources may not always be able to use natural or existing barriers.
- More mop up and patrolling is usually required.

Indirect Attack and Parallel Attack

This is when resources work at a distance from the fireline. There are similarities between them as both are performed at a distance from the fireline, though a Parallel Attack can be implemented when the resources are still fairly close to the fireline. Parallel Attack is normally used when closing off unburned areas between fingers of the fire, by use of creating control lines and burning out from them. Indirect Attack is used when resources are a good distance away from the fire (sometimes many kilometres) and often involves creating control lines in combination with a burn out or back burn operation. Both of these forms of attack carry a higher degree of risk as it may be possible to lose sight of the main fire.

Advantages
- Control lines can be created using favourable topography.
- Natural or existing barriers can be used.
- Firefighters may not have to work in smoke and heat.
- Control lines can be constructed in lighter fuels to your advantage.
- There may be less danger of burning material spreading across control lines.

Disadvantages
- More area will be burned.
- It will take time to construct the control lines and burn from them .
- Danger of not being able to see the main fire and have unburned fuels between resources and the fire.
- Firing operations are difficult and dangerous.
- Firing operations may leave islands of unburned fuel.

MINIMUM IMPACT SUPPRESSION TACTICS

The intent of minimum impact suppression tactics are to suppress a wildfire, with the least impact to the environment. Firefighter safety, fire conditions, and good judgment dictate the actions taken. By minimizing impacts of fire management actions, unnecessary resource damage is prevented and cost savings can be realized. These actions include, but are not limited to:

Select procedures, tools and equipment that least impact the environment, such as:

- Using a water resources to create a wet line.
- Using natural or human made barriers to limit fire spread.
- Burning out sections of fireline.
- Limiting width and depth of fireline necessary to limit fire spread.
- Locate pumps and fuel sources to minimize impacts to streams.
- Minimize cutting of trees and snags to those that pose safety or line construction concerns.
- Move or roll downed material out of fireline construction area.
- In areas of low spotting potential, allow large diameter logs to burn out.
- Limb only fuels adjacent to the fireline with potential to spread outside the line or produce spotting issues.
- Scrape around tree bases near fireline likely to cause fire spread or act as ladder fuel.
- Minimize bucking of logs to check/extinguish hot spots; preferably roll logs to extinguish and return logs to original position.
- Use extensive cold-trailing techniques (see Mop Up) and/or hot-spot detection devices along perimeter.

- Increased use of fireline patrols/monitoring.
- Flush-cut stumps after securing fireline.
- Minimise the use of bulldozers and digging equipment.
- Avoid the construction of up slope fuel breaks on steep gradients, rather angle the fuel break across slope.
- Avoid driving in other vehicles tracks through the fynbos.

On Long-Term Incidents

Consult with Resource Advisor to locate suitable campsites.

- Scout thoroughly to avoid hazards (bee hives, ants nests, widow-makers, etc.).
- Plan for appropriate methods of:
  - Helispot locations.
  - Supply deliveries.
  - Garbage disposal.
  - Disposal of human waste.
- Minimize ground and vegetation disturbance when establishing sleeping areas.
- Use locally approved storage methods to animal proof food and rubbish.
- When abandoning camp, rehabilitate impacts created by fire personnel.

WILDLAND URBAN INTERFACE (WUI) SUPPRESSION

Firefighting in the Wildland Urban Interface is inherently dangerous as it involves an increase in the hazards that you can encounter as well as a more complex situation. Wildland Urban Interface firefighting can involve structure protection. This is ideally done ahead of time by mitigating existing risks.

DO NOT commit to staying and protecting a structure unless a Safety Zone has been identified during size-up and triage. Rather move to nearest Safety Zone, let the fire front pass and return as soon as conditions allow. Remember, your life is more important than any structure/

Situational Awareness

You are required to have heightened situational awareness when working in an interface situation as there will be many distractions such as other resources, moving vehicles, hazards around properties and the emotional members of the public. You must continually evaluate your Escape Routes and Safety Zones. Ask yourself what could garages and sheds, or structures, possibly contain?

Hazards

- Home owners and the public.
- Pets and animals.
- Narrow roads, cul-de-sac's and one way streets.
- Moving vehicles.
- Combustible materials outside homes and structures.
- Gas and fuel tanks and other hazardous materials.
- Power lines.

STRUCTURE SIZE-UP

Site considerations

- Is there an adequate Safety Zone based on expected fire behaviour?
- Are there good positions for lookouts?
- What is the communication capability like?
  - Phones - are there dead areas?
  - Radios - is there local interference or poor reception?
- Is there a good defendable space based on surrounding vegetation or the presence of fuel breaks?
- Are there adequate access (ingress) and egress routes for vehicles and emergency personnel?
- Are there working hydrants or alternative water sources?
- Is the property/structure situated mid-slope or on the edge of slopes, kloofs or chimneys?

Tactical challenges

- Are there narrow roads, unknown bridge limits and/or septic tank locations.
- Do you have limited water resources?
- Are there ember traps in the structures? These can be:
  - Eaves, gables, air vents or gaps between gutter and roof.
  - Wooden decks or combustible material on porches..
  - Chipped paint or old wood.
  - Broken glass in windows or gaps in windows.
  - Ornamental plants and combustible debris (such as wood piles) next to structure.
- Are there fuel or gas tanks and hazardous materials?
- Are the structures wooden or thatch roofed?
- Is the property owner staying on site?
- Properties and structures not easily defendable?

STRUCTURE PROTECTION TACTICS

Firefighters with a Safety Zone can safely defend structures with some challenges.

Immediate measures you can take in order to mitigate risk.

- Remove combustible materials immediately next to the structure.
  - › wood piles.
  - › clothes on lines.
  - › deck chairs and tables.
  - › plants under windows.
- Close windows and doors, including garages and sheds, but leave unlocked in case quick access is required.
- Take curtains down.
- Clean area around fuel tanks of debris and shut off the tank.
- Charge all garden hoses.
- Apply foams (if you have them) to areas and materials that are easily flammable.

Equipment and water use.

- Mark the entrance to indicate a staffed location if it is not immediately obvious.
- Communicate which properties are defendable.
- Use the properties water for all wetting down purposes.
- Charge fire hose lines prior to fire arriving.
- Try to avoid long hose lays.
- Keep at least 400 litres of water in reserve.
- Identify a back up water source.
- Identify power lines and high structure hazards for aerial resources.
- DO NOT rely on water for firefighter safety.
- Try to limit water use during the passing of the fire, rather keep it in reserve to deal with structures alight once the main fire has passed.

Patrol following the fire front.

- Move to closest safety zone and let the fire front pass.
- Most structures do not burn until after the fire front has passed.
- Return as soon as conditions allow safe access to structures.
- Secondary ignition is usually due to residual spot fires or creeping ground fire.
- Check all ember traps, for example:
  - Gutters.
  - Eaves, fascia boards and barge boards.
  - Wooden walls.
  - Flat or gentle sloped roofs.
  - Ventilation gaps or devices in walls or roofs.
  - Gaps in doors and windows.
  - Chipped paint.
  - Debris or vegetation build up.
  - Wood piles.
- Take suppression actions within your capability.
- Call for assistance if needed.

Hazard control

- Avoid hazards by designating "No Work Zones" (flag or sign post these and add to map).
- Modify suppression tactics or fireline location to avoid high risk areas.
- Post lookouts to help secure high risk areas.
- Use road/traffic controls in high risk areas.
- Fireproof potential hazard trees to prevent ignition.
- Keep clear of bucket drops near trees/snags.
- Reposition firefighters to secure areas in response to any strong winds forecast.
- Provide timely feedback to others regarding any tree or overhead hazard.

STRUCTURE TRIAGE

Remember it is the responsibility of the land, or home owner to have already put mitigation measures in place.

Defendable: Stand Alone
- Determining factor: Safety Zone present.
- Size-up: Structure has very few tactical challenges.
- Required Tactics:
  - Resources not directly assigned as little likelihood of ignition during initial fire front phase.
  - Patrol following the passage of the fire front to ensure structure has retained integrity.

Defendable: Prep and Hold
- Determining factor: Safety Zone present.
- Size-up: Structure has very few to some tactical challenges.
- Required Tactics:
  - Resources needed on site to implement structure protection tactics during passage of fire front.
  - If there is time perform rapid mitigation measures.
  - Set trigger point for safe retreat if required.

Non-Defendable: Rescue Drive-By
- Determining factor: NO Safety Zone present.
- Size-up: Structure has significant tactical challenges.
- Required Tactics:
  - Resources not able to commit to staying due to scale of mitigation measures required.
  - If there is time perform what rapid mitigation measures are possible.
  - Ensure that no people are in the structure.
  - Set trigger point for safe retreat.

MOPPING UP GUIDELINES

After primary fire suppression line work is completed and a fire is declared "contained," many things remain to be done to make the fireline safe and put the fire out. This work is called mop up.

