

# Guide to Navigational Rallies

## Introduction

Many clubs have problems recruiting people to their ranks, and then keeping them. This Club Manual Guideline has been produced to help address this.

## Preparation

Anybody proposing to run a class, or a course of classes, should plan it thoroughly.

The size of the group and the ages and likely abilities of the participants should be taken into account, and tutors should be ready to tailor lessons according to the live in-session feedback.

It's a good idea to run these classes just before a real event, preferably one that is designed mainly for the class participants.

One University club, for example, runs an annual series of 'Fresher' classes that culminates in a 50-mile 'Training Rally' comprising only two 'classes' (in a different sense), one for novice drivers and the other for novice navigators. They team up each novice with an experienced partner, the average speeds are set well below 30 mph, and the whole series is usually very successful.

The preparation for a course should include a briefing to tell people what kit to bring. This is likely to comprise a map, a pencil, a rubber, a calculator and a notepad. But these items should not be mandatory. Some of them may not have maps, so some old ones should be supplied to allow for this.

## Using Technology

Modern digital information technology can be used to good effect in any class, regardless of its size.

A projector can let everybody see illustrations at the same time. But if a projector is not available, files can easily be copied into a few laptop computers, which are almost ubiquitous these days.

It is very easy to prepare lessons in computer files, and to include maps, diagrams and specific local examples in full colour. These files can replace the traditional printed handouts, with extra material that the students can refer to later if they wish.

If there aren't enough maps, computers or other bits to go round, the students can pair up and share.

There is some hyperlink technology below, but of course that won't work if you're reading a paper copy of this. If there is an abbreviation that you are not familiar with, there is a brief glossary at the end.

## Structure Of The Course

This is best decided on the basis of the numbers and the existing skills of the pupils. Some people can absorb it all in a single session, while others, especially larger groups, may need two or more, as