

A Pocket Guide to MARSHALLING



**Motorsport
Safety Fund**

Helping
to keep
motorsport
safe

Registered Charity No. 296802

The **MOTORSPORT SAFETY FUND** is a registered charity (No. 296802) which helps to improve safety standards at motorsport events. The MSF strives to do this in three ways by *direct support*, by *encouragement* and through *communication*.

Direct Support

The Fund assists with the purchase of rescue equipment as stipulated in the MSA Blue Book. The MSF will consider claims from all MSA recognised clubs organising licensed competitive events, and all MSA licensed rescue vehicles and services, whatever the motorsport discipline; however, claims are not accepted from individuals or teams. Support for non-Blue Book items will only be given in exceptional cases.

Encouragement

To recognise the work done by people and organisations concerned with motorsport safety, "The Ferno MSF Award" is presented each year to *"the Individual, club or organisation making a significant contribution to motor sport medical or rescue services"*.

Communication

- The MSF publishes a newsletter, Rescue and Resuscitation, twice a year which goes to all doctors and rescue crews involved in motorsport.
- To help the exchange of information, the Fund has an annual presentation on safety and related matters, called the Watkins Lecture in acknowledgement of the work done in this field by Professor Sid Watkins.



Funding:

The work the MSF is able to do is entirely governed by the amount of money

It is able to raise, and the Trustees hope enthusiasts will support any fund raising initiatives by the Fund.

Personal donations represent a significant part of the Fund's annual income and if you would like to make a contribution, please send a cheque, made payable to:

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An Introduction to Marshalling

Marshalling is for anybody who is interested in and wants to be involved in motorsport. You don't need any special skills or qualifications to start, just common sense and a reasonably developed sense of self-preservation.

As you become more involved you will be able to take advantage of training funded by the sport's governing body - the Motor Sports Association - and run by individual motor clubs, Regional Associations or the clubs set up to cater specifically for Marshals - the British Motor Racing Marshals Club, the British Rally Marshals Club and the BRDC Marshals Club.

This booklet isn't a substitute for that training, but is designed to act as an aide memoire to back up the experience and the training you will receive as your marshalling career progresses.

Personal Equipment

Wearing the right gear is essential for marshals. You can't go back to the car, nip into a bar or pop off for a hot dog and a cup of tea at the drop of a hat. In the wrong sort of clothing there is a very real danger of hypothermia in the winter and sunburn or heat stroke at the height of the summer.

You don't need any special clothing to go marshalling. Be prepared for the worse and remember you can always take off an extra layer of clothing if you are too hot.

Essential Clothing

- Wear natural fibres (cotton and wool) - particularly next to the skin. Man made fibres can melt - even under protective overalls - causing nasty burns.
- Thick shirts and trousers, several jumpers and one or more pairs of thick socks. On cold days wear thermal underwear.
- Always cover your arms and legs - even when it is hot. Overalls protect your clothes and give additional protection against fire if they are the orange, flame resistant Proban treated variety worn by many marshals.
- Wear thick gloves which are reasonably loose fitting and consider carrying a spare or a waterproof pair as damp gloves can scald if you grab a hot exhaust.
- Stout boots - hiking or work boots - are essential. Even if you are wearing gloves it is quicker and safer to kick debris off a track rather than to pick it up. Never wear trainers. They provide no protection and are not waterproof.
- Hats are essential as we lose a high proportion of body heat through our heads in cold weather and a light hat will protect from sun stroke in hot weather.
- Always take waterproof tops and trousers with you. Avoid thin nylon at all costs. Rubberised cloth and more expensive fire resistant waterproofs are the best option.
- Choose colours which don't clash with flags - orange is ideal.

• Other Equipment

- Ear plugs or ear defenders - essential at F1, Historic F1, F3000 and GT meetings. Plugs are probably best for incident marshals. Defenders are more useful for flag marshals and observers and in the pits.
- Gesco/Tuff-Kut Scissors - cut everything from seat belts to brake pipes.
- Screwdriver - with a reversible blade (flat and Phillips) if possible.
- Safety glasses - not a must, but can be useful when marshalling close to gravel traps.
- Sun cream - you will be painfully surprised at how easy it is to get burnt when you are standing out all day.
- Whistles - Should only be used as a warning by the people in charge of the marshals post at race meetings, so, if you have got one, keep it in your pocket at circuits. They can come in handy on rallies and at hillclimbs, however.

Food and drink

Always take ample food and drink (in particular during the summer when dehydration can be a real threat) and never rely on course catering. It may or may not be there, you may or may not be able to get to it.

Promoting Motorsport

Marshals are one of the public faces of motorsport - particularly in the Paddock, the Pits and at Rallies, where you are more likely to have direct contact with spectators and a host of people who aren't interested in motorsport and may even resent the presence of an event.

We can't ignore them and we must do everything to accommodate them along with the enthusiasts. Motorsport faces rising customer expectations and widespread quality competition.

Motorsport's customers include competitors, sponsors, Press and TV, circuit and land owners and their staff and marshals themselves as well as spectators. We need to do everything we can to create events competitors want to compete in, marshals want to officiate at, spectators will pay to watch and circuit and land owners will want to stage again.

Remember: When people are breaking the rules and safety is at stake, when you are tired and fed up, when the going gets really tough, that's when you really need to make an extra effort to do the impossible, bite your tongue and keep everyone safe and happy.

Basic First Aid

Motorsport is a long way from being one of the most dangerous sports, but, despite all the protective measures - roll cages, helmets, seat belts, fire proof overalls, plumbed in extinguishers - high speed impacts occur, cars catch fire and people get injured.

At circuits, hill climbs and sprints, experienced, professional assistance will always be close at hand. At Rallies, it may take longer, but, in any event, what you do in the first few minutes can make a major difference. If you get the opportunity to go on a First Aid course, then take it. If you don't, then try to follow these basic principles.

- Your own safety is paramount - you can't help anyone if you too are injured
- Stop and think before you act
- Keep a crashed car between yourself and oncoming traffic
- Ensure no one is smoking near a crashed vehicle
- Deal with fire first and try to isolate the vehicle's electrics
- Try to approach the driver/navigator from their direction of vision
- Speak to the driver/navigator - their response or lack of it is a key indicator to whether further assistance is needed. Think of the acronym AVPU. Are they Alert, if not, do they respond to your Voice? Failing that, pinch the skin on the back of their hand to see if they respond to Pain. Are they Unconscious?
- Pause and assess the situation before summoning help. Don't grab a casualty and don't drag an unconscious casualty out of a car unless the risk presented by leaving them where they are is greater. The first can lead to a violent reaction if they have been hit on the head, the second could leave them paralysed.
- Look out for the quiet casualty. The more noise a casualty is making, the less problems they are likely have. A conscious casualty who is speaking must be breathing.
- Use the "ABC" rule.
 - Check their Airway, Breathing and then their Circulation.
 - Someone whose airway is blocked can die in two minutes as struggling for breath uses up oxygen in the blood stream, someone who has stopped breathing could die in four minutes and someone who is bleeding severely will die in eight minutes.
 - Unconsciousness disables muscles, allowing the tongue to sag and block the throat. Lifting the chin and tilting the head lifts the tongue from the back of the throat, leaving the airway clear.
- Test breathing in an unconscious casualty by placing your face close to the casualty's mouth to feel for breath on your cheek, looking for chest movements and listening for breathing sounds.
- If a casualty is not breathing and you have no prospect of immediate assistance, you may have to remove their helmet. To do this without making a potential spinal injury worse, you need two marshals. One supports the neck firmly in neutral alignment - with the eyes looking forward - to prevent the neck twisting or flexing. The other undoes the chin strap, uses the straps on either side to flex the helmet and rotates it backwards over the nose until it can be taken straight off. Beware of any head rests.
 - **Only remove the helmet if the casualty is unconscious and not breathing. On race circuits and at speed events, support the head in the neutral position until help arrives and someone else takes over control of the head.**
- Find the casualty's pulse by feeling for the Adam's Apple and sliding your fingers into the gap between the Adam's Apple and the strap muscle running up the side of the neck. Feel for pulse for five seconds.

If the casualty is not breathing and has no pulse call for assistance immediately and then start CardioPulmonary Resuscitation (CPR) if you know how.

If you are alone

1. Open the airway
 2. Give two breaths
 3. Give 15 compressions
 4. Continue with steps 2-4 unless there is a sign of circulation returning. If circulation returns, continue providing breaths, checking circulation every ten breaths.
- If there are two of you, one first aider starts CPR while the other calls for help. When the second first aider returns, continue with one first aider providing breaths and the other compressions at the rate of one breath for every five compressions.
 - If you discover an unconscious casualty who is not breathing, but has a pulse
 5. Give ten breaths of artificial ventilation.
 6. Call for assistance
 7. Re-check for a pulse
 8. If a pulse is present, continue artificial ventilation, otherwise commence CPR
 - If the casualty is unconscious, breathing and has a pulse, treat any life threatening injuries.
 9. Place the casualty in the recovery position.
 10. Get help
 - If the casualty is conscious, breathing and has a pulse, treat them as appropriate and get help if necessary

Spinal Injuries

Spinal injuries are a potential problem in any motoring accident. Key Indicators which should lead you to expect a spinal injury include:

- Unconsciousness
- Facial injuries
- Neck pains
- Feeling of electrocution
- Belly breathing - stomach moving to draw air into the lungs instead of the chest rising.

Ask the casualty to stick out their tongue, make a fist and twist his/her arm. If they can't **CALL A DOCTOR, SUPPORT AND IMOBILISE THEIR NECK IN THE NEUTRAL POSITION UNTIL AID ARRIVES**

A casualty with a suspected spinal injury should not be moved without supervision by medical or rescue personnel, except to establish an airway to allow them to breathe or to remove them from a life threatening hazard such as fire.

Bleeding

1. Control bleeding with direct pressure on the wound.
 - Use a clean pad or handkerchief and try to avoid contamination by wearing gloves - particularly if you have an open wound or cut on your hand.
2. Elevate a bleeding limb if possible.
3. Do not apply tourniquets or clamp bleeding vessels.
4. Treat for shock.

Burns

1. Small burns should be treated by applying cool, clean water to reduce pain and halt further burning.
2. Keep the casualty warm.
3. Do not burst blisters as this encourages shock and infection.
4. Do not remove clothing attached to burnt flesh.
5. Any burn covering an area greater than a 10p piece requires medical attention. Deep burns always require medical attention.
6. Clean plastic bags can be used to cover burns and reduce fluid loss.
7. Clothes contaminated with chemicals should be removed and the surface washed with large quantities of clean water.
 - Do not allow the clothing or any liquid to come into contact with your own clothing or flesh.
8. Treat for shock.

Fractures

1. Broken bones are generally obvious because of pain at the site.
2. There may also be deformity. It is best not to attempt to straighten the limb, but allow the casualty to support the fracture in the most comfortable position.
3. Treat for shock.

Shock

1. Assume that any casualty will be suffering from shock - either as a result of loss of blood or as a reaction to the accident they have suffered.
2. Sit, or if possible, lay them down with their feet elevated above their head.
3. Keep them warm, give them plenty of re-assurance.
4. Do not allow them to drink, eat or smoke.
5. Call for assistance as appropriate.

Basic Circuit Marshalling

Arriving at a Circuit

- Find out where marshals are signing on
- Sign on
- Find out which post you have been allocated to, how to get there, where it is safe to park your car and what time you should be on post.

Arriving on Post

- Sign on with the Observer - the senior official in charge of the post
- Check in with the Incident Officer (I/O) - who is responsible for the team of incident marshals and position any equipment - extinguishers, brooms, oil dressing material (cement or plaster) spades etc as requested.