Mopping up does not mean sitting around looking at the fireline, it means actively checking and ensuring the fireline is dead out.

Guarding of fires.

- An adequate force of firefighters is required to guard a fireline for a minimum period of 48 hours, once a fire has been brought under control to prevent and control flare ups.
- Crews are to be equipped with radios and/or cell phones with which they can contact the OSC or IC.
- The OSC or IC is responsible for ensuring that mop up has been successfully concluded before withdrawing resources and declaring the fire as extinguished. The IC may delegate this authority to a suitably qualified person.

Command Responsibilities

- Determine areas that require additional mop up and establish what the priorities are.
- During extended fires determine what areas will require priority mop up and that there are sufficient resources to address this.
- Develop a mop up and patrol plan.
- Ensure that mop up resource requirements are included in the IAP for the next operational period. This includes specialised personnel and equipment e.g. chainsaws and chainsaw operators.

- During rotation of crews, ensure that sufficient crew and equipment remain to monitor for possible re-ignition of fire.
- Ensure a scheduled crew rotation during mop up and that crews carry out follow-up checks to ensure the mopped up perimeter is dead out.
- Determine the distance inside the control line that is required to be mopped up.
- Ensure that the objectives are clearly communicated and give a clear 'End State' during the supervisor briefing.

The Objectives of Mop Up

- Extinguish all embers or sparks to prevent them from crossing the fireline into unburned fuels.
- Ensure that ground fires and creeping surface fires cannot cross the fireline by digging up root systems and cutting line down to mineral soil.
- Cut trench lines on slopes to avoid rolling material crossing into unburned fuels.
- Strengthen the control lines so that crews can leave the fire safely and be ready for the next fire as soon as possible.

The Principles of Mop Up

- Begin as soon as possible.
- Start with the most dangerous area first.
- Take forecasted wind into consideration.
- Allow fuel to burn out if it will do so quickly and safely.
- On small fires mop up the entire area if practical.
- On large fires mop up a minimum of 30 metres in from the edge, or to such a distance that nothing will blow, roll or spot across the control line.
- Work from the control line toward the fire centre.
- Arrange burning fuels so they cannot roll over the control line.
- Dig out roots that cross the control line.

- Use water in conjunction with hand tools where possible.
- Use water sparingly, but enough to do the job.
- Adding Class A foam to water will greatly increase effectiveness in mop up of deep-burning fuels.
- Scrape or stir up coals while applying water to ensure good penetration and maximum water application.
- Scrape and dig up areas of deep burning fuels such as peat, thick mulch, old leaves or pine needles.
- Dig up root collars of stumps, check under logs and ensure white ash pits are all cold.
- Any logs within 20 meters of the fireline that are impractical to move must be descaled.
- A certain amount of mop up work must be done at the same time as initial suppression operations.
- Only move forward if an area is 100% safe, if you cannot leave an area to move forward then additional resources should be called in.

Strengthening a Scratch Line (Cold Trailing)

Cold Trailing is a method of controlling a partly dead fireline by carefully inspecting and feeling with the hands for heat to detect hot spots, digging out hot coals and trenching where necessary.

- Cold Trail the Scratch Line, widening it into a secure Control Line for a minimum of at least 3 m into the burned area.
- The Control Line should be free of any flammable material.
- Begin with widening the Scratch Lines at the high risk areas first and then proceed to the remaining areas until you have a Control Line of the entire perimeter of the fire.
- The width of a Control Line must be based on the risk of fire spread and should be determined by the OSC or IC.
- All unburned fuels lying within or in close proximity to the Control Line must be moved deep into the burned area.

- Animal dung must be moved deep into the burned area as it can burn for a long period of time and throw embers.
- Break down or isolate termite mounds (particularly in Renosterveld) by placing a Control Line around it.
- Strengthen a Scratch Line into a Trench Line line in steep terrain where rolling material is likely. Ensure the line is wide and deep enough to catch the rolling materials.
- Allow fuel to burn up if it will do so promptly and safely. Monitor this process until area is safe.
- Only burn out unburned islands with permission from the OSC or IC.
- Constantly check for spot fires outside the fireline, especially downwind from the fireline.

Guideline for widths of Control and Scratch Lines

NOTE: This is a guide only and supervisors and crews must use their knowledge and discretion to decide when a wider line is required.

Fuel Type	Width of Control Line	Width of Scratch Line
Grass	3 metres	1 metre
Fynbos 2-6 yrs	3 metres	1 metre
Fynbos 6+ yrs	10 metres	2 metres
Plantation or dense Invasive Alien	20 metres	3 metres
Slash and Stacks	20 metres	3 metres

RESOURCE TYPING

Under the Incident Command System resources which can be Vehicles, Aircraft, Crews, Equipment, IMT's and even Incidents are organised by the Kind (i.e. what is the resource) and the Type (i.e. what are it's capabilities) of resource. This standardisation allows for the easy communication and understanding of exactly what resources are required for a particular incident or situation regardless of the area you are in or type of Incident you are working on.

RESOURCE	ENGINES (TANKER/WATER TENDER)			
CAPABILITIES	TYPE I	TYPE 2	TYPE 3	TYPE 4
DRIVE TRAIN	2x4, 4x4, 6x6	2x4, 4x4, 6x6	N/A	N/A
CAPACITY	≥10,000 L	≥5,000 L		
PRESSURE	4000 L/min	4000 L/min		
COMMENTS	All Types to have connection compatibility of being able to have direct pump connection to Engine or Veld Fire Pumpers.			

RESOURCE	ENGINES (WILDFIRE VEHICLES)			
CAPABILITIES	TYPE I	TYPE 2	TYPE 6	TYPE 7
DRIVE TRAIN	ALL TERRAIN	ALL TERRAIN	ALL TERRAIN	N/A
CAPACITY	4000 L	2500 L	500-600 L	
PRESSURE	3800 L/min	1800 L/min	200 L/min LowPressure 50 L/min HighPressure	

RESOURCE TYPING CONT.

RESOURCE	AIRCRAFT			
CAPABILITIES	TYPE I	TYPE 2	TYPE 3	TYPE 4
CAPACITY	10,000 L	6,000 L	3,000 L	1,500 L
EXAMPLES	C-130 P-3 DC-7	DC-7 SP2H P2U	S-2 CL-215T CL-415	Thrush Air Tanker Dromader

RESOURCE	HELICOPTERS			
CAPABILITIES	TYPE I	TYPE 2	TYPE 3	TYPE 4
ALLOWED PAYLOAD @59. @ SEA LEVEL	2250 Kg	1125 Kg	540 Kg	N/A
PASSENGERS	≥ 15	9 - 14	4 - 8	
MAXIMUM GROSS TAKE OFF/LAND WEIGHT	≥ 5600 Kg	2700 - 5599 Kg	≤ 2699 Kg	
CAPACITY	2500 L	1100 L	750 L	
EXAMPLES	Bell 214B	Bell 204 Bell 205 Bell 212	Bell 206 Squirrel B2 Jet Ranger	

RESOURCE	HELITANKER
CAPABILITIES	AIR TANKER BOARD CERTIFIED
CAPACITY	≥ 4000 L

GROUND CREW RESOURCE TYPING

CREW SIZE: 17-25
STICK SIZE: 10-16

Crew Type	Type 1	Type 2A with IA capability	Type 2B	Type 3
Fireline Capability	Initial Attack/ can be broken into sticks, fireline construction, complex firing operations	Initial Attack/ can be broken into sticks, fireline construction, firing to include burnout	Initial Attack/ fireline construction, firing to include burnout	Fireline construction, fireline improvement, mop up and rehab
Leadership	1 Type 1 Crew Leader, 2 Type 2 Crew Leader	1 Type 1 Crew Leader, 2 Type 2 Crew Leader	1 Type 1 Crew Leader, 1 Type 2 Crew Leader	1 Type 2 Crew Leader
Bilingual Requirement	Yes	Yes	Yes	Yes
Experience	80% 1 season	60% 1 season	40% 1 season	NA
Full Time Organised Crew	Yes. Work and train as a unit 40 hrs p/week	Yes	No (Seasonal)	No (Seasonal)
Comms.	Programmable radios x 5	Programmable radios x 4	Programmable radios x 2	Programmable radios x 2
Chainsaw Operators	Qualified x 3	Qualified x 3	Qualified x 2	None
Training	80 hours annual training	Basic Firefighter training and/or annual firefighter safety refresher		
Fitness	Arduous	Arduous	Arduous	Moderate

CREW SIZE: 17-25 STICK SIZE: 10-16				
Crew Type	Type 1	Type 2A with IA capability	Type 2B	Type 3
Logistics	Team self sufficient for min of 12 hrs			No supplies or logistics
Dispatch Availability	1 hour	2 hours		Agency dependent
Transport	Own transport		Transport may be needed	
Personal Gear	Capability to camp in base camp for extended periods			No personal gear
First Aid training	Level 3 x 1 per 10 people			Level 1 x 1 per 10 people
Rations	Must arrive with 24 hrs rations as per own agency standard			None
Certification	Must be annually certified by the local host unit Agency Administrator or designee prior to being made available for assignment	Not Applicable		

FIRE CAUSE DETERMINATION CHECKLIST

As a emergency responder it is important to try and preserve the integrity of the area where the origin of the fire may be. Minimising the disturbance to this area will give the fire investigator a better chance of determining the cause of the fire, especially in the case of a malicious ignition.