You will be briefed by both the Observer and the I/O. If you have any questions, don't be afraid to ask. The I/O will allocate you to a team. The I/O will have decided the points where he or she wants teams positioned and, at most circuits, you will rotate between those posts every couple of sessions.

It's not a bad idea, when you arrive at a point to check the escape routes - whether you can roll under fencing, jump down a bank, get through a gap or get down behind a solid barrier in the event of a car heading towards you.

Remember to always watch the on-coming traffic and be ready to get out of the way if necessary

Check the track between sessions. Treat any oil spills, pick up any debris, sweep any gravel or dirt off the racing line and report any track damage to your Observer.

How Meetings Run

Clerk of the Course

The Clerk of the Course is responsible for the running of the meeting, the overall organisation, safety and judicial decisions. Clerks may have assistants and at some meetings there may be separate Clerks with responsibility for individual races and for overall administration.

International meetings may be presided over by a Race Director - a sort of "super clerk."

However, the Race Director will usually concentrate on the top event and leave the handling of other races to subsidiary clerks.

The Clerk is based in Race Control which handles communications with marshals' posts, emergency vehicles, scrutineers, timekeepers, Judges of Fact, the Paddock, Assembly Area, Pits and Startline.

Stewards

There are usually three stewards at any meeting, two club stewards and an MSA Steward. They have no powers to interfere in the running of a meeting, but the MSA Steward must be satisfied it is safe to run the meeting before it can start. The stewards will submit a report to the Motor Sports Association - motorsport's governing body in the UK - at the end of a meeting which could affect a club's ability to run future events. In certain circumstances, Stewards can act as an immediate court of appeal for drivers and teams against the summary decisions of the Clerk of the Course.

All race meetings and most other motorsport events run under a permit from the MSA. As well as appointing a Steward, the MSA licences Clerks and Rescue Crew and, of course, drivers, receives a report on the meeting and acts as an appeal court against Clerks' and Stewards' decisions

How Marshals Posts Run

Marshals' posts are located around the circuit and will normally be manned by an Observer, between one and three Flag marshals, an Incident Officer and an Incident Team made up of Incident (Fire) Marshals, Course Marshals and Trainees.

The Observer

The person in charge of a Marshals' Post is known as an Observer. There is usually one per post, but sometimes more at big meetings. The Observer has overall responsibility for the running of the post and safety and is regarded as the eyes and ears of the Clerk of the Course. Observers report on incidents during racing and practice, usually by telephone and sometimes by radio in the first instance. They follow that up with a written report handed to the Clerk of the Course or the Chief Observer, when he drives round the circuit at the end of a session. Reports may cover driving standards and behaviour, mechanical problems - spilling petrol, loose bodywork and other safety related issues - or crashes, spins and the like.

Flag Marshals

The post will usually have between one and three Flag Marshals. At major International meetings one of the Flag marshals may be in direct radio contact with Race Control. If there is no Observer, a flag marshal will be asked to act as the observer.

The Incident Officer

The post will usually have an Incident Officer who is responsible for the safety and direction of the team of incident marshals on the post. The I/O should brief marshals at the start of the day, ensure the equipment has been checked, report any deficiencies to race control, arrange the pairing up of his/her team, according to experience and direct the team in the event of an incident. The I/O will also coordinate any clear up operations and track checking. At Silverstone alone, I/Os are in direct radio contact with race control. Elsewhere, they are autonomous in the event of an incident, but under the general direction of the Observer.

Incident Marshals

Incident Marshals - also known as a Fire marshals - have at least two years' experience on the bank who will often be paired with a new marshal.

Course Marshal

A marshal with at least one year's experience on the bank.

Essentials of Fire Fighting

The priority is to save life and then to protect property. The most obvious danger to the driver is burns, but fires consume oxygen and lack of oxygen can result in brain damage or even death before a casualty is actually burnt. The aim has to be to get to a burning vehicle and to have the fire under control - and preferably extinguished - within 30 seconds.

The Triangle of Fire

You must have three things in order to have a fire

- Something to burn
- Oxygen
- Enough heat to raise the material to its ignition temperature.

Remove any one and the fire will go out.

You can:

- Remove heat with a cool liquid - water, foam or a dry powder extinguisher
- Remove fuel - turn off the fuel supply or remove flammable materials
- Remove Oxygen - seal with foam

Classes of Fire

1. Free Burning (Class A)
 - Solid materials - wood, cloth, paper, vehicle trim.
 1. Knock down with dry powder, then use water or foam to cool.
2. Flammable liquids (Class B)
 - Oil, spirits, petroleum, alcohols, greases, fats.
 1. Fight with dry powder, followed by foam. CO₂ or Halon (now banned) are alternatives in closed spaces.
3. Flammable Gasses (Class C)
 - Propane, butane, natural gas.
 1. Fight with dry powder, CO₂ and Halon
4. Electrical Fires (Class D)
 - Any electrical equipment.
 1. Isolate the source of power before using dry powder, CO₂ or Halon
5. Vehicle Protection (Category developed by extinguisher manufacturers Chubb)
 1. Knock down with dry powder, cool and seal with foam.

Extinguishers found at motorsport events

Currently, fire extinguishers are colour coded by painting the whole of the extinguisher, however, the European Union has decided that all new extinguishers must be red or unpainted stainless steel and their type will be identified by a coloured label, following the existing coding system. You will find both types on circuit.

- Blue Dry powder. Found on marshals' posts
Filled with a powder which is propelled by compressed air or Nitrogen, stored in the extinguisher itself or CO₂, stored in a sealed cylinder inside the extinguisher which is punctured when the trigger is squeezed.
- White Light Water Foam or Aqueous Film Forming Foam (AFFF).
Found on marshals' posts.
Filled with a mixture of water and a detergent type liquid and propelled by compressed air which is also stored in the extinguisher or a sealed cylinder inside it. Now used in onboard extinguishers to replace Halon (below).

- Green Halon. Usually found in the pits and formerly in onboard extinguishers. Liquid which vapourises, providing cooling and removing air from the site of the fire. Most effective in enclosed spaces. Production of Halon was banned internationally in 1993 and is being phased out in motorsport.
- Black Carbon Dioxide. Sometimes found in the pits or in Race Control. Disperses too easily to be effective in motor sport context. Care is needed as you can get cold burns, particularly from the trumpet as the liquid CO₂ turns into a gas.
- Red Water. Used to provide fire cover in stands, race control etc. Solely for "Class A" fires - Fires involving cloth, wood and paper.

Marshals posts on circuits and at speed events are usually equipped with one or more pairs of Blue (Dry Powder) and White (Foam) extinguishers. The powder and foam is forced out of the extinguisher by pressurised gas which can either be in a sealed cylinder which is punctured when the trigger is squeezed or by compressed gas stored inside the extinguisher itself. Stored pressure extinguishers operate marginally faster than sealed cylinder extinguishers as the gas has to escape from the sealed cylinder into the body of the extinguisher before the powder or foam can be forced out. Stored pressure extinguishers have gauges which show whether the pressure is sufficient. Sealed cylinder extinguishers will not have a gauge.

Most On-Board extinguishers are foam based, following the banning of Halon. They are designed to deliver twice as much foam to the engine bay as the cockpit and may be thermally triggered. It can take time for the liquid to reach the trigger temperature. On-board extinguishers may not work if the car is upside down.

On-board extinguishers are either fired mechanically (by pulling a handle) or electrically (by pressing a button or flicking a switch).

If you are a regular Rally marshal and decide to carry an extinguisher with you, buy a hand held dry powder extinguisher that will cope with Class A,B and C fires.

Blue bottles (Dry Powder)

Checks:

1. Pin - ensure the pin is present and secure.
2. Pressure - if the extinguisher has a pressure gauge, check the needle is in the middle section of the gauge.
3. Pipe - check the hose is not blocked and is intact. Hoses become frayed with age and damaged where they bend.
4. Powder - The powder in an extinguisher will settle and form a plug at the bottom if the extinguisher is left to stand for a long period. Turn the extinguisher upside down and put it on your shoulder. Listen for the powder moving. If it does not, shake the extinguisher to loosen it.
5. Weight - be suspicious of light bottles.

Use the Dry Powder extinguisher first, delivering short bursts of powder from 12 feet away, at the base of the fire to knock the flames down. Dry powder extinguishers provide cooling and, if the powder is Monex, interfere with the chemical reaction sustaining the fire.

White bottles (Foam)

Checks

1. Pin - ensure the pin is present and secure.
2. Pressure - if the extinguisher has a pressure gauge, check the needle is in the middle section of the gauge.
3. Pipe - check the hose is not blocked and is intact. Hoses become frayed with age and damaged where they bend.
4. Weight - be suspicious of light bottles.

Once the flames have been knocked down by the marshal(s) with the dry powder extinguisher(s), marshals with foam extinguishers move in to seal the site of the fire and any fuel spills. Foam should be allowed to fall onto the site of the fire to cool and form a film excluding air from fuel. Foam extinguishers do not work so well with methanol fires as the foam dissolves in the methanol and does not form a film.

Extinguishers that are faulty must be reported and replaced. Lay them down on the edge of the track for collection at the end of the day or leave them as requested by the circuit.

Know the difference between the electrical cut off and extinguisher symbols. Always isolate the power supply to stop fuel being pumped into a hot engine. Don't hesitate to use on-board extinguishers. They direct the extinguishant to where it is most needed.

Familiarise yourself with the cars and their safety systems. Find out where the fuel tank is and the external extinguisher and fuel cut off switches. Are they in the same place? Are they both operated by the same switch? Are there any other cut offs you need to know about? For example, Eurocars have a fuel stop cock in the cockpit itself.

What burns on a car

1. Fuel

- Petrol is not the only fuel used in racing. Some older cars and Indy cars are fuelled by methanol which was originally introduced because it could be supercharged without risk of pre-ignition. Methanol cools the engine as it evaporates at a lower temperature than petrol and auto ignites at far higher temperature than petrol, so it can undergo massive compression.
- Methanol is harder to ignite than petrol and burns with a clear flame, which cannot be seen. A methanol fire can be extinguished dry powder extinguishers, but the fuel breaks down AFFF foam. Methanol is both toxic and a narcotic which can be absorbed through skin. Like petrol it can cause painful burns.

2. Brakes

- Brake fires are caused by the temperature of the pads causing the brake fluid to ignite. If the brake assembly is not cooled the fluid will re-ignite. This is one of the few occasions where a foam extinguisher alone is the best way of fighting the fire. Brake discs are usually large enough to take the thermal shock of rapid cooling without shattering - but that remains a possibility so stand well back and take additional care.

3. Turbos

- Turbo fires also involve high temperatures, however, rapid cooling could well lead to the turbine in the hot end shattering, firing metal shrapnel around. Although using a dry powder extinguisher will almost certainly mean an engine rebuild, it is the safer option in these circumstances. Beware of re-ignition.

4. Exhausts

- Be particularly aware of the possibility of grass fires in hot, dry weather when a car pulls off the circuit. Knock down with powder and follow up with foam as usual.

5. Metal

- Magnesium can be used to reduce the weight of metal components such as wheels and bulkheads. Metal fires give off an intense white light and produce white smoke particles. **Under no circumstances** should you use a water or foam extinguisher on a metal fire. It will make the fire more intense. The best way of fighting a metal fire is to cover the burning item in sand to exclude air.

6. Trim

- Some plastics and rubber compounds used in trim leave behind an exceedingly corrosive acid when they are burnt. There is no alternative to hospital treatment if you get the acid on your skin. Simply flushing the skin with water is inadequate. Beware of the fumes given off by burning trim.

7. Bodywork

- Glass Reinforced Plastic can catch fire and may give off dangerous fumes so extra care is required. Fight the fire in the conventional manner with dry powder extinguishers, followed by foam.

8. Tyres

- Tyres are highly unlikely to catch fire unless the vehicle has been alight for a considerable period of time. Burning tyres give off an acrid, black smoke which you should avoid inhaling. A large amount of water will be needed to put out burning tyres and a watch will need to be kept on the vehicle for a significant time to ensure there is no re-ignition.

Fighting Fires

1. Act as a team.
2. Approach with the wind behind you to avoid smoke and powder getting blown in your face.
3. Stop about 10 to 12 feet away from the blaze to collect your thoughts and your colleagues. Don't get too close as the power of the extinguisher could spread burning fuel.
4. Take the pins out.
5. Marshals with Blue (Dry Powder) extinguishers go first to knock the flames down and are followed by marshals with White (Foam) extinguishers.
6. Don't run through flames. Extinguish ground fires as you approach.
7. Priorities:
 - If the driver is trapped inside, the cockpit area is top priority.
 - If the driver is out but on fire, get him down on the ground, pat and smother the flames or use an extinguisher.
 - If the driver is out and safe concentrate on the seat of the fire.
8. Don't cover your colleagues with flames, powder or foam.
9. Watch out for flashbacks, under body fires, fires in the engine bay and in the boot.
 - Don't throw open a bonnet or boot. One marshal, wearing protective gloves and keeping low, should crack open the lid with their back to the car while the other inserts the pipe of the extinguisher into the opening and gives a quick burst.
10. Once the flames are out, damp the car down and keep watching. Extinguishers are a must when clearing up a car that has been on fire.
11. Some rubber compounds and plastics which have been burnt can produce powerful acids which cause severe injuries if you get them on your skin. If you feel a burning sensation go to a circuit medical centre or a hospital casualty unit and tell them you may have been into contact with acids produced by burnt rubber compounds.
12. Report the number and type of extinguishers you have used so that they can be replaced. Include partially used extinguishers in your tally and don't trust them for use in a later blaze. Leave them lying down on the edge of the track at the end of the day.

Advanced Circuit Marshalling

Incident Handling

1. Let the dust settle.
 - The car may drive off. The time spent gathering your thoughts and deciding what to do can be invaluable.
2. Use the safest route to get to the vehicle.
 - Stay on the banking until the last possible moment.
3. Always take an extinguisher.
 - Don't lug one all the way from your marshalling point if you are going to pass one on the way.
 - Put the bottle down before you jump down from the bank or tyre wall.
 - Don't cross the track unless you absolutely have to and **never** take a bottle across the track.
 - If you take a bottle trackside, don't forget it.
4. Act as a team.
 - Gather your resources on the bank.
 - Decide on a strategy then act.
5. Use the car involved in the incident for protection.
 - Keep it between yourself and the oncoming traffic.
6. Look and listen for danger.
 - If you hear a whistle, look up, see what is happening and take appropriate action.
7. If more than one car is involved, split your resources.
 - The least active driver is usually the one who is worst off.
8. Isolate the car's electrics.
 - Get the driver to isolate the car if possible. He should know exactly where the isolator is and how to operate it.
9. Check the driver's condition.
 - Try to approach from the front, talk to him. If he's conscious and capable of moving, give him time to collect his thoughts, don't pull at him, but provide help and support if it is needed. Summon assistance if necessary. Any driver involved in an impact must not be allowed to wander off and should be taken to the medical centre by ambulance at the end of the session.
10. Move the car to a place of safety.
 - If the driver has removed the steering wheel to get out make sure he replaces it.
 - Removeable steering wheels will only lock in one position. If you have to replace a steering wheel to move a car, examine the steering column and the underside of the wheel, pull back the locking collar behind the wheel and put the wheel on the column so that the two match.
 - Check whether the car is in gear and put it in neutral if necessary.
 - The easiest way to move a saloon with a sequential gearbox is to put a marshal inside to depress the clutch.
 - Try to move it as close to and parallel to the tyre or other protective wall between the circuit and banking and as far away from the line of impact, should another car go off.
 - If you cannot move it, get back onto the banking at the earliest opportunity.
11. Stay alert
 - Once you are back on the banking do not allow anyone to stand so that the car is between them and the oncoming traffic. If another car comes off and hits it they could be showered with debris.
 - Keep an eye on the car in case a fire breaks out.

Snatching

Snatching - the use of tractors, four wheel drive vehicles and even JCBs to remove vehicles to a place of safety while racing continues has become increasingly prevalent with the growth of gravel traps which make it difficult or impossible to move the vehicles by marshal power alone

1. Safety is paramount. Keep a close eye on the Snatch Crew's and your own.
2. Avoid Snatches by moving vehicles yourself.
3. Find out beforehand how the crew will operate and what assistance they may want.
4. Get the vehicle ready before the Snatch arrives. Clear gravel away from towing eyes and remove bodywork if necessary.
5. Be ready to help clear the vehicle at the gap in the circuit wall where the Snatch crew will leave it.

Vehicle Recovery

1. Plan Ahead
 - Is a breakdown or assistance from a snatch vehicle needed?
 - Where is it best to tow or lift from?
2. Communicate
 - With your observer, your colleagues, the driver and recovery crew.
3. Get the car ready for recovery immediately the session is over
 - Push it to the side of the track
 - Remove bodywork if necessary to make it easier to lift or tow
4. Safety First
 - Always have an extinguisher to hand when recovering a car.
 - Guard against ropes or hoists breaking, trip, crush and fire hazards. NEVER go underneath a suspended vehicle
5. Clear Up
 - Make sure the track, grass verge and any gravel traps are clear of debris.
 - Check for and treat any oil. Powder is available on posts to dry up oil spills. Apply it sparingly with a shovel and brush it well. DO NOT treat oil spills if the track is wet. You will only make matters worse.

Hand Signals

There are five recognised hand signals used to communicate over a distance. Three are used to request medical assistance and the other two to indicate whether it is safe to cross the track or a Rally stage. Pause for thought before summoning medical assistance. If you are sure it is required make the signal clear and maintain it until acknowledged by the Observer on post who should repeat the signal to you.

Do not allow signals to become confused. One informal signal often used to indicate a straight tow is needed can be mistaken for a request for a Rescue Unit, so take extra care to avoid embarrassment.

1. Rescue Unit
 - a) Arms held out sideways level with the shoulders
If a driver is trapped or if he needs medical assistance and you don't have a doctor, paramedic or ambulance personnel on post, call for a Rescue Unit. All Rescue Units will have medical personnel on board.
2. Doctor
 - a) One arm held up like a school kid asking a question.
The Doctor signal may be used to summon a doctor, paramedic or ambulance personnel who are on the post.
3. Ambulance
 - a) Arms, crossed at the wrists and held above the head.
The Ambulance signal should only be used for an injury in the crowd or to summon assistance when a driver has been removed from a vehicle and been taken ill on the banking.
(1) The ambulance will usually arrive via the spectator area, so urgent cases may require a rescue unit.
4. Safe to cross
 - a) Sweeping movement with one arm as if ten pin bowling.
5. Stop
 - a) Hand held up in the stop position.

The Incident Officer's Role

An Incident Officer is someone who organises the most effective use of marshals and equipment available on a post to ensure safety and encourage the smooth running of a race meeting.

An Incident Officer should be a:

1. Leader
 - REMEMBER leadership is something you do WITH people - not TO them. When the best leader's work is done the people say 'We did it ourselves!' (Mao Tse-Tung).
 - Begin by briefing your team. As an I/O, you should ALWAYS brief, but DON'T always give the same briefing. Tailor the briefing to the experience level of your audience, the circuit, the post and the programme of races.
 - Use your briefing to build your team, create confidence, establish guidelines, stress safety issues and remove uncertainty.
 - if someone is doing something wrong it is your job to put them right, but use diplomacy and tact where ever possible.
2. Safety Officer
 - Check the equipment and the post. Report any deficiencies or hazards.
 - Stand back from an incident. Direct your team and keep an eye open for developing danger.
 - Drivers and photographers may need warning of the hazards they face on the banking.
 - Spectators cannot be ignored.
 - Always remember the danger does not stop when the racing is over.

3. Communicator

- Communicate with your team, the post's Observer and, if necessary, Race Control.
- Report anything to the Observer that you think they should know about or may have missed.
- If there is an incident to be dealt with or a car to be recovered after a session, develop a plan and communicate it to the team.

4. Trainer

- One of the most important roles of an I/O is providing on post training for new recruits, who may also benefit from spending time with the Observer. You should cover all the essentials with a new recruit and check the experience of trainees, by getting them to check fire bottles under supervision and explain their use.
- Old Hands can help with training, but may need their memories jogging too

Always debrief after an incident. Explain and invite observations on how incidents are handled.

Flag Marshalling

1. Flags must be displayed clearly and in plenty of time, if they are to be of any use at all. It is pointless showing a flag as the cars pass you.
2. Before racing starts take the opportunity to look at the flag post from the driver's point of view. Work out when the post comes into view and when the driver stops looking at the post. On a corner this can be well before the car reaches you as the driver is already looking into the bend.
3. Always stand facing your fellow flag marshals and never stand back to back. If you are facing the traffic your reactions are vital to the marshal facing in the other direction. In an emergency, pull them out of the way if there isn't time for them to react to your shout.
4. If you are on your own do NOT stand with your back to the traffic. Stand sideways on or slightly towards the traffic and check for incidents behind you by glancing over your shoulder regularly. Don't be afraid to ask the incident team or the Observer to shout if something happens and you miss it.
5. If there is more than one flag marshal on a post, the marshal with the yellow flag stands with their back to the traffic, the marshal with the blue flag faces the traffic and a third flag marshal would hold the green flag and stand back, behind the marshal with the blue flag.
6. Rotate yellow flag marshal to green, green flag marshal to blue and blue to yellow in long races, that way the green flag marshal can get up to speed on where the race leaders and the slow cars are before taking over the blue flag.
7. Try to keep the next flag point in view or, if that is not possible, flick your eyes regularly towards the next flag point to check for signals.
8. Make sure all of the flag is displayed, at a right angle to the drivers' line of sight.
9. If it is necessary for another flag point to respond to your signal - to display a green flag to mark the end of a hazard zone, to put out a Safety Car Board, to display the black and yellow quartered flag or the red flag, for example - hold the flag in such a position that they can see and respond to it, before moving it into the drivers' line of sight.
10. Use flags to "talk" to the drivers.
 - A stationary blue flag, held high can be used to indicate to cars further back that they are about to be overtaken and then moved downwards as they near the flag point, before being waved, if necessary.
 - Flags can be waved lazily or vigorously depending on the urgency.
 - Stationary flags can be moved to catch a driver's attention.
11. In windy weather, move the flag quickly in the direction of the wind and more slowly against it to achieve a clear signal without wrapping the flag around the pole. In high winds, the best way of "waving" a flag is to hold it as if you were displaying a stationary signal, and then move your arms.
12. Don't use or wave flags unnecessarily - it just leads to them being ignored by drivers. If you see a driver move over or indicate to another to pass, don't bother with a blue flag - unless you fear the driver being overtaken may not realise more cars are about to overtake.
13. Don't downgrade a flag signal simply because you cannot see any cars. One of the worst crimes a flag marshal can commit is to downgrade a waved yellow flag to a stationary yellow while there are no cars in view and then upgrade it again when cars appear. The preceding post will take the change as an indication that the hazard has lessened and withdraw their stationary yellow flag which means drivers will have no advanced warning.

If, instead, you move from a vigorous wave to a leisurely wave while there are no cars, the advanced stationary flag will remain out and you will rest your arm at the same time.