Fire Investigators should remember the following:

- Take essential investigation materials to the incident.
- Make notes of all your actions and findings:
  - Time fire was reported.
  - Name and identification of reporting party.
  - En route observations (people and vehicles).
  - Name and identification of persons or vehicles in vicinity of fire origin.
  - Record the weather.
- Locate and protect fire origin.
- Search fire origin area for physical evidence of fire cause.
- Protect evidence. Do not remove unless necessary to prevent destruction.
- Demarcate the suspected origin site if possible.
- Make sketches of origin area with measurements of relative locations of all evidence.
- Take photographs from all angles including long and medium distance, and close-up views of fire origin area and evidence.
- Turn over all notes, information, and physical evidence to the responsible law enforcement representative, or make your notes part of the official fire record.

NOTES

AIRCRAFT CAPABILITIES AND LIMITATIONS

Aerial support includes the use of aircraft and other aerial resources to combat wildfires. The types of aircraft used include fixed-wing and rotor wing (helicopters).

The following must be taken into account when using aircraft in an operational capacity or devising aerial strategies during incidents.

- Weather. Aircraft must always maintain a visible reference with the ground.
- Smoke. Aircraft may fly through smoke that the pilot can see through.
- Landing Zones.
  - Helicopters generally need a surface area of 6m diameter with a slope less than 5 ° to land on.
  - Maneuvering area of 30m diameter to be free of obstacles.
  - 7 ° approach and take-off path distance of 100m required 20 ° wide.
- Night time. No flying is allowed after sunset for fire fighting operations. Dispatch is mandated to recall aircraft 15 mins before nightfall and they must land before last light.
- Availability. Aircraft availability depends on wind speed and direction, snags, pilot FDP, PMDI's.
- Loading. Air temperature and altitude affects the size of the loads that can be carried in an aircraft.
- Water Sources. The effectiveness of bombers and helicopters is dependent generally on proximity of water loading sources.
- Terrain. Helicopters are generally better suited to operations in mountainous terrain, and less susceptible to turbulence. However, landing on a mountain with a full load of firefighters can be marginal in terms of the power available and tail rotor control.

AERIAL RECONNAISSANCE

Plan the flight.

Preflight briefing.

- Discuss flight plan, check smoke, sun and all flight hazards.
- Check air-to-ground comms.
- Test on-board comms.
- Select best seating for viewing the terrain and fireline.
- Take map, pens, digital camera etc.

In-flight reminders.

- Identify landmarks, landing zones, access routes, water sources, possible control lines, drop zones, flying hazards.
- Observe current fire behaviour bearing in mind the potential future fire behaviour based on the weather, vegetation and topography. *Remember the way topography and vegetation appears from the air can be very different in reality on the ground.*
- Trace perimeter and determine rate of spread (ROS) of fire on map.

TROOPING

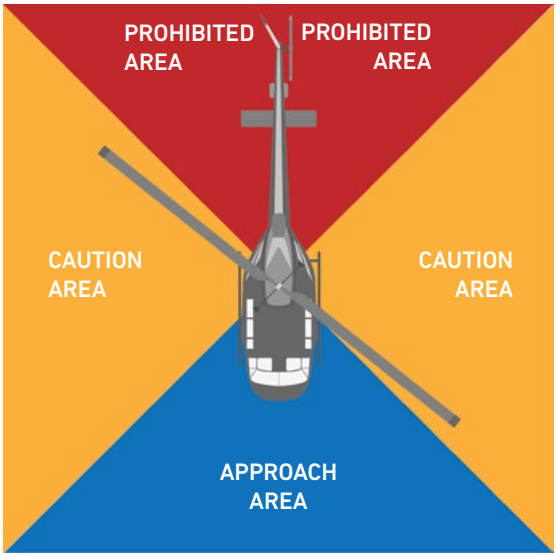
Passengers must be informed of the following.

- Cell phones and radios off.
- DO NOT smoke within 60m of the helicopter.
- Stay well clear of the tail rotor.
  - › *Move no further than the rear edge of the rear door.*
- Crouch when under the blades.
- Backpacks to be carried on the chest, or clipped on backs.
- Long objects to be kept horizontal at waist level.
- DO NOT carry equipment on your shoulders.
- Follow the instructions of the Pilot, Helicopter Safety Leader (HSL), Helicopter Personal Assistant (HPA) or crew supervisor.
- Approach and depart the aircraft strictly according to the instructions of the Pilot, HSL, HPA or crew supervisor.
- Wear full PPE when approaching aircraft - gloves and goggles may be removed after boarding.
- Keep landing zones clear of loose objects and unattended equipment.
- Do not touch windows, switches or controls of the aircraft.
- Wear your seatbelt unless told to disembark.
- When embarking/disembarking
  - › Helmets strapped on or strapped to bag.
  - › Loose clothing secured in bag.
  - › Sleeping bag in bag or backpack.
  - › Think before chasing loose objects blown by downdraft.
- No camera flashes.
- Groups to be pre-assigned to carry tools.
- Tools to be secured in bags or fastened bundles where possible, and fitted with guards.
- Know location of first aid kit, survival kit, fire extinguisher, Emergency Locator Transmitter (ELT), Fuel and Battery shutoff switch location and how to operate.

HELICOPTER SAFE APPROACH AREAS

Danger zones near a helicopter are anywhere aft (behind) of the passenger door, marked as red Prohibited Areas below.

- Access to these areas should be restricted to pilots and HSL/HPA only.
- NEVER approach a helicopter from the upslope side.
- Beware of rotor blade dip when a helicopter is starting up or gearing down the engine.



Disembarkation (Walking)

Applicable to level landing zones.

- The HSL/HPA or crew supervisor will need to ensure that all passenger's PPE is in place for disembarkation.
- The passengers will remain seated with seat belts on until the pilot, HSL/HPA or crew supervisor gives orders to disembark.
- The HSL/HPA or crew supervisor (in the absence of an HSL/HPA) will remove any straps securing tools.
- On receiving the signal from the pilot, the HSL/HPA or crew supervisor will open the door and disembark, taking up the station at the rear edge of the door.
- The HSL/HPA or crew supervisor will signal the passengers to disembark, at which point they will remove their seat belts and disembark in the direction indicated by the HSL/HPA or crew supervisor.
- The HSL/HPA or crew supervisor will signal the passengers to move in the correct and safe direction.
- The passengers will move (staying low) to a position well beyond the rotor diameter, preferably more than double the rotor diameter and sit or kneel.
- The HSL/HPA or crew supervisor will instruct the last two passengers to remove the tools from the aircraft and join the other passengers; in cases where tools are loaded loose, they will be removed by the HSL/HPA or crew supervisor and issued to crew on disembarkation.
- The HSL/HPA will ensure the Bambi Bucket is deployed at this point (if instructed by the pilot) and may request assistance from the crew supervisor.
- The HSL/HPA or crew supervisor will close the door as required.

- Once the HSL/HPA is satisfied that the cabin is prepared for flight, and the ground situation is safe, the HSL/HPA will communicate this to the pilot, who will then take off at their discretion. This task will be performed by the crew supervisor in the absence of an HSL/HPA.
- The passengers will remain sitting or kneeling until the helicopter has departed.
- The crew supervisor may, at the discretion of the Pilot or HSL/HPA guide the helicopter for take-off.

Disembarkation (Drop down)

To ensure the safe disembarking from a helicopter on uneven landing zones.

- The HSL/HPA or crew supervisor will ensure all passengers have PPE in place before disembarking.
- Passengers are to remain seated with seat belts fastened until the HSL/HPA or crew supervisor gives the instruction to disembark.
- The HSL/HPA or crew supervisor will remove any straps fastening or securing tools.
- Upon receiving the signal from the pilot, the HSL or crew supervisor will open the door, disembark and take up position at the rear of the door.
- The HSL/HPA or crew supervisor will signal passengers to disembark and move to the correct positions one by one.
- The HSL/HPA or crew supervisor will instruct passengers to take position by the side of the aircraft after disembarking from the aircraft (on low ground).
- The passengers will remain in position on low ground making sure their gear and bags are secured on them.