14. Be prepared to use a flag to force a signal at another marshals' post.
For example, display a green flag to indicate to a preceding post with restricted view that they should be displaying a yellow. The green could be waved for a short while to indicate they need to wave the yellow if a car is out of their view, but in a dangerous position. Withdrawing the green indicates to the advanced post that it is now safe for them to withdraw the yellow.
15. If you need to display more than one flag on a post - for example a yellow and a white flag, while a vehicle is being snatched or an emergency vehicle is passing to attend an incident at the following post - one marshal should hold one flag high and another should hold the other flag low to avoid one getting obscured by the other.
16. Check safety car and black and yellow flag regulations if either is being used.
Regulations may be modified depending on the club, the type of racing or the circuit.
17. If radios are being used at an International meeting make sure you understand the radio procedures, know when check calls are likely to be made and respond accordingly. See the section on Radio Communications for more information about how to use radios.

Signals displayed on Marshals' Posts

Yellow Flag

1. No overtaking.
2. A stationary yellow flag tells a driver to slow sufficiently to ensure full control of the car is maintained.
3. A waved yellow flag means slow down considerably, be prepared to take evasive action and stop, if necessary.
 - A waved yellow flag is displayed at the marshals' post immediately before an incident if the track is obstructed or there are marshals working trackside.
 - The preceding post will display a stationary yellow, or even an additional waved flag if the incident is very serious.
 - The post following the incident will display a green flag to show the hazard and ban on overtaking is past.
4. No overtaking is allowed between the stationary yellow and the green flag. Any infringements should be reported to your observer, who will need to know:
 - the numbers of both cars involved
 - where the overtaking occurred
 - who overtook who - and on which side
 - the time it happened.

Yellow flags are also shown when a Pace or Safety Car is controlling the race while a serious incident is dealt with.

International Yellow Flag Regulations

International regulations allow double waved yellows when the track is wholly or partially blocked, but FIA regulations insist yellow flags should only be displayed at the post immediately ahead of the incident and not at the preceding post - unless the Clerk of the Course has decided there is a post with a particular visibility problem and drivers have been informed the preceding post will also display the same flag signal.

The FIA regulations - used during F1 and GT races state the Yellow Flag should be:

- stationary if the car is off the track, even if marshals are working on it.
- waved if there is a hazard on the track
- double waved if the track is wholly or partially blocked

Hazard Board

The Hazard Board - a black exclamation mark inside a yellow triangle with a black border - indicates the presence of a hazard, such as a stationary car, which is off the track and wasn't there when racing or practice began. Typically, the hazard will have been covered with waved or stationary flags at an earlier stage, usually for a minimum of one lap, prior to the hazard board being displayed. Overtaking is permitted when the Hazard Board is displayed.

Inform the post Observer the instant the Hazard Board is displayed as they will need to report the time to Race Control.

Yellow and Black Quartered Flag

The yellow and black quartered flag allows a race to be controlled while an incident is dealt with in much the same way as it would be by a Safety Car, but without the need to put a Safety Car out on the circuit. On seeing the flag the leader should slow down to 50 mph and allow a train of cars to form up behind him. No overtaking is allowed.

1. The yellow and black quartered flag is initially displayed at the start finish line.
2. Flag points display the stationary flag, following the direction of racing.
3. When the yellow and black flag at the start finish line is replaced by a green flag the yellow and black flags are withdrawn in the direction of racing at flag points around the circuit.
4. Flag points around the circuit DO NOT display green flags when the Yellow and Black Quartered Flag is withdrawn.

The Red Flag

The red flag indicates the race or practice has been stopped, usually because of a car in a dangerous position. There should be no overtaking and drivers are required to proceed slowly to the pits, if it is a practice session, or stop on the grid, if it is a race.

The red flag comes out on the start/finish line and is waved except in certain FIA controlled events where it is held stationary. The flag proceeds both ways round the circuit. At circuits equipped with repeater red lights around the circuit it is permissible for flag marshals to display the flag when the red lights come on.

The red flag should only be shown at marshals' posts

1. if the flag marshals have seen it at a previous post
2. if the flag marshals have seen it at a following post
3. if the flag marshals have seen the circuit red lights go on
4. on the instructions of a flag radio controller at FIA meetings where flag marshals are in radio contact with Race Control

Red and Yellow Striped Flag

The red and yellow striped flag is the slippery surface flag. It is sometimes called the "oil flag" or, wrongly, a "debris flag."

Drivers take more notice of this flag than any other, but, while it can be used to indicate limited amounts of gravel and dirt, as well as oil and water, or even a track surface which is breaking up, a yellow flag should be used to indicate debris which presents a danger - body work and exhaust pipes are typical examples where a yellow and not a red and yellow flag should be used.

White Flag

The white flag indicates a slow moving competitor or a course car - rescue vehicle, fire tender and the like - is ahead.

The flag should be:

- Waved while the vehicle is in your sector - the area between your post and the next flag post.
- Held stationary while the vehicle is in the next sector - the area between the two following flag posts.
- Withdrawn once the next sector stops waving its white flag and holds it stationary.
- Replaced with the appropriate yellow flag signal if the vehicle stops.

Blue Flag

The blue flag is the most difficult to get right and relies heavily on the flag marshal's interpretation. It is used differently during practice and racing and there are different regulations for FIA F1 and GT races.

Race reading - the skill of remembering which are the fast and the slow cars, who is at the front and who is at the back and the ability to judge when overtaking is about to take place - can take some time to acquire.

Shape and colour are usually easier to remember and recognise than competitor numbers.

Helmet colours may also help. Try to identify some visual key - particularly for the vehicles at the back. When it comes to overtaking, it is the backmarkers who will come into view first and the speed differential will show you whether they are about to be overwhelmed.

During practice, the Blue Flag

- Indicates to a driver that they are being caught or about to be passed.
- Held stationary, it means another competitor is following close behind.
- Waved, it means another competitor is trying to overtake.

During racing the blue flag is

- Only used when a car is about to be lapped.
- Except when a car is leaving the pits and likely to be passed by a car on the track, travelling at racing speed.

Experienced flag marshals can use the blue to indicate to the driver on the track a slow car is leaving the pits - and it can be used to tell a driver that has spun and has recovered that he is about to be passed. Depending on how you wave or hold the blue flag you can communicate different degrees of urgency to the drivers.

During racing, when there are only two marshals on a flag post, it is best for the marshal operating the blue and green flag to keep hold of the green flag until the leader is approaching backmarkers. Try to assess the gap between the soon to be overtaken backmarker and see how much shorter it is getting each lap. When you judge overtaking is imminent, put down the green flag and pick up the blue.

FIA Blue Flag Rules

During racing, flag marshals may only show a stationary blue to a car being lapped, unless a stationary blue was shown to the same car on the previous lap or on instruction from Race Control.

Failing to yield when a blue flag is waved can incur a penalty at FIA meetings.

Green Flag

The green flag is shown at each marshals' post at the start of practice and on the warm up lap to indicate to drivers where the flag posts are. It is also used to indicate the end of a hazard area where overtaking has been prevented by Yellow flags.

Intelligent use of the Yellow and Green Flags can minimise the area where overtaking is prohibited. The Green flag can also be used to indicate to a preceding post which has yet to display a flag that an incident is in their sector.

Safety Cars

It is easy to get confused by the multitude of different Safety Car rules. The main regulations are listed below, but are subject to change so always check with event organisers. When a Safety Car is on the track yellow flags should be displayed as normal at the site of the incident.

Traditional Safety Car/Pace Car Regulations

The first indication Flag Marshals get that the Safety Car is out is when they see it approaching with its lights flashing.

1. On seeing the car for the first time the Yellow flag is held out stationary
2. Each time the Safety Car passes your flag point the Yellow flag is waved
3. Once the Safety Car and the train of competitors has passed the next flag point the flag is held stationary again at your point.
4. The Safety Car extinguishes its flashing lights to indicate it is going in next lap.
5. As the train of competing cars passes the start/ finish line flag posts display green flags in the direction of racing.
6. The Green Flags are withdrawn after one lap

Formula 1 Safety Car

1. A stationary yellow flag and an SC board are displayed at the start line when the safety car is deployed.
2. Stationary yellow flags and SC boards are then displayed by all flag posts, in both directions.
3. Flags are not waved, except at the post ahead of the incident.
4. When the safety car is called in it extinguishes all lights.
5. As it enters the pits, the yellow flags and SC boards are withdrawn in both directions and replaced with a stationary green flag.
6. The green flag is withdrawn after one lap.

Formula 3 and British GT Safety Car

1. A stationary yellow flag and an SC board are displayed at the start line when the safety car is deployed.
2. Stationary yellow flags and SC boards are displayed by all flag posts, in the direction of racing.
3. Flags are not waved, except at the post ahead of the incident.
4. When the safety car is called in it extinguishes all lights.
5. As it enters the pits, the yellow flag and SC board is withdrawn at the start line, after which all flag points withdraw their flags and boards in the direction of racing.
6. When a green flag is waved at the start line, green flags are deployed at all flag points in the direction of racing and kept out for one lap.

Flags shown at the Start Finish Line

Black and white diagonal flag

Shown with the car's number to show a driver his driving standards are being observed. Used when a driver is persistently baulking, guilty of unsportsmanlike conduct or trying to gain an unfair advantage by short cutting or running off the track.

Black flag with an orange disc

The black flag with an orange disc is also displayed with the driver's number and indicates some sort of mechanical problem which the driver may not be aware of. The car should call in to the pits on the next lap for repairs. Dragging exhausts, open doors or hatchbacks and petrol leaks are typical reasons for displaying this flag.

Black flag

Shown with a driver's number, indicates the driver must pull in to the pits at the end of the next lap. A driver may be black flagged if he has failed to improve his driving standards after being shown the black and white flag, if he has incurred a stop/go penalty for a jumped start or illegal overtaking manoeuvre or if his car has a serious mechanical problem which must be attended to.

Chequered Flag

Indicates the end of practice or racing .

Role of Observers

Observers are the eyes and ears of the Clerk of the Course. At it's simplest, that means they are responsible for submitting impartial reports on racing incidents which occur in their sector, but the role of an observer is far more extensive than that. Observers play a vital safety role and also have an important training role.

On post training is a key part of gaining the experience to become a good and safe marshal. Some training can be delegated. Incident Officers should be able to provide hands on fire, safety and incident handling training, but may need to be encouraged - particularly when it comes to debriefing their team after an incident.

Encourage Incident Officers to give a full briefing at the start of the day and be constructively critical of what they say and fail to say. Ensure they cover the hand signals used in marshalling. Involve other personnel including First Aiders and doctors. Discover what role they see themselves playing in the event of an incident. They may be unwilling to go trackside while racing is continuing or have been specifically instructed not to go trackside until racing has been stopped.

The major training role for Observers, however, is probably training Flag marshals and trainee Observers. It is difficult for fellow Flag marshals to help new colleagues, unless there are three or more on a post and one can watch what a new Flag Marshal is doing from the same direction. Try to be positive. Highlight the things someone is doing well before being critical. Ask them what they find most difficult to create an opening for a suggestion.

Observer's Personal Equipment Checklist

1. Advance paperwork
 - Often contains information on pace cars, rolling starts and the like
2. Pens, pencils and paper
3. Watch set to race time
4. Sign on sheet or Post list
5. Programme
 - May - or may not - be more accurate than your advance paperwork, so it's worth having both.
6. Report Pad
7. Circuit diagrams
8. Serious Incident form

On-Post Checklist

1. Communications - Phone, radio and signals
 - Everyone usually remembers to make a phone or radio check, most emphasise what a whistle means if their team should hear it, but few re-inforce the use of recognised arm signals. Make sure the I/O or you yourself establish what arm signals to expect.
2. Emergency vehicles - Manning and access
 - Check that emergency vehicles are present, manned, ready and have the access they need on and off circuit. The vehicles are under your control. Experience may tell you whether there should be a vehicle at a gap, however, if you are 'phoning in at the start of the day, it is worth mentioning the absence of any vehicles.
3. Marshals - Details, experience and gear
 - You should ensure you have details of all the marshals and other officials on your post. Checking their experience and that they have the proper gear can be delegated to the Incident Officer, but you should ensure you are happy with the way marshalling teams are split up.