- The HSL/HPA or crew supervisor will instruct the last two passengers to remove the tools from the aircraft and join the other passengers; in cases where tools are loaded loose, they will be removed by the HSL/HPA or crew supervisor and issued to crew on disembarkation. The tools are to be kept low and secure until after the helicopter has departed.
- The HSL/HPA will ensure the Bambi Bucket is deployed at this point (if instructed by the pilot) and may request assistance from the crew supervisor. It is not advisable to deploy Bambi Bucket in such situations, due to terrain and proximity of passengers.
- The HSL/HPA or crew supervisor will close the door as required
- Once the HSL/HPA is satisfied that the cabin is prepared for flight, and the ground situation is safe, the HSL/HPA will communicate this to the pilot, who will then take off at their discretion. This task will be performed by the crew supervisor in the absence of an HSL/HPA.
- The passengers who have disembarked will remain sitting or kneeling until the helicopter has departed and they are given instruction to move by their crew supervisor to get up and walk.

HELICOPTER CARRIAGE OF FIRELINE HAND TOOLS

The following is permitted to be carried in a standard tool set.

- Rakehoe/Hoe/Pulaski/Shovel
  - Maximum one per team member plus two spares.
- Beater
  - Maximum one per team member plus two spares.
- Knapsack
  - Maximum one per two team members.
- Slasher/Non-motorised cutting tool
  - Maximum one per team member plus two spares.
- Chainsaw
  - One saw per Saw Team (Team = 1 x Sawyer, 1 x Swamper).
- Ropes
  - Maximum 30 kg.
- Ropes will be carried in closed bags only.
- Drip torches will be carried if they are empty and new, or have been rinsed with vegetable oil, i.e.: there must be no smell of fuel.
- A maximum of 5L of carried fuel per aircraft is allowed.
- Drip torch fuel, chainsaw fuel and oil must be carried in a suitable container that seals securely, and is designed specifically for carrying fuel.
- Chainsaws will only be carried when properly secured, with chain guards on, and empty of fuel and oil.
- Chainsaws must have a bar scabbard in place over the bar.

LANDING ZONE (LZ) SELECTION

The following should be considered when selecting Landing Zones during fire suppression in mountainous terrain.

NOTE
- What appears to be an easy walk to the fireline from the aerial observation can be a very different reality on the ground.
- Try to imagine what slope steepness and vegetation density will actually be like on ground level.
- There must be escape routes and safe zones along the route to the LZ when moving between LZ and the fireline.
- The crew supervisor must know where they are and where they are in relation to the fireline prior to disembarking.

Landing Zone (LZ) location in relation to fire.
- Never in the path or potential path of the fire.
- Never downwind or upslope of a fireline even if it appears quiet or there is only mild fire behaviour.
- Consider the round trip flight time, i.e.: keep the LZ as close as possible to the drop zone, in order to keep the operation efficient and limit personnel exposure to noise, turbulence, etc.

Distance and route to fire.
- Plan the route the crew has to take from the LZ to the fire.
- Distance of the hike to the fireline should never be more than 15 minutes walk.
- Consider the difficulty of the terrain the firefighter has to walk over to get to the fireline.
- Deep kloofs or steep cliffs between crew and objectives will seriously hinder their time in reaching them.
- Dense vegetation even a few years old is very difficult to walk through and can be a safety risk.

Landing Zone Terrain.

- Should not be overly rocky terrain.
- Slopes should not exceed 5 º.
- Vegetation should not be higher than the average knee height.
- The direction of landing should be over the lowest obstacles and generally always into the wind.
  - › If there is only one satisfactory approach direction, or it is desired to make maximum use of the available landing area, most helicopters can land with a crosswind of 11 to 16 Km/h or a tailwind of 0 to 9 Km/h. The same considerations apply to departures from landing sites.
- Landing Zones should be free of tall trees, power lines, and similar obstructions on the approach/departure ends of the landing site.
  - › Obstacles within the landing site, such as rocks, stumps, holes, and thick grass or brush (>45 cm), must be removed.
  - › For planning in advance, an obstacle ratio of 10 to 1 should be used; *i.e. a Landing Zone requires 30 metres of horizontal clearance from a 3 metre tree if helicopters must approach or depart directly over the tree.*
- Surfaces must be firm enough to prevent helicopters from bogging down, creating excessive dust, or blowing snow. Rotor wash on dirt, sand, or snow-covered surfaces may obscure the ground and should be avoided.
- Remove from a Landing Zone any loose debris that could damage the rotor blades or turbine engine(s) by flying up into them.

HELICOPTER HAND SIGNALS

Clear to Start

Make circular motion above head with arm.

Hold on Ground

Extend arms at 45° with thumbs pointing down.

Move Upward

Arms extended with sweeping upward motion.

Move Downward

Arms extended with sweeping downward motion.

Hold Hover

Arms extended to the side with clenched fists.

Clear to Take-Off

Arms extended in direction of Take-Off.

Land Here

Extend arms in front with wind at your back.

Move Forward

Arms extended in front waving helicopter towards you.

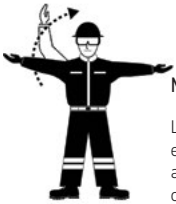
HELICOPTER HAND SIGNALS

Move Rearward

Arms downward using shoving motion.

Move Left

Right arm extended, Left arm sweeps overhead.



Move Right

Left arm extended, Right arm sweeps overhead.

Move Tail Rotor

Rotate whole body with one arm extended.

Shut Off Engine

Cross neck with hand with palm down.

Fixed Tank Doors

Open arms outward, close arms inward.

Release Sling Load

Contact forearm with other hand of other arm.

Wave Off / Don't Land

Wave arms and cross overhead.

IN-FLIGHT EMERGENCY PROCEDURES

If pilot declares an emergency.

- Remain calm, do not panic.
- Follow instructions of Pilot/HSL/HPA or crew supervisor.
- If you are the one next to the rear passenger doors or emergency exits, make sure you know how to operate them.
- Ensure seat belts are as tight as possible.
- Forward Facing Seat.
  - › Press lower torso firmly against seat back.
  - › Lower chin to chest, grip seat edge with your hands or place them under your legs.
- Rear Facing Seat.
  - › Same as forward facing seat except place your head against head rest or bulkhead.
- Side facing Seat.
  - › Lean toward front of aircraft and brace your upper torso and head against whatever might be contacted when landing.
- Remain in seats until blades stop turning, unless otherwise instructed by Pilot/HSL/HPA or crew supervisor.
- Exit via rear passenger doors or emergency exits within the window hatches, do whatever is necessary to extricate injured personnel and extinguish fires.
- Assess situation, secure the area, remove first aid kits, fire extinguisher, radio and Emergency Locator Transmitter (ELT) if possible.
- Document or photograph location of any debris needed to be moved to perform rescue or fire suppression.
- Render first aid where necessary.
- Establish contact with OSC or IC and inform them of situation.

NOTES

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THE INCIDENT COMMAND SYSTEM (ICS)

The Incident Command System (ICS) is used to manage the response to an emergency incident or a non-emergency event. ICS categorises response into functional components to be performed by the agency with responsibility for the response. When more than one entity has response authority, the coordinated response structure is managed using Unified Command (UC). The basic ICS operating guideline is that the IC or Unified Command is responsible for all functions until authority for individual functional components is delegated to another person or agency. ICS is designed to work equally well for both small and large situations and can expand or contract (scalable) to meet the needs of the incident.

The organisation of the ICS is built around five major management activities. These include the following activities.

- Command - sets objectives and priorities; has overall responsibility at the incident or event.
- Operations - conducts tactical operations to carry out the plan and develops the tactical objectives, organisation, and directs all resources.
- Planning - develops the IAP to accomplish the objectives, collects and evaluates information, and maintains resource status.
- Logistics - provides support to meet incident needs, as well as resources and all other services needed to support the incident.
- Finance/Administration - monitors costs related to the incident and provides accounting, procurement, time recording, and cost analysis.

COMMAND AND CONTROL

Establishment and Transfer of Command

- The command system must be clearly established from the beginning of an incident.
- The agency with primary jurisdictional authority over the incident designates the individual at the scene responsible for establishing command.
- When command is transferred, the process must include a briefing that captures all essential information for continuing safe and effective operations.

Chain of Command and Unity of Command

- An orderly line of authority within the ranks of the incident command organisation must be established.
- Every individual involved in the incident must have a designated supervisor, to whom he or she reports at the scene of the incident in order to clarify reporting relationships and eliminate the confusion caused by multiple, conflicting directives.
- Incident managers at all levels must be enabled to control the actions of all personnel under their supervision.

Unified Command

- In incidents involving multiple jurisdictions, a single jurisdiction with multi-agency involvement, or multiple jurisdictions with multi-agency involvement, unified command must be implemented.
- Unified command is an authority structure in which the role of IC is shared by two or more individuals, each already having authority in a different responding agency. This allows the incident management to be shared amongst agencies, or jurisdictions, while maintaining unity of command.

Accountability

An effective accountability system must be implemented at all jurisdictional levels and within individual functional areas during incident operations. To that end, the following principles must be adhered to:

- All responders, regardless of agency affiliation, must report to the Incident Command Post to receive an assignment in accordance with the objectives established by the IC.
- An IAP must be compiled and all response operations must be directed and coordinated as outlined in the IAP.
- Under UC, a single coordinated IAP will direct all activities. The IC's will supervise a single Command and General Staff organisation and speak with one voice.
- Each individual involved in incident operations will be assigned to only one supervisor.
- All responders are expected to use good judgment and be accountable for their actions.
- Supervisors must be able to adequately supervise and control their subordinates, as well as communicate with and manage all resources under their supervision.
- Supervisors must record and report resource status changes as they occur.
- Personnel and equipment should respond only when requested or when dispatched by an appropriate authority.
- Resources not requested must refrain from spontaneous deployment to the incident.

Information and Intelligence Management

The incident command organisation must establish a process for gathering, analysing, assessing, sharing, and managing incident-related information and intelligence.

ACCOUNTABILITY PROCEDURES

Check In
All deployed personnel must check in upon arrival to the incident site. This is typically with the RESL or PSC within the Planning Section and normally uses an Incident Check-In List (ICS-211).

Incident Action Plan (IAP)
The IAP drives incident operations and tasks. Changes must be communicated and coordinated with the OSC who communicates and gets approval from the IC/UC.

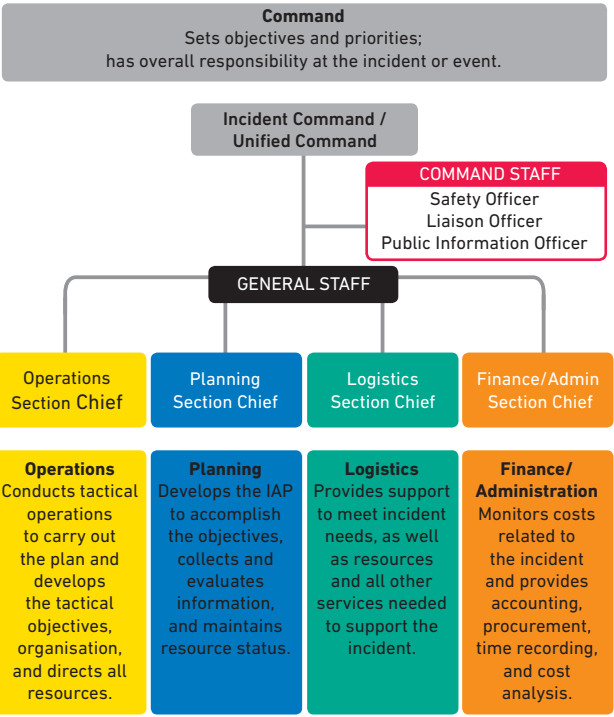
Unity of Command
All members of the ICS organization will have only one direct supervisor. This will prevent accountability breakdowns.

Span of Control
Adequate supervision by supervisors is a must. Within ICS, a manageable span of control varies between 3–7 personnel or functions per supervisor. A 1 to 5 ratio is preferred.

Resource Tracking
Any changes in resource status (available, assigned, or out-of-service) should be recorded by the supervisor and reported to the RESL or PSC. Effective accountability is reliant on everyone committing to a common resource tracking method.

ICS STAFFING STRUCTURE

The organisation of the ICS is built around five major management activities. These include the following activities:



ORGANISATIONAL STRUCTURE

Incident Command

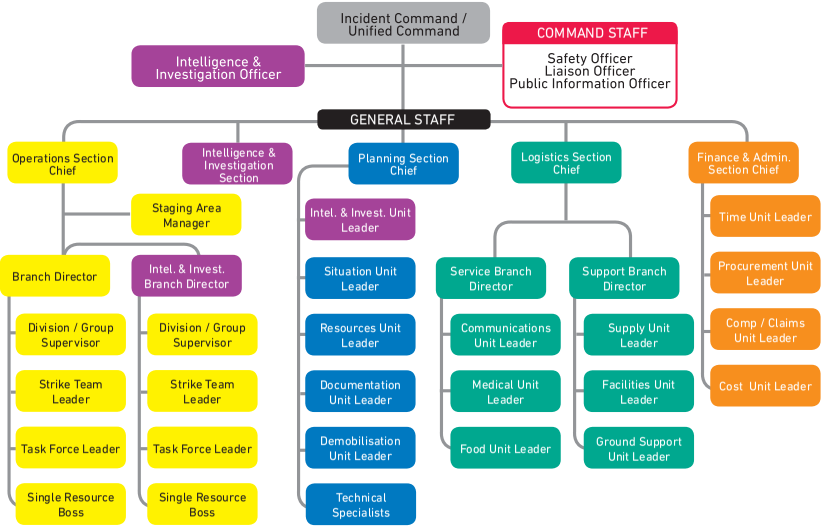
- IC must be responsible for overall management of the incident.
- Overall management must include Command Staff assignments required to support the command function.
- The Command and General Staff may be located at the ICP.
- The Incident Command organisational structure should develop in a modular fashion that is based on the size and complexity of the incident, as well as the specifics of the hazard environment created by the incident.
- The command function must be conducted as a single incident command or a unified command structure.

Command and General Staff

The Incident Command structure must consist of two types of staff; Command Staff and General Staff.

- The Command staff must include a PIO, a SO, and a LNO, who report directly to the IC and may have assistants as necessary depending on the nature, scope, complexity, and location(s) of the incident(s).
- The General Staff is responsible for the functional aspects of the incident command structure.
- The General Staff must consist of the OSC, PSC, LSC, and FSC if necessary.
- The Section Chiefs may have one or more deputies assigned, with the assignment of deputies from other agencies encouraged in the case of multi-jurisdictional incidents.

ICS STRUCTURAL ORGANOGRAM



GENERAL STAFF

Responsible for the functional aspects of the incident command structure and must consist of the Operations, Planning, Logistics, and Finance/Administration Section Chiefs.

The Section Chiefs may have one or more deputies assigned, with the assignment of deputies from other agencies encouraged in the case of multi-jurisdictional incidents.

The Operations Section is responsible for:

- All tactical activities focused on reducing the immediate hazard.
- Saving lives and property.
- Establishing situational control.
- Restoring normal operations.

The Planning Section is responsible for:

- Preparing status reports.
- Display situation information.
- Maintain the status of resources assigned to the incident.
- Prepare and document the IAP, based on Operations Section input and guidance from the IC/UC.

The Logistics Section is responsible for:

- Facilities.
- Security (of the incident command facilities and personnel).
- Transportation, equipment maintenance and fuel.
- Supplies and food services.
- Communications and information technology support.
- Emergency responder medical services, as required.

The Finance / Administration Section is responsible for:

- Recording personnel time.
- Maintaining vendor contracts.
- Administering compensation and claims.
- Conducting an overall cost analysis for the incident.

Incident Management Team (IMT)

An IMT is an incident command organisation made up of the Command and General Staff members and other appropriate personnel in an ICS organisation and can be deployed or activated, as needed.

The level of training and experience of the IMT members, coupled with the IMT's identified formal response requirements and responsibilities, are factors in determining an IMT's type, or level.

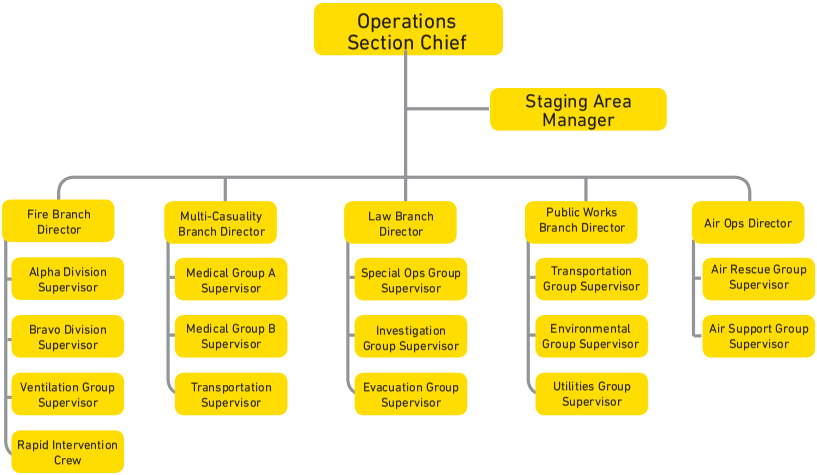
OPERATIONS SECTION

Branches may be functional, geographic, or both, depending on the circumstances of the incident.

Divisions are established to divide an incident into physical or geographical areas of operation.

All resources allocated to an incident may be organised and managed in three different ways, depending on the requirements of the incident.