4. Post Equipment
 - Checks can be delegated, but you must be happy with the condition of the equipment and its deployment.
5. Post Conditions
 - Walk the banking. Is it level and dry or potholed and boggy? Are the barriers capable of being quickly scaled, is the debris fencing compromising the safety of the incident team? Some circuits invite Incident Officers to report on the state of the post and a report from the Observer will add weight to that report.
6. Briefing
 - Brief in cooperation with, rather than in competition with the I/O and involve everyone, including medical, first aid and snatch crew. Decide on the points you want to make and keep it brief, but remember that the briefing is the best chance you will have to set the tone for the post and, along with the I/O, turn a group of individuals into a team.

Making Verbal Reports

Give Race Control:

1. Post details
2. Car number(s)
3. What's happened
4. Action taken
5. Action needed
6. Time

Not all the information required for a verbal report may be instantly available, but Race Control will welcome an incomplete report, with a follow up, particularly if the verbal report enlarges on what they can see on circuit cameras.

You may not know the car numbers, but you can give an initial view on a potentially serious incident which your team is about to deal with and Race Control an early indication of any action they may need to take.

Ensure that in the event of a rescue unit or doctor being scrambled they are made aware of the way the incident occurred as impact details can give indications of potential injuries and the need for alternative extrication strategies.

If the Hazard Board is displayed ensure that you make a note of the time it was put out and report it to Race Control.

Making Written Reports

Written reports should contain:

1. All the details you gave in your verbal report
2. Flags displayed
3. Sketch (see below)
4. Conditions
5. Damage
6. Recovery
 - You may also need to include details of the recovery, particularly if further damage results and details of damage to the circuit should be included, even if it is slight - say a tyre wall rebuild.

Written reports should be factual and not contain opinion. You may wish to enlarge upon your written report verbally when the Clerk of the Course or Chief Observer comes round to collect your report.

Making a Sketch of the Incident

Sketches should contain two types of information, static and dynamic:

Static Information

- Circuit and Barriers
- Personnel
- Flag and Marshals Posts
- Direction of Traffic

Dynamic Information

- Position of car(s) - start, contact and finish
- Path of car(s) between those points
- Flag signals

Circuit Specialists

Specialist marshals operate in the paddock and assembly areas, where cars are collected before being released to the track for practice or competition, on the startline and in the pits. They inevitably have more contact with drivers, teams and, possibly, the general public and need to be able to deal with them with courtesy and understanding, whatever the circumstances.

Understanding the principles and practicalities of fire fighting is as important for specialist marshals as it is for course marshals.

Paddock Marshals

The Paddock is essentially a large car park for competing cars, transporters and other authorised team vehicles, where teams prepare, repair and refuel vehicles. The Paddock usually extends along the back of the pit garages and may also contain some hospitality facilities. It will have an area set aside for scrutineering - where cars are checked before and, if required, after racing, to ensure they comply with a range of regulations. The area used for post-race checks is known as Parc Ferme. Cars in Parc Ferme may not be touched by teams until they have been released by scrutineers.

The Paddock also incorporates an Assembly Area, which, as its name suggests, is used to collect competing cars before a practice session or race.

Paddock Marshals:

1. Are usually the first marshals to sign on and start working - often well before competitors.
2. May control the entrance as well as the exit from the Paddock area as well as paddock parking, making sure only authorised vehicles are allowed in and are parked in the correct location.
 - Ensure you know which permits are required and the layout of the paddock
3. May be responsible for calling competitors to the assembly area using the Paddock public address system prior to a practice or race.
4. May issue bulletins to teams or be asked to pass other messages directly or via the PA - including requests for drivers and team personnel to attend meetings and briefings in Race Control, with the Clerk of the Course or the Stewards.
5. Will ensure all the cars are present for a practice session or a race. Paddock marshals:
 - May be asked to ensure cars are in grid order before they are released for a race.
 - May need to chase up non-arrivals and report defaults to race control.
 - May need to ensure competitors' vehicles have the appropriate scrutineering passes.
6. Must ensure the track is clear before releasing cars to the track.

Pit Marshals

The Pits - known on Continental circuits as the "Box" - is used by teams to make adjustments and repairs to cars during practice and racing. The Pits usually comprises a pit lane with an exit from and an entrance to the race track and a number of garages for competing cars between the pit lane and the Paddock. The Pit Lane is considered to be part of the race track and is divided into three lanes - an acceleration lane, a slowing down lane and a third lane where work can be carried out on stationary vehicles. It is divided from the track by a raised pit wall, from which crews can signal to competitors.

Pit Marshals should:

1. Wear protective clothing
2. Know the layout of the pits.
3. Know the location of and how to use the emergency equipment kept in the pits, which includes fire extinguishers, brushes and absorbent powder to treat fluid spills.
4. Be aware of who is authorised to be in the pits and ensure only those people gain access. No one under the age of 16 is permitted in the pits
5. Understand what work is permitted, where it can take place and who can carry it out.
6. Keep the pits free from obstructions.
7. Pay particular attention to safety, particularly with regard to
 - cars entering and leaving the pits - particularly when team personnel are crossing from the pit wall to the garages
 - cars breaking down in the pits
 1. move them to the garage lane as soon as possible
 2. warn other competitors to slow as there is an obstruction in the pits
 - cars using the pit lane when vehicles from other races are in the pit garages
 1. teams from the garages may want to move cars into the Pit Lane to work on them or prepare for the next session, while cars from the current session are still entering and leaving during practice
 - Hazards such as paper, rags, metal components, wire etc and remove them
 - Pit stops
 1. You may need to report the length of and reason for stops during practice and race sessions. Record the event or race, the time, car number and reason for the stop or retirement.
 2. The information will usually be most easily available from the team manager or driver rather than busy mechanics.
 3. Don't forget to sign the report.
 4. You should be aware of races with compulsory pits stops for driver changes and when those stops are required to occur.
 5. Be prepared for stops to refuel, change brake pads etc during long distance races.
 - When refuelling is occurring
 1. Refuelling is seldom permitted in the pits, but may occur despite that
 2. make sure an extinguisher is close to hand.
 - Race starts
 1. Commonly, no-one should be permitted on the pit wall until the cars have left the start line.
 - Smoking
 1. No smoking is allowed in the pits at any time. Smoking is usually prohibited in the pit garages too, but not in the paddock.

Startline Marshals

Startline marshals are responsible for positioning the cars on the grid and ensuring competitors are aware of where they should stop following a "Green Flag" warm up lap prior to the start. Startlines are busy places, with mechanics, photographers, journalists, sponsors and other team guests on the grid at some of the more prestigious meetings. It is important that only authorised individuals are allowed onto the grid and that they leave at the correct time - usually two minutes before the start.

1. Position the cars you are responsible for in the appropriate grid positions
2. Ensure engines are switched off if this is a requirement.
3. Engines may be restarted at the appropriate time - usually three minutes before the start.
4. If you have been provided with a board with the row number on, show it to the driver and indicate the position where it will be displayed for the start.
5. The grid should be cleared at the two minute signal, with startline marshals moving to a safe position in line with the grid row they are responsible for.
6. If a driver stalls or is unable to start when the green flag is waved, give the car a push start or, if it fails to start, remove the car from the grid to a place of safety.
7. Check the grid positions you are responsible for any oil or debris and treat appropriately if time allows.
8. As competitors return from the Green Flag lap and come onto the grid, hold out the board with the row number on and keep it there until the cars in the rows you are responsible for have come to a halt.
9. If a driver indicates he cannot start, display a yellow flag to warn competitors behind him. Once the cars have left the grid, help to clear the vehicle.
10. Be aware of cars on the back of the grid starting with time penalties.

Using Radios

Radio Frequencies

Rally:..... 86.4375 MHz AM
Race:..... 169.3375 MHz FM

Radio Usage

Check the radio is on and is set on the correct channel. Set the "Squelch" if this is not done automatically. Turn the squelch knob up until you get continual "white noise," then turn the knob back until the noise just stops. Once you have reported in, do not leave your radio unattended. Use the appropriate frequency for the event. Use of Race frequencies to talk between units at major Rallies, where the RAC MSA's A, B and C radio channels are in use can interfere with event communications.

Listen before you speak - others may have greater need of the airwaves.

Keep messages short and to the point and speak only when necessary or when spoken to.

When using your radio, remember communications may be monitored by the DTI and there will almost certainly be a spectator with a scanner.

Use your call sign and work through the radio controller. Think about what you want to say before you depress the PTT (Push To Talk) button, pause, then speak across the microphone rather than into it to avoid the noise of your breath distorting the transmission.

Clear the airways as soon as possible. If you don't know the answer to a question, say so, or ask Control to "Wait One" while you find out. If you have a long message - particularly one that includes a list or information which needs to be taken down in full - say "Break," pause for Control to note what you have said and to collect your own thoughts, then continue.

Radios consume battery power. If you are in a vehicle run your engine regularly to recharge it.

Arriving at a Rally stage:

Check which control you are working with in the Operations Manual or Safety Plan - there may be a more than one Control working in the area.

Listen to Radio Comms before informing Control of your presence. Other stages may be operational and need priority over the air waves.

Remain alert for a radio check before the stage is declared "Ready."

Arriving on post at a Circuit or Speed Event

Check in with Race Control unless you are aware that Race Control will be conducting a radio check. In which case, remain alert and report in when called during the check.

Reporting Reception levels

Judge the standard of reception and respond accordingly. Don't say "loud and clear" simply because that is what you always say. On Rallies in particular, the system of reporting signal strength and clarity on a scale of five may be better. "Reading you five by five" or "Reading you fives" is the equivalent of loud and clear. Adjust the numbers accordingly. Be prepared to reposition to improve reception.

Check the other call signs in your area in case it may be necessary to relay messages.

In an Emergency

Judge the situation and, to gain priority over other callers precede your call sign with one of the following:

PRIORITY..... Life or death situation
SAFETY..... Situation which could lead to further incidents if unresolved
URGENT Other calls requiring attention as soon as possible

Other Radio Terms

Affirmative.....(Pronounced Ayfirmative) Yes
 Negative.....No
 Copy To hear and understand a message for another user which is relevant to you.
 Understood..... I understand your message.
 Acknowledged I understand your message
 Relevant Used to break into a communication when you have information relevant to what is being said.

Go, Go Ahead, Send, }
 Pass Your Message } Permission granted to speak (usually preceded by call sign)
 Go Again, Repeat, }
 Say Again } Repeat your message
 Over..... I have finished what I have to say, but you may want to come back to me.
 Out..... This conversation is ended
 Over and Out..... Is wrong. Don't use it.
 Control is Clear This conversation is ended, control is ready to receive calls from other radio users

Go Direct..... Permission to speak direct to another operator without going through control (eg "<CALLSIGN1> go direct to <CALLSIGN2>")

<CALLSIGN> Standby <CALLSIGN> Get ready to scramble.
 <CALLSIGN> Proceed..... <CALLSIGN> Go NOW. Remember to report your arrival at an incident and give regular situation updates.

Wait One Pause while we collect our thoughts
 <CALLSIGN> Hold Don't transmit, I wish to deal with another caller.
 <CALLSIGN> Wait Out Get off the air NOW!