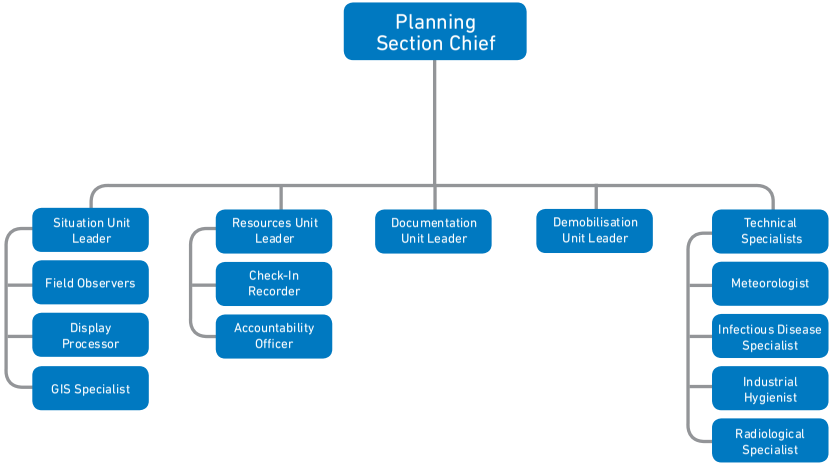
- Single Resources: Individual personnel or equipment and any associated operators.
- Task Forces: Any combination of resources assembled in support of a specific mission or operational need.
- Strike Teams: A set number of resources of the same kind and type that have an established minimum number of personnel.


Operations Section Chief
Staging Area Manager
Fire Branch Director
Alpha Division Supervisor
Bravo Division Supervisor
Ventilation Group Supervisor
Rapid Intervention Crew
Multi-Casuality Branch Director
Medical Group A Supervisor
Medical Group B Supervisor
Transportation Supervisor
Law Branch Director
Special Ops Group Supervisor
Investigation Group Supervisor
Evacuation Group Supervisor
Public Works Branch Director
Transportation Group Supervisor
Environmental Group Supervisor
Utilities Group Supervisor
Air Ops Director
Air Rescue Group Supervisor
Air Support Group Supervisor

PLANNING SECTION

The Planning Section is comprised of four primary units, as well as a number of technical specialists to assist in evaluating the situation, developing planning options, and forecasting requirements for additional resources.

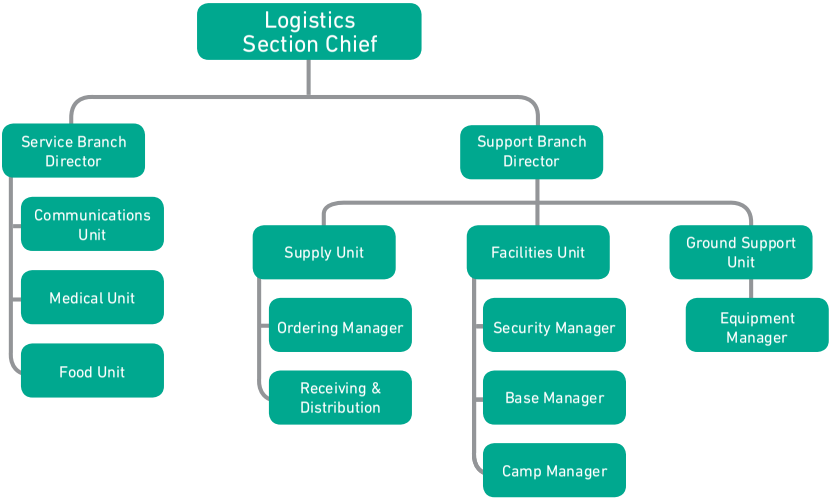
- Resources Unit: Responsible for recording the status of resources committed to the incident.
- Situation Unit: Responsible for the collection, organisation, and analysis of incident status information, and for analysis of the situation as it progresses.
- Demobilisation Unit: Responsible for ensuring orderly, safe, and efficient demobilisation of incident resources.
- Documentation Unit: Responsible for collecting, recording, and safeguarding all documents relevant to the incident.
- Technical Specialist(s): Personnel with special skills that can be used anywhere within the ICS organisation.


Planning Section Chief
Situation Unit Leader
Field Observers
Display Processor
GIS Specialist
Resources Unit Leader
Check-In Recorder
Accountability Officer
Documentation Unit Leader
Demobilisation Unit Leader
Technical Specialists
Meteorologist
Infectious Disease Specialist
Industrial Hygienist
Radiological Specialist

LOGISTICS SECTION

Within the Logistics Section, six primary Units fulfill functional requirements.

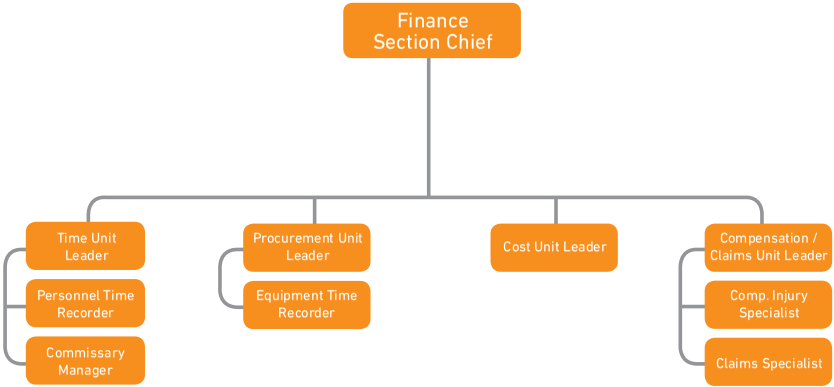
- Supply Unit: Orders, receives, stores, and processes all incident-related resources, personnel, and supplies.
- Ground Support Unit: Provides all ground transportation during an incident and is also responsible for maintaining and supplying vehicles, keeping usage records, and developing incident traffic plans.
- Facilities Unit: Sets up, maintains, and demobilises all facilities used in support of incident operations.
- Food Unit: Determines food and water requirements, plans menus, orders food, provides cooking facilities, cooks, serves, maintains food service areas, and manages food security and safety concerns.
- Communications Unit: Major responsibilities include effective communications planning as well as acquiring, setting up, maintaining, and accounting for communications equipment.
- Medical Unit: Responsible for the effective and efficient provision of medical services to incident personnel.


Logistics Section Chief
Service Branch Director
Communications Unit
Medical Unit
Food Unit
Support Branch Director
Supply Unit
Ordering Manager
Receiving & Distribution
Facilities Unit
Security Manager
Base Manager
Camp Manager
Ground Support Unit
Equipment Manager

FINANCE/ADMINISTRATION SECTION

Within the Finance/Administration Section, four primary Units may fulfill functional requirements.

- Compensation/Claims Unit: Responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident.
- Cost Unit: Responsible for tracking costs, analysing cost data, making estimates, and recommending cost savings measures.
- Procurement Unit: Responsible for financial matters concerning vendor contracts.
- Time Unit: Responsible for recording time for incident personnel and hired equipment.


Finance Section Chief
Time Unit Leader
Personnel Time Recorder
Commissary Manager
Procurement Unit Leader
Equipment Time Recorder
Cost Unit Leader
Compensation / Claims Unit Leader
Comp. Injury Specialist
Claims Specialist

INTELLIGENCE AND INVESTIGATION

Intelligence and Investigation includes information security and operational security activities.

The Intelligence and Investigation function may be organized in one of the following ways:

- Within the Command Staff: This option may be most appropriate in incidents in which real-time, incident-related intelligence is needed.
- Unit within the Planning Section: This option may be most appropriate in an incident with a need for tactical intelligence that can be handled by the Planning Section but requires a separate unit from the Situation Unit.
- Branch within the Operations Section: This option may be most appropriate in incidents with a high need for tactical intelligence actions.
- Separate General Staff Section: This option may be most appropriate when an incident is heavily influenced by intelligence factors or when there is a need to manage and/or analyze large volumes of highly sensitive intelligence or information. This option is particularly relevant to a terrorism incident.
- Intelligence Technical Specialist: This option can be used for any situation but may be most appropriate when little intelligence information is required by the incident.

Regardless of how it is organized, Intelligence and Investigation function is also responsible for developing, conducting, and managing information related to security plans and operations, as directed by the IC.

OPERATIONAL PLANNING CYCLE

Effective planning provides the foundation for successful mitigation of incidents.

The entire Command and General staff participates in the planning process and in developing the IAP. The planning process must:

- Provide a clear and accurate picture of the current situation and resource status.
- Effectively predict probable courses of the event (best and worst case).
- Involve alternative strategies (plan A, B, C, and D).
- Create a foundation for a realistic IAP for the next operational period.

There are five primary phases of the planning process that are generally the same, regardless of the type and complexity of the incident. The IC on simple incidents must develop and communicate a simple plan through oral briefings. More complex incidents require a more complete, time-consuming planning process and written IAP prepared by an entire IMT.

1. Situational Awareness: This first phase involves gathering, recording, analyzing, and displaying a clear and accurate picture of the incident evolving at the moment.

2. Establish Incident Objectives and Strategy: The second phase involves determining an effective strategy and formulating and prioritizing the incident objectives. The strategy and objectives must consider alternative strategies.

3. **Determining the Tactics: The third phase** involves determining the tactical direction and the specific resources needed for implementing the strategy for one operational period. Prior to formal planning meetings, each member of the command and general staff is responsible for gathering the necessary information so that they can successfully and collectively develop the plan.

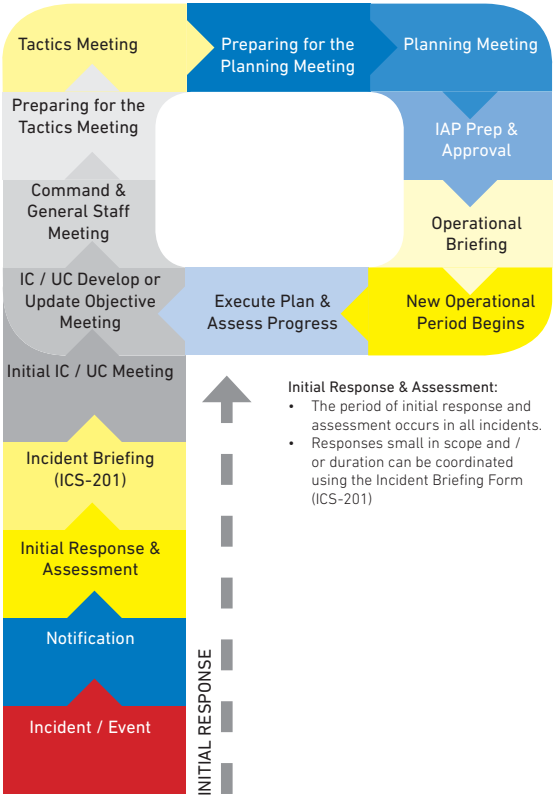
4. **Prepare and Disseminate the Plan: The fourth phase** involves preparing the plan in a format that is appropriate for the size and complexity of the incident. For initial response, this will likely be notes for an oral briefing and oral assignments or orders. For incidents with multiple operational periods, more formal written IAP's are necessary.

5. **Execute, Evaluate and Revise the Plan: The fifth phase** of this cyclical process is to execute and evaluate the plan in order to ensure success. The command team must regularly compare planned progress with actual progress. Adjustments in the plan can then be made as new information emerges or conditions change. Adjustments can then be implemented in the IAP for the next operational period.

Planning Responsibilities and Activities
The "Planning P" organogram (see next page) is a visual representation of the Operational Planning Cycle.

The Operational Planning Cycle is repeated each Operational Period of an incident and results in the formation of the IAP for the next Operational Period.

THE 'PLANNING P'



THE PLANNING PROCESS CHECKLIST

	PLANNING STEP	RESPONSIBILITY
1	Briefing on situation & resource status	PSC
2	Set / review incident objectives	IC / UC
3	Plot control lines / points, establish branch & division boundaries, identify group assignments	OSC
4	Specify tactics for each division / group	OSC
5	Specify safety mitigation measures for identified hazards in divisions / groups	SO
6	Specify resources needed by divisions & groups	OSC, PSC
7	Specify operations facilities & reporting locations, plot on map	OSC, PSC, LSC
8	Develop resource & personnel order	LSC
9	Consider communications, medical & traffic plan requirements	LSC, PSC
10	Finalise, approve & implement Incident Action Plan	PSC, IC, OSC

PLANNING MEETING AGENDA CHECKLIST

NOTE: REMIND attendees to turn off pagers, cell phones and radios so that the meeting can progress quickly and without interruption. REMIND attendees of the IAP document deadline & location for turning them in.

Incident Status
- Carried by SITL/OSC.

Review objectives/strategy
- Carried out by OSC/PSC.

Prioritise and set control objectives
- Carried out by IC/UC/OSC.

Review and establish safety plan
- Carried out by SO.

Establish branch and division areas
- Carried out by OSC.

Specify resource needs
- Carried out by OSC/RESL.

Identify logistical issues and concerns
- Carried out by LSC.

Review communication, medical and transportation plans
- Carried out by LSC/PSC.

Consider potential problems or opportunities
- Carried out by IC/UC/PSC.

Discuss public information issues
- Carried out by PIO.

Review financial implications
- Carried out by IC/FSC.

Finalise the IAP
- Carried out by IC/UC/PSC/OSC/LSC/FSC.

Review objectives and strategy
- Carried out by OSC/PSC.

IAP CONTENTS AND TYPICAL ATTACHMENTS

COMMON COMPONENTS OF THE IAP	
COMPONENTS	PREPARED BY
Incident Objectives - ICS 202	IC/UC
Organisational List or Chart - ICS 203	RESL/PSC
Assignment List - ICS 204	RESL/PSC
Communications Plan - ICS 205	COML/LSC
Logistics Plan	LSC
Responder Medical Plan - ICS 206	MEDL/LSC
Incident Map	LSC
Health and Safety Plan	SO

OTHER POTENTIAL COMPONENTS OF THE IAP	
COMPONENTS	PREPARED BY
Air Ops Summary	AOBD
Traffic Plan	Ground Support (GSUL)/LSC
Decontamination Plan	Tech Specialist
Waste Management Plan	Tech Specialist
Environmental Protection Plan	Tech Specialist
Demobilisation Plan	Facilities Unit (FACL)/LSC
Operational Medical Plan	Tech Specialist
Evacuation Plan	Tech Specialist
Site Security Plan	Intelligence & Investigation
Investigation Plan	Intelligence & Investigation
Evidence Recovery Plan	Intelligence & Investigation
Other Plans	As Required

OPERATIONAL BRIEFING

The Operational Briefing occurs approximately one hour prior to the shift change.

Facilitator: PSC.
Attendees: IC/UC, Command & General Staff, Branch Directors,DIVS, TFL, Unit Leaders and others, as appropriate.

IC
- Provides clarification, leadership & motivational remarks.

OSC
- Provides Operations Briefing for next operational period.
- Ensures ICS 204 tasking is clear.

PSC
- Sets up briefing area.
- Facilitates Command/General Staff & other attendees briefing responsibilities.
- Resolves questions, explains support plans, as needed.

LSC
- Briefs transportation, communication, and supply issues.

FSC
- Briefs administrative issues and provides financial report.

Staff Briefings
- Operations, Logistics, Safety, Public Information, and Interagency and Intelligence issues.

ICS MAP SYMBOLOGY

SA	Staging Area - Identified by name
B	Incident Base
C	Camp
R	Repeater / Mobile Relay
W	Water Source
T	Telephone
F	Fire Station
	Incident Command Post
X	Mobile Weather Post
	IR Ground Link
	First Aid Station
H	Helibase
 H3	Helispot - Location and Number
( )	Division Boundary
	Fire Origin

	Hot Spot
	Spot Fire
	Uncontrolled Fire Edge
[I] [II]	Branches - Initially numbered clockwise from Fire Origin
(A) (B)	Branches - Initially numbered clockwise from Fire Origin
	Wind speed & direction
	Planned Fireline
	Planned Secondary Line
	Proposed Dozer Line
	Fire Break - Planned or Incomplete
	Completed Dozer Line
	Completed Line
	Line Break Completed
	Man made features

INCIDENT COMPLEXITY ANALYSIS

The following are common contributing indicators for initial attack and extended attack complexity types. As the complexity increases so the incident and the resources required will escalate. It is important to recognise when an incident is escalating and exceeding your control before it becomes overwhelming. Indicators that the incident is escalating are marked with a light red background.

Type 5 General Indicators	Span of Control Indicators
• Incident requires between one and five resources. • Minimal staffing or leadership positions are required. • Formal Incident Planning process is not required. • Written IAP not required. • Incident has limited or minimal affect on immediately surrounding population. • Critical infrastructure or key resources are not adversely affected. • Incident is typically concluded (i.e. incident objectives met) within a short time frame once resources have arrived on scene.	• IC position filled. • Single resources are directly supervised by the IC. • Command or General Staff positions are not needed to reduce workload or span of control.

Type 4 General Indicators	Span of Control Indicators
• Multiple resources (6+) are required.	• IC position filled. • Single resources are directly supervised by the IC or by ICS Leadership positions.
• Resources may require limited logistical support.	• Task Force or Strike Teams may be required to reduce escalated span of control challenges.
• Minimal staffing or leadership positions are required.	• Command or General Staff positions are fulfilled to reduce work load or span of control.
• Formal Incident Planning process is not required.	
• Written IAP not required.	
• Incident has limited or minimal affect on immediately surrounding population.	
• Critical infrastructure or key resources may be adversely affected, however mitigation measures are uncomplicated.	
• Incident is typically concluded (incident objectives met) within one operational period once resources have arrived on scene. However resources may remain on scene for more than one operational period.	
• Little or no interaction required between stakeholder groups, political organisations or governing officials.	