The Radio Alphabet and Numbers

Letter	Pronunciation
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

Number.....	Pronunciation
0.....	Zero
1.....	Wun
2.....	Too
3.....	Tree
4.....	Fower
5.....	Fife
6.....	Six
7.....	Seven
8.....	Ait
9.....	Niner
1000.....	Tousand
Decimal Point	Dayseemal

Rally Marshalling

There are three main types of Rallying that take place on the mainland in the UK

1. Multi Venue (Stage) Rallies
 - Rallies like the RAC Rally, which involve a series of competitive Special Stages at different (usually forest) locations, separated by non-competitive Road Sections and Service Halts
2. Multi Use (Single Venue) Rallies
 - Similar to Stage Rallies, but these take place at a single venue, or adjacent venues linked by public roads, which may be a disused airfield or similar facility and usually combine sections of tarmac and gravel. By varying the combination of roads used and directions they are travelled in it is possible to provide sufficient variety for eight or more stages to be run in one day.
3. Road Rallies
 - Navigational tests, usually run at night over public roads, under public road legislation with penalties for competitors who are judged to have exceeded the set speed limit (no greater than an average of 30mph).

Rallying involves a large number of people, so it is important that everyone knows their role and duties and the part they are expected to play in the team. It is helpful to know the role others are expected to play and how their role links with yours. Understand the limit of your responsibilities and do not exceed them. Follow the chain of command and support senior organisers. In rallying especially, people should be prepared to be multi-functional and carry out duties they would not normally do.

Teamwork is the key to the events success.

For information on personal equipment, basic first aid and fire fighting see the appropriate earlier chapters

Multi-Venue (Stage) Rallies

Marshals at stage rallies can find themselves in close contact with both competitors and the public, which means they may need to act with diplomacy.

Rally stages may be crossed by cyclists, motor cyclists and horse riders. The Health and Safety Executive insists that any member of the public straying onto a stage should be stopped and warned of the dangers. However, marshals and organisers cannot prevent the public from using footpaths and tracks- unless they have been officially "closed" - although they should ensure that people are advised of and directed to safe routes.

All points where paths cross the stage must be manned and should also have appropriate warning signs.

The vast majority of people respond positively if they are politely informed of what is happening. It is the officious marshal who tells someone "you can't go down there" who creates problems and provokes a negative response.

The message they should be given is "If you go down there, be careful because... You might be better going this way because...."

Motor bikes and push bikes present particular dangers. Most mountain bikers generally do not want to travel along a stage - they prefer more challenging routes.

Going Rallying

1. The Chapter on Personal Equipment provides a basic list of equipment. Marshals in stage will inevitably be more isolated from civilisation than circuit marshals, which means warm and waterproof clothing is all the more essential, together with plenty of food and hot drinks or facilities for cooking hot food and making hot drinks. On rallies you may also need:
 - The appropriate maps to locate the stage
 - Dry Powder fire extinguisher with an ABC rating (marked on the extinguisher). This type of extinguisher can put out Class A (solid materials), B (flammable liquids) and Class C (gas) fires.
 - First aid kit
 - Powerful torch
 - Whistle
 - Reflective jacket

Make sure you know how to find the electrical cut offs and extinguisher triggers on a rally car (see section on fire fighting) and how to release racing harnesses. If in doubt, ask. If you intend to marshal regularly at rallies or other events try to make the time go on a First Aid course

Before leaving

1. Check your equipment
2. Check the Map Reference and any stage entry instructions you have been given.
 - References are usually given as an Ordnance Survey Map Number, followed by a six or (more unlikely) eight digit number which indicates the square on the map - eg MAP:eeennn or MAP:eeeeennn, where MAP is the map number and e and n are numbers between 0 and 9
 1. The first two numbers indicated by an "e" locate the left hand side of the square referred to, reading from left to right. The first two number indicated by an "n" indicate the bottom side of the square referred to, reading from the bottom of the map to the top.
 2. Once you have located the square, use the remaining numbers to locate the exact position within the square referred to. Imagine the square divided into a 10 by 10 grid or a 100 by 100 grid and move left to right and bottom to top accordingly.
 - Most stages have a Stage Entry reference and a Stage Start reference. You should always follow any instructions you have been given for reaching the stage and leave plenty of time for getting there. Short cuts which you can see on the map will probably not work as they deviate from routes arranged by the rally organisers and the police/local authorities and are likely to lead you to a road block or to a one way section where you will be turned back.
 1. Stage Entry, tells you where to leave the main road
 2. Stage Start is where you will normally sign on and be allocated a post.

Arriving at a Stage

1. Sign on with the Stage Commander.
 - You will be told the sector you are to marshal - usually between or at numbered junctions - and may be given a map indicating the junctions, rescue and recovery vehicle and radio points. If not, ask the stage commander where they will be located.
2. Check the procedure for the stage to be declared ready and to indicate when marshals are stood down.
3. Proceed to your post, when you get there:
 - Park in a safe position well away from the stage
 - Introduce yourself to the nearest Sector Marshal or Radio Operator
 1. Sector Marshals control the sector, are responsible for briefing and deploying marshals and for dealing with any incidents.
 - Check that the stage furniture (rally arrows, box junctions, spectator tapes etc) is in position
 - Await stage opening cars
 - Ensure any spectators are in a safe position
 1. It is far easier to advise someone where to stand before they get settled than to have to move them later because they are in a dangerous position.
 2. Check where the better (and safer) viewing spots are and advise spectators to go there.

Cars on Stage

A number of official cars may go through a stage before the first competitive car

1. Manufacturers Course Closer Cars
 - Commonly known as "Tyre Crews"
 - Allowed to conduct a conditions check by running through the stage on International Events only up to 90 minutes before the first competitor.
 - Although they are not meant to travel at competitive speeds and may not wear helmets, it is not unknown for manufacturers crews to have serious accidents, so be prepared.
2. The Clock Car
 - Delivers timing clocks to the Arrivals, Start and Finish timing controls and entry and exit controls at other appropriate locations such as Service Halts, Regroups and Parc Ferme.
3. Treble Zero
 - So called because the vehicle will be allocated the number 000
 - On an international event, leaves Stage Start 60 minutes ahead of the first competitor.
 - Checks stage lay out, presence of marshals and other officials at their posts and the accuracy of timing equipment.
 - Carries spare stage equipment and timing clocks
4. Official Cars
 - Stewards and other authorised officials allowed to drive through the stage.
5. Double Zero
 - Allocated the number 00
 - Leaves Stage Start 30 minutes before the first competitor.
 - Spectator Control. Checks safety of spectators on the stage
 - Also rechecks the stage "furniture" - rally arrows, box junctions, marker boards and warning signs.
 - May stop in stage to ask marshals to rectify a problem
 - Carries spare stage equipment and timing clocks

6. FIA Officials
 - On an international event, the FIA Safety Delegate, Stewards and FIA Observers can cover the stage up to 30 minutes before Safety Car Zero
- Safety Car Zero
 - Allocated the number 0
 - A rally car, with driver and navigator on board which will travel at competitive speed, carrying out final operational checks.
 - Starts five to 10 minutes ahead of the first competitor
 - Can clear a stage faster than the competitors on some events, particularly when the Zero car is driven and navigated by a professional, trying out a new car.

Dealing with incidents in stage

1. Follow the lead of your Sector Marshal, if one has been appointed.
2. Isolate the car's electrics and deal with any fire as described earlier.
3. Talk to the driver and navigator and check their condition.
4. Report to the nearest radio operator.
 - The Radio Operator will note the number of each car as it passes on a check sheet. If a car goes missing, it should be possible to pinpoint where it is by comparing the details on check sheets over the airwaves.
 - The Radio Operator may also be equipped with a red flag and/or a yellow flag.
 1. The Red Flag is used to stop the stage on the instructions of the Stage Commander if emergency or recovery vehicles need to be sent in. Competitors must stop at a red flag and await instructions to proceed.
 2. Yellow Flags are used on some international events to allow cars on stage to complete the course, even though an emergency vehicle has been scrambled. The flag is only displayed once the emergency vehicle has passed the flag point and is displayed until the Stage Commander says it may be withdrawn.
5. Display the car's warning triangle 100 yards ahead of the incident or further away if there is an intervening corner.
6. Display the OK/SOS board on the car.
 - All rally cars must carry a triangle and an OK/SOS board. If all is well with the driver and navigator, make sure the OK side of the board is visible to following cars in the back or side window, otherwise, the SOS side should be displayed - in which case the following driver should stop to render assistance.
7. If the crew is out, you may want to move the car to a safer position.
 - A car on the side of a straight piece of track is generally safe, but cars on bends may need to be moved further off the track or up a side track.
 1. At single venue events, ensure that the side road you are using to get a car out of the way is not going to be used as part of a stage later in the event.
8. If crew members are trapped and injured, or the car cannot be moved from a dangerous position, summon assistance.
9. Do **not** move unconscious casualties unless their lives are at risk.
 - If the car has rolled or suffered a heavy impact, suspect a possible spinal injury.
 - Under no circumstances should you right a rolled vehicle with passengers inside unless you can do so in a controlled manner.
 1. Assemble sufficient marshals/ spectators to right the car.
 2. Get someone inside to support the injured competitor's head and prevent excessive head movement.
 3. Once they have control of the neck, they should call the shots
 4. Right the car slowly, under control and put it onto its wheels gently
 5. **NEVER** drop a car onto its wheels if there is still someone inside.

10. Report back via the Sector Marshal or Radio Operator.
 - As well as information about the crew, try to provide as much information as possible about the condition of the car to aid the recovery crew.

Retirements

A crew that is retiring must return their time cards and a completed damage disclaimer, outlining any damage to property or third parties to the Secretary of the Meeting at Rally HQ or leave them at the stop line for the course closer to pick up.

If the car is driveable, the crew may want to leave the stage. Try to give them a route out which will not bring them onto or near the rest of the stage route and remind them that they must ensure their damage declaration is returned. Ensure the Radio Controller is aware that the competitor is leaving the stage and quitting the event.

At the End

1. Stay on post until instructed otherwise by the Stage Commander - possibly via the nearest radio operator - or until the Course Closer passes your location.
 - NEVER assume the stage is over. There can be delays between cars - due to an incident on your stage which has resulted in an emergency vehicle being called in to the stage or an incident on a previous stage which has led to a gap.
 - Even then take care. Recovery and Rescue Vehicles may still have work to do and competitors who have been recovered may be driving through the stage.
 - The Course Closer will have appropriate markings on the side of his or her vehicle and, as with other closing cars, will usually have an orange flashing light.
2. Once the Course Closing Car has passed your position it is safe to leave following stage direction or by using roads which do not form part of the stage unless the Stage Commander has expressly given permission for cars to travel "WD" - Wrong Direction.
3. Be prepared to help the Recovery and Rescue Crew sent to deal with vehicles in your sector. You can help by:
 - Protecting the scene
 1. Deploying fire extinguishers - possibly by using the recovery unit's own extinguishers
 2. Keeping spectators away.
 - Warning the recovery operator immediately if you can see that something is going wrong.
4. Before you leave, take down any stage "furniture" - arrows, tape, signs, brushwood barriers etc. and leave it as instructed by the stage commander (usually in a pile by the track for the equipment officer to collect)
 - If you know there are still vehicles to be recovered leave one arrow up to indicate stage direction as it is often difficult for a recovery operator to navigate using a stage map alone in the depths of a forest, late at night.

Take any rubbish with you

Stage Time Controls

It is up to a competitor to present the time card to the marshals at a time control.