Type 3 General Indicators	Span of Control Indicators
• Multiple Types and Kinds of resources (6+) are required.	• IC position filled. • Command or General Staff positions are fulfilled to reduce workload or span of control.
• Resources may need to remain on scene for extended periods and will require logistical support.	
• Many staffing or leadership positions are required.	• Numerous resources are supervised indirectly through the establishment and expansion of the Operations Section and it's subordinate positions.
• Formal Incident Planning process is required, initiated and followed.	
• Written IAP is required for each operational period.	
• Incident has affect on surrounding population.	• Division and Group Supervisors, Task Force or Strike Teams required to reduce escalated span of control challenges.
• Critical infrastructure or key resources may be adversely affected, with mitigation measures increasing in complexity.	

Type 3 General Indicators	Span of Control Indicators
• Incident is typically extended into multiple operational periods. • Incident objectives not met within first or second operational period and resources may need to remain on scene for multiple operational periods. • Incident may require an Incident Base and other Incident Command facilities in order to support the resources on scene. • Continued interaction required between stakeholder groups, political organisations or governing officials.	• ICS functional units required to be filled in order to reduce workload and span of control.

If multiple of the Type 3 Incident Complexity Indicators are exceeded and the incident escalates beyond the capabilities for local control, consider escalating up to a Type 2 level of Incident Management.

If National resources are required for safe and effective management and operations of the incident, then consider escalation to a Type 1 level of Incident Management.

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THE BEAUFORT SCALE (INDICATORS OF WIND STRENGTH)

Beaufort Number	Wind Speed (Km/h)	Common Term	Description
0	<1	Calm	Calm, smoke rises vertically.
1	1-3	Light Air	Smoke drift indicates wind direction, vanes do not move.
2	4-7	Light Breeze	Wind felt on face, leaves rustle and vanes begin to move.
3	8-12	Gentle Breeze	Leaves and small twigs in constant motion, light flags extended.
4	13-18	Moderate Breeze	Dust, leaves and loose paper raised up. Small branches begin to move.
5	19-24	Fresh Breeze	Small trees begin to sway.
6	25-31	Strong Breeze	Large branches of trees in motion, whistling heard in wires. Empty garbage bins tip over.
7	32-38	Moderate Gale	Whole trees in motion, resistance felt when walking against the wind.
8	39-46	Fresh Gale	Twigs and small branches broken off from trees.
9	47-54	Strong Gale	Slight structural damage occurs, slate tiles blown from roofs.
10	55-63	Whole Gale	Seldom experienced on land, trees broken, structural damage occurs.
11	64-72	Storm	Very rarely experienced on land, usually with widespread damage.
12	>73	Hurricane Force	Violence and destruction, large debris thrown about.

AFIS / FIRE DANGER INDEX

As a situational awareness tool, the AFIS and FDI provides a method for those involved with wildland and prescribed fire operations to communicate a common understanding of key index values provided by the National Fire Danger Rating System.

The graphic following shows seasonal changes in fire danger and provides historical context for local weather thresholds.

Firefighters should reference the card when indexes are broadcast, comparing current and forecasted index values to historic trends, thresholds, and associated significant events.

An interpretive briefing should accompany the distribution of any pocket cards to firefighters.

Regardless of the index used, firefighters should always assess the fire environment they are working in, the observed fire behaviour, and the expected fire behaviour based on forecasted conditions.

FIRE ALERT STAGES	BLUE	GREEN
Fire Danger Index	0 -20	21- 45
Fire behaviour	Safe	Moderate
Flame Lengths	0 - 1 metre	1 - 1.2 metre
Fire Control Guide	If started they spread very slowly and may go out without suppression forces. There is little flaming combustion and intensity is low. Control is readily achieved and little or no mop up is required.	Ignition may take place near prolonged heat sources. Speed is slow in forests, moderate in open areas. Light surface fires with low flames. Control is readily achieved with direct manual attack with minimum forces. Steep, exposed slopes may require light mop up.
Fire Precautions	Low fire danger. Controlled burning operations can proceed with reasonable safety but must have a permit.	Controlled burning operations can be done without creating a large fire danger. Be careful if burning on dry exposed slopes. Be aware of unexpected changes in wind speed and direction.

YELLOW	ORANGE	RED
46 -60	61-75	76 -100
Dangerous	Very Dangerous	Extremely Dangerous
1.2 - 1.8 Metres	1.8 - 2.4 Metres	> 2.4 Metres
Open flame will start fires. Mature grasslands and forest litter will burn readily. Spread is moderate in forests and fast in exposed areas. Fires burn on surface with moderate flame heights. Fight fires with direct attack and all available resources including aircraft. Light to moderate mop up.	Ignition can occur readily with fast spread in forests. Grass fire behaviour will be extreme. Fires will be very hot with crowning and short to medium spotting. Direct attack on the head may not be possible requiring indirect methods on flanks. All available resources must be used with extended mop up. Beware of wind change!	Ignition can occur from sparks. Fires will be extremely hot with fast rate of spread. Control may not be possible during day due to long range spotting and crowning. Suppression forces should limit efforts to limiting lateral spread. All available resources must be used with extended mop up and careful attention to areas that can flare up. Beware of wind change!
Controlled burning is not recommended. If burn operations do continue extreme caution is necessary.	No controlled burning permitted. Any fires that do occur should be attacked with maximum strength.	No fires under any circumstances in the open air. All operations likely to ignite fires are to be suspended. React immediately at first sign of smoke.

RECOMMENDED INFORMATION

In order to ensure a standard system for all resources to work to the same time line during an incident, it is recommended that all resources work of cell phone time.

For awareness on Fire and Weather conditions use the following mobile apps or websites which are available for both Android and IOS devices.

Apps for weather.
- WindGuru
- Yr.no
- WeatherSA

Website for weather.
- www.windguru.cz
- www.yr.no
- www.weathersa.co.za
- www.windytv.com

App for fire.
- Afis

Website for fire.
- www.afis.co.za

Apps for acquiring location.
- GPS Kit Free
- Avenza Maps

Google Earth and Google Earth Pro
- www.google.com/earth

NOTES

BRIEFING CHECKLIST

SITUATION

- INCIDENT NAME, LOCATION, MAP ORIENTATION & OTHER INCIDENTS IN AREA?
- TERRAIN, FUEL TYPE & AGE, SLOPE ASPECT & GRADIENT?
- WEATHER (PREVIOUS, CURRENT & PREDICTED), WINDS, RELATIVE HUMIDITY & TEMPERATURE (TIME OF DAY)?
- FIRE BEHAVIOUR (PREVIOUS, CURRENT & PREDICTED)?

MISSION

- COMMAND, WHO IS IC / IMMEDIATE SUPERVISOR?
- LEADERS INTENT, WHAT IS TASK, PURPOSE & END STATE?
- SPECIFIC TACTICAL ASSIGNMENTS.
- CONTINGENCY PLANS?

COMMUNICATIONS

- COMMUNICATIONS PLANS FOR TACTICAL, COMMAND, AIR-TO-GROUND & PHONE NUMBERS?
- MEDIVAC PLAN?

SERVICES / SUPPORT

- OTHER RESOURCES, GROUND & AERIAL?
- LOGISTICS, TRANSPORT, SUPPLIES & EQUIPMENT?

RISK MITIGATION

- IDENTIFY KNOWN HAZARDS & RISKS.
- IDENTIFY CONTROL MEASURES TO MITIGATE HAZARDS & REDUCE RISKS.
- IDENTIFY TRIGGER POINTS FOR RE-EVALUATION OF TASKS & OPERATION OBJECTIVES.

AFTER ACTION REVIEW

It is important to remember that the environment of an After Action Review (AAR) must be one in which the participants openly and honestly discuss what occurred. This should be carried out in sufficient detail and clarity so that everyone understands what did, and didn't, occur and why.

Most importantly, participants should leave with a will to improve their proficiency.

Guidelines for an AAR

- An AAR is performed immediately after, or as soon after as is realistically possible, the event or incident by the personnel involved.
- The leader's role is to ensure skilled facilitation of the AAR and that they follow the principles of honesty and integrity.
- Reinforce that respectful disagreement is alright, however always remain focused on the what, not the who.
- Ensure everyone participates.
- Offer guidance on actions or attitude that had negative outcomes.
- Offer encouragement on actions or attitude that had positive outcomes.
- End the AAR on a positive note.

Topics to be covered in an AAR

- What was planned?
- What actually happened?
- Why did it happen?
- What can we do next time?