Stage Arrival - Arrival Time Control (ATC)

1. Manned by two, or possible three marshals, equipped with
 - A rally clock
 - Check sheet to record the arrival of competitors.
 1. The check sheet may have car numbers, against which a time is recorded, or times, against which a car number is recorded.
2. Competitors should arrive at an Arrival Time Control ready to start the stage - helmets on, belts secured, chewing gum out!
3. The ATC marshals take the competitor's time card when it is presented, write the time on the card in the appropriate box and notes the time and the number of the car on their check sheet. They may also enter a start time - often three minutes after the arrival time.
 - On national events, the competitor's time card will usually have more than one, and possibly as many as three stages on one page.
4. Competitors can enter an Arrival Time Control up to 59 seconds ahead of or after the arrival time on their Time Card without suffering a penalty.
 - A competitor whose card shows he should arrive at 08:30:00 (Hours:Minutes:Seconds) can arrive at any time between 08:29:01 and 08:30:59 and demand the 08:30:00 as his arrival time.
 - If the competitor arrives ahead of 08:29:01 he will suffer a time penalty - usually ten minutes. If he arrives after 08:30:59, then he will not suffer an immediate time penalty, but his penalty free lateness allowance will be reduced accordingly.
 1. Most events allow 30 minutes of penalty free lateness. So a competitor who turns up late by one second will have the number of penalty free minutes he has reduced by one minute. Once a competitor is OTL - Outside Total Lateness - he will be penalised according to the event's regulations. However, it is not the job of the marshals at the ATC to impose any penalty.
 - As an event proceeds - and particularly after a long stage - several competitors may end up with the same arrival time. They may each be given the same arrival time, but, obviously, their start times will not be identical.
 1. A slower competitor will usually invite a faster competitor with the same arrival time to go ahead and take an earlier start time.
5. Arrivals marshals may be asked to tell competitors about
 - Amendments to the stage or changes to arrangements later on.
 1. If so, they will be given a sheet detailing the changes and a form for the competitors to sign, indicating they have read the information.
 - Cautionary messages, such as logs on the side of the track, cars off in stage etc.

Once the competitor is passed the ATC he is technically in dead time and may do limited work on the car - change a tyre, cleaning lights and windscreens - with no outside assistance. On events where Pace Notes are banned, checks may be carried out to ensure none are being carried. The checking team must comprise a man and a woman.

Start

Competitors come to the start when told to do so by the start line marshals. It should not be necessary to knock on the window. The navigator should be watching the flow of cars ahead. Start marshals may delay a competitor in the event of an incident in stage. If they do so they will amend the start time on the competitor's time card.

1. The start is manned by three or four marshals equipped with a
 - Rally clock
 - Flag
 - Check sheet similar to the sheet found at the ATC
2. The marshals with the clock and flag are responsible for starting cars, while the third marshal will either make entries on the competitor's Time Card, or take it to the fourth marshal - usually under cover - who enters the details.
3. The marshal entering information on the card will
 - Check the information already on the card is correct
 - Amend it if necessary
 - Fill in the start time, if necessary
 - Enter the number of the previous car - if the Previous Car system is being used on the rally.
 1. The Previous Car system is a useful safety measure. When the competitor arrives at the finish, the finish marshals check the number on his card with the number of the previous car that passed the finish. If the numbers tally, all is well, if not, there may be a car off in the stage.
4. Startline marshals may also ask competitors to look out for specific cars stuck in stage or warn them if there is a problem.
5. A navigator may ask to look at the start clock to check the time.
6. The marshal with the clock should tell the competitors when there are 30, 15 and 10 seconds to go and then count down from five seconds.
 - At ten seconds, the marshal with the flag should hold it in front of the windscreen on the driver's side.
 1. Under no circumstances should it be allowed to touch the windscreen of the car. If it is wet, it can smear the windscreen and impede the driver's vision and if it is held away from the car it is easier to judge a jumped start.
 - The marshal with the clock counts down the seconds from five, indicating the number of seconds by displaying the appropriate number of fingers.
 - He will also shout out the seconds - largely for the benefit of the marshal with the flag as neither the navigator nor the driver will hear his voice inside the car.
 - On "Zero" the marshal will point down the stage and shout "Go," while the marshal with the flag quickly whips it out of the way.
7. Marshals on the start line should wear stout boots and thick trousers. Stones will fly as the track gets cut up and it may be necessary to turn away from a departing vehicle to protect your face from flying stones.

As well as the Start crew, you are likely to find the Stage Commander and/or Stage Safety Officer at the start, a radio crew, doctor and rescue crew and a recovery crew. On international events the Safety Officer may be at the end of the stage.

1. Stage Commander - has sole responsibility for the stage and its management. The next step in the chain of command is the Clerk of the Course, who is usually based at Rally HQ and is in charge of the whole event. The Stage Commander is the person on the ground who says whether a stage will run or not.

The Stage Safety Officer usually acts as the Stage Commander's deputy and has the job of ensuring the stage is set up properly, with arrows, warning boards, tape and road blocks in appropriate places.

Stage Finish

The finish of a Special Stage is made up of two components - the Flying Finish and the Stop Line. As its name suggests, competitors pass the Flying Finish travelling at competitive speeds, they then slow down in and come to rest at the Stop Line, where a time is entered on their Time Card. The time records the instant they passed the Flying Finish and NOT the time they reached the Stop Line.

Flying Finish

Working the Flying Finish can be one of the most difficult jobs on a stage. It is

1. Usually manned by one person, sitting in line with the Flying Finish line at the end of the stage
2. Equipped with a
 - Rally Clock
 - Some means of indicating to the Stop Line that a competitor has passed the finish - usually by pressing a button, connected electrically to a buzzer at the Stop Line.
 - Check sheet

As competitors pass the Flying Finish, the marshal presses a button which freezes the display on his clock and indicates to the Stop Line that the competitor has passed the finish.

1. The Flying Finish and Stop Line compare and agree a finish time - usually over a field telephone or short range radio
2. Both enter the competitor's number and time on their check sheets.
 - The Stop Line may need to tell the Flying Finish the competitor's number - particularly when it is dark or the weather is bad.
3. Although the clock display is frozen, the clock keeps counting the seconds and will show the current time when the display is released by pressing a button.
4. New timing systems, triggered by the competitor breaking a light beam are being used for international rallies timed to a tenth of a second.

Stop Line

1. The Stop Line will be manned by two or more marshals. One in contact with the Flying Finish and the other to fill in the time on the competitor's time card. The time will also determine when the competitor is due to arrive at the next Special Stage or Service Halt.

Passage Control

As competitors leave the stage they may pass through a Passage Control which may collect their time card for forwarding to Rally HQ, and where checks may be carried out on the car - typically, noise tests, tyre checks and checks for illegal pace notes.

Service Halts

Service halts are busy places and can remain that way all day. If an event starts at 9am you should expect the first service barges to arrive around then.

Allow sufficient room for catering vans and tyre sales in their own defined areas.

Space should also be allocated for results display and handouts.

On arrival, find out where the nearest emergency 'phone is, whether a special area is being set aside for refuelling - and what safety cover is required - and liase with Rescue Crew and other emergency services crew if they are allocated to the service area.

You cannot stop the press and public from entering service halts - indeed, they are often highlighted as a place to visit for spectators, so remain tactful and polite. However:

1. The only vehicles allowed in should be rally cars, services barges and management cars with the appropriate rally plates.
2. Always give priority to competing cars and ask barges which are arriving and looking for somewhere to set up to move aside so that competitors can get in.
3. If there is a designated refuelling area:
 - It must be a clearly defined area away from the main Service area
 - Refuelling must only take place in that location

4. Adequate fire cover should be provided
5. If there is no designated area, safety is the responsibility of the team refuelling, however, marshals should remain alert and ready to provide assistance.

Time controls at Service Halts are similar to those at Arrival Time Controls, but instead of a time in and a start time, the control issues a time in and a time out. Each time control will normally be manned by two people.

If an event is running late, organisers may cut service time.

Regroups

On larger events, organisers will include one or more Regroups to close up gaps which have developed due to retirements and delays earlier in the event. Regroups have an In and Out Control similar to a service halt, but servicing may be restricted or prohibited entirely as once competitors have passed the In control they are considered to be in Parc Ferme.

Parc Ferme

A secure area where competitors cars are parked at the end of a leg, section, day's competition or at the end of the event if they are to be scrutineered. Parc Ferme will have an In and an Out control - unless it is at the end of an event, in which case cars will be released on the instruction of the Rally organisers.

If you are marshalling a Parc Ferme area, check what, if any, work can be carried out and by whom. Work may usually only be carried out by the driver and navigator, using tools carried on the vehicle and is limited to essential safety repairs agreed by scrutineers, changing a tyre or broken windscreen and replacing a dead battery.

Rally Officials

As with other motor sport events, a Rally is under the control of a Clerk of the Course - or, on an international rally, a Rally Manager. Rallies usually have a Safety Officer, who acts as the Clerk's deputy in much the same way as a Stage Safety Officer deputises for the Stage Commander.

1. The Safety Officer is usually responsible for arranging the emergency services - booking Rescue Units, doctors, paramedics, ambulances and recovery crew - liaising with the appropriate authorities - police, hospitals, county ambulance service - establishing rendezvous points for transferring casualties from Rescue Units to County Ambulances or, if necessary Air Ambulances. The event's Safety Officer may also be responsible for drawing up a Safety Plan containing details of call signs, emergency personnel, Radio Controllers, rendezvous map references and instructions on how to react to most eventualities.
2. There will also be a Radio Coordinator - usually referred to as "Control" - or, possibly a number of Radio Coordinators if an event is spread over a wide area where one Coordinator could not keep in touch with all the stages because of the distances involved.
 - Coordinator(s) will be located at positions where reception is best and not necessarily at Rally Headquarters. Often, they will be at the highest available location. Radio Coordinators have no jurisdiction over how an event is run, but an experienced Radio Coordinator can play a key role in keeping an event running smoothly - calming situations when there is a danger of over-reacting and losing a stage unnecessarily or spotting developing problems.
3. Driving Standards Observers
 - Senior officials who tour the public roads that form the route between stages looking for illegal servicing/refuelling and management cars which are not following their allocated routes. If there is a problem - because of a road accident or some other incident, a DSO may be called upon to assist.

Multi-Use (Single Venue) Rallies

Multi-Use events are far more compact than Multi-Venue events - running in an area of a few square miles instead of hundreds of square miles - however, the same principles apply to dealing with incidents as those outlined in the previous section on Multi-Venue Rallies. Although Multi-Use rallies may be run at a single location, there must be sufficient roads and tracks so that no stage is used more than twice and no part of the stage route is used more than two times in the same direction. A minimum of 20 percent of the route must be changed to count as a new stage.

Multi-Use rallies require more setting up than stage or Multi-Venue events and marshals may be expected to assist with changes to the stages - known as the "turnaround."

Time controls will run similar to those at the start and end of a Special Stage on a Multi-venue Rally, while servicing will generally take place at one central site, which will be run similar to the Paddock at a racing circuit.

At signing on marshals should

1. Collect a stage diagram
 - Ask for one if you are not offered one.
2. Always read any instructions before you leave sign on
 - It may be the only opportunity you get to ask questions, particularly with regard to red flag procedures and radio call signs.
3. Take food and drinks in with you.
 - Even if the rally takes place on one site, you may not be able to get back to your car
4. Find out whether you will be doing the turnaround and if so, who will be co-ordinating your efforts.
5. Help with clearing up
 - The number of Multi-use venues is declining and those that remain - particularly airfields - are more interested in the site being left neat and tidy than in the cash for the hire of the venue.

Road Rallies

Road rallying is, in the main, a test of navigational skills. Competitors are provided with clues - which may be exceedingly cryptic - which translate to map references and allow them to plot a route. They are given an average speed to cover the route, which must be no more than 30 miles an hour, but, as part of the time they take to cover a section will be spent puzzling out the clues, the actual speed at which they travel may be in excess of 30 miles an hour, although, competitors must not exceed the legal speed limit. So, for example, if the distance between two time controls is ten miles, a competitor may be given 20 minutes to cover that distance - an average speed of 30 miles an hour - but, if they take ten minutes to puzzle out the clues, they will have to drive at 60 miles an hour to reach the second time control in time to record an average speed of 30 miles an hour.

The vast majority of marshalling on Road Rallies involves running time controls. You should initially go to the start of the rally to pick up your instructions. You will be given a map reference and instructions outlining where you should park your car. If you are given more than one time control, make sure you can physically get from one to the other in the time available. You should not leave your control until the Course Closing car has passed.

There are four types of Road Rally timing:

1. Standard
 - Timed to the second
2. Neutral
 - Travelling through sensitive areas (built up areas, for example), timed to the minute
3. Regularity
 - Timed to the second and with at least one intermediate time control to ensure competitors are not exceeding the permitted average speed limit.
4. Transport
 - Timed to the minute, but travelling along a route which is not sensitive in public relations terms.

Again, the marshal gives the competitor whatever time he asks for, as long as the time hasn't gone. If you are allocated a Regularity Time Control (RTC), timing is On Sight. That means you stop your time clock when you first catch sight of the competitor, and give them that time when they stop. RTCs will be at the end of a Regularity section, but there will also be at least one intermediate time control to ensure competitors are not exceeding the average speed.

The competitor is given a route to travel and an average speed to maintain along that route. All Road Rallies must contain a Regularity Section but there is no requirement for Selective and Transport stages.

Unlike Multi-Venue and Multi-Use Rallies, more than one competitor can start a section at the same time.

Speed Events

The same basic principles apply to marshalling at speed events - hill climbs and sprints - as apply to circuit racing. Speed events have Paddocks, but no Pits, Clerks of the Course, Stewards, Rescue and Recovery services, a Control, fulfilling a similar function to Race Control on a circuit and Marshals Posts manned by Observers and Incident Marshals and in communication with Control by telephone or radio. There are three main differences, however. Speed events have a more complex start procedure than races.

Runs are usually stopped if there is an incident.

Only one flag is used at a Speed event - a Red Flag - except when the event is taking place at a circuit when other flags may also be used.

Although there may only be three or four cars on the course at one time -all separated by a reasonable distance - and there is never a question of trying to deal with a significant incident while competition is continuing, Speed events can be almost as frenetic as race meetings, and marshals need to be flexible - able to do different jobs or a number of jobs at the same time.

Marshalling on a Speed Event Post

There are four main jobs on a Speed Event Post:

Observing

Communications

Flagging

Incident Handling

It is not uncommon for one marshal to carry out several of the functions.

Speed Event Observer

The Observer's duties are similar to those of an Observer on a circuit. Refer to the section on Observing in the section on Advanced Circuit Marshalling. The Observer should:

1. Check the post equipment is functioning
2. Brief the marshalling team so that everyone knows what is expected of them
3. Appoint a marshal to handle communications with Control and a Red Flag marshal if manning permits - these jobs can be rotated between sessions
4. Keep a constant check for debris or oil on the track
5. Call for a session to be stopped in the event of an incident or to clear the track of debris.
6. Provide written reports and sketches as required by organisers.
 - Check to see what written reports are required. In some cases these will only be needed in the event of an injury or significant impact and in the event of a breach of regulations when a competitor may have his time disallowed.
 - Advice on the information needed for written reports can be found in the section on Observing at Race meetings.

Communications

The marshal handling communications contacts Control and relays messages on the Observer's instruction and acts as a second pair of eyes for the Observer. See the chapter on Using Radios if communications are by radio.

Flags

The marshal with the Red Flag should display the flag:

1. When the post after yours displays a red flag
 - This is a requirement on most if not all Hillclimb and Sprint Courses. The assumption you must make is that the incident will not be cleared by the time the next competitor arrives.
 - Always check the following flag point before the next competitor enters your sector to ensure no flag is being displayed.

2. When any vehicle not carrying competition numbers is proceeding up and down the course.
3. If there are spectators or animals on the course
 - Speed events usually take place in countryside areas and livestock have been known to stray onto courses.
4. If marshals are working on the track.
5. When an incident occurs in your sector which will cause a competitor further down the course to stop, slow or deviate.
 - A red flag may not need to be displayed if a car spins and then drives off as long as it is unlikely to be caught by the following competitor.
 - A red flag must be displayed if a vehicle stops in your sector, unless it has been pushed far enough away as to be in a position of safety.
 - You may also need to stop a competitor if in your judgement they will catch a slower competitor who is in front.

You should also:

1. Use a whistle to attract the attention of the post below if you have to display a red flag.
2. Withdraw the flag at the earliest possible opportunity.
3. Ensure that Control is informed of any competitors whose runs are stopped because of an incident - they will be entitled to a re-run.
4. Keep the flag furled and out of sight when not in use
5. Try to keep spectators in red clothing at a distance from your flag/marshalling point.

When a competitor sees a red flag they should come to a halt as quickly as is safely possible and await further instructions from the marshals. It is usually possible to allow them to proceed, slowly or, in some cases to divert them back to the start for a re-run via another route.

Speed Event Incident Marshals

The role is similar to that of a Course/Incident Marshal on a circuit. See the chapters on fire fighting and incident handling earlier in this booklet for further information.

You are more likely to encounter cars fuelled by methanol on a hill climb or sprint course so take particular note of the information on methanol in the chapter on fire fighting.

Try to clear debris or an incident quickly, avoiding the need for a Red Flag if possible.

Speed Event Paddock Marshalling

The fact that competitors frequently share cars and that the layout of some venues means competitors have to drive down the course to a holding area before runs can begin makes the need for efficient paddock marshalling all the more acute at speed events. Paddock marshals should

1. Agree the method of operation with the Clerk of the Course and Chief Start Marshal
2. Obtain a record of all competitors who have signed on and been scrutineered
3. Call drivers in plenty of time for their session so that they are ready to move to the start at least ten minutes before they are required.
4. Ensure the vehicles have a scrutineering ticket and collect a practice ticket if these have been issued to ensure competitors only take the number of runs they are entitled to.
5. Get the cars in class and running order before they proceed to the start. If a competitor has a problem, make a note, but do not hold up the batch.
6. Advise the Chief Start Marshal of any non-starters or retirements.
7. Ensure drivers comply with whatever safety regulations are in force. Some venues insist they wear helmets and are strapped in before proceeding to the start, particularly if they have to use the course to get there.
8. Where it is possible to run cars down to the start without using the course, keep in contact with the start to ensure there is always a reasonable number of competitors ready to run.

At some speed event courses it is necessary to run the cars back down the course to the main paddock once a batch has completed its runs, in which case there will be a finish paddock, where cars can be collected after their runs.

If you are controlling a finish paddock:

1. Ensure a marshal is waiting to direct each car to a parking spot when it finishes.
2. Ensure the electrics area off and the car is prevented from rolling away if it is going to be left.
3. Do not let cars back up towards the finish line
4. Keep a clear passage for emergency vehicles.
5. Establish when a batch is going to be returned to the main paddock.
 - Give drivers plenty of warning and ensure that those vehicles which need slave batteries to start have them available.
 - It is normally up to competitors to ensure they provide the crew necessary to restart.
6. Ensure drivers comply with whatever safety regulations are in force.
 - Some venues insist they wear helmets and are strapped in before returning to the main paddock.

Startline Marshalling

Timing is operated by a black timing strut, bolted to the front of the vehicle which breaks a beam of light. Competitors are brought to the start line which is 10 cm ahead of the light beam and may start their run when a system of lights changes to green. The Chief Startline Marshal is responsible for the start area and for liaising with the time keepers and paddock to keep a constant stream of competitors on the course.

The Startline will have an assembly area, where teams can start vehicles in preparation for their run and may also have a tyre warming area, where competitors can spin their wheels to raise the tyres to working temperatures before the Start Pad itself.

Marshals in charge of the Assembly and Tyre Warming area should:

1. Ensure there is one vehicle on the pad whenever the course is live
2. Keep the next vehicle a safe distance away to avoid damage by flying stones
3. Ensure teams keep slave batteries and starters in a safe position, away from other vehicles.
4. It is their job to start the car, not yours, however, if you do assist in bump starting a vehicle, take care where you push.
 - Rear wings and fibreglass bodies can be damaged if you push on them.
 - Do not get between the front and rear wheels of single seaters when bump starting or pushing them.
5. Ensure competitors are properly attired.
6. Advise competitors to select neutral or dip the clutch as they are positioned on the Start Pad
7. Ensure each competitor knows the start procedure.
8. Keep an eye open for oil or other fluid spillages and treat accordingly.

Start Pad Marshals should:

1. Manoeuvre the car into the starting position
 - The front wheels usually give the best leverage, but beware of drivers who try to "help" by raising the clutch and be ready to get out of the way if the clutch is accidentally dropped.
 - Roll the vehicle forward until the timing strut cuts the light beam, then roll it back until the beam is no longer obstructed.
 1. If the strut fails to cut the beam, report this to the Chief Startline Marshal
 - Chock the rear wheel to stop the vehicle rolling backwards.
 1. Most speed courses provide a chock on a length of broomhandle so that the chocking marshal can stand to one side of the rear of the vehicle and avoid any flying stones as it leaves the start.

- One marshal may need to gently hold the body work to stop the car creeping forward as the driver selects a gear.
 1. Wear gloves, take extreme care and be ready to let go if you are carrying out this duty.
 2. Also beware of flying stones.
- 2. Check for debris or fluid dropped as the car departs and treat accordingly
- 3. Be ready to position the next car straight away

Marshals on the Start Pad should keep away from the car once it is positioned and take care not to distract the driver or get in the way of the start lights. The start pad is not the place for a conversation with drivers or your colleagues.

Kart Marshalling

Karting provides some of the busiest, most action packed and, on occasion, controversial events in motor sport. Marshals are usually guaranteed a tiring, but satisfying day, with barely a moment to draw a breath. As karts pull off at the end of a practice session or race, the next session will be getting underway and, whatever the circuit, the grids are likely to be full.

Marshalling duties are similar to those on a race circuit or at a Speed event, but the number of karts competing increases the prospects of incidents, while the shortness of most circuits means speed in dealing with incidents - removing karts or getting them going again with a push start - is essential. Flag marshals need to be particularly sharp and Observers face greater difficulties than normal in getting a clear picture of what has happened in their own minds, transmitting those details to Race Control and producing a written report in the limited time available.

Kart Incident Marshals

The same fire fighting and incident handling skills are required as in other areas of motor sport, with an added premium put on remaining alert. See the chapters on Personal Equipment, Basic First Aid, Basic Circuit Marshalling, Essentials of Fire Fighting and the Incident Handling section of the chapter on Advanced Circuit Marshalling.

Kart Flag Marshals

Flag marshals will find themselves using the same flags as on a circuit. See the Flag Marshalling section of the chapter on Advanced Circuit Marshalling for more information.

1. Blue Flag
 - At some Kart circuits, the Blue flag will be under the control of the Clerk of the Course, who is likely to be much closer to the action than a Clerk at a Race Circuit.
2. False Starts
 - An additional flag - Green with a Yellow Chevron - is used in karting to indicate a false start. This flag is also usually under the Clerk's control and is usually shown at the start line and, possibly, the next post as a repeater.
3. White Flag
 - Some Kart circuits use the White Flag to summon an ambulance, instead of to indicate a slow moving kart or emergency vehicle is on the track. Always check the practice employed by the circuit.

Kart Observers

The potential for controversy and the large number of competitors in each event puts an additional burden on Observers, but the principles remain the same as those outlined in the section on the Role of an Observer in the chapter on Advanced Circuit Marshalling.

Remember to brief your team and allocate them duties according to their experience. Agree the boundaries of your post with neighbouring Posts and ensure you know the start procedures and the procedures for stopping a session prematurely before practice begins.

Reports must be factual and not contain assumptions and should be detailed but not verbose. Essential details that must be reported to Race Control are the same as those outlined in the chapter on Observing at Race Circuits.

In particular:

1. Keep a continual watch for driving infringements.
2. Ensure the track surface is kept free from debris and oil.
3. If an injury occurs, complete a major incident report form.
4. If the track is blocked or an incident is serious, decide rapidly whether to request a race stop.

If an incident is taking a long time to sort out provide regular updates for Race Control.

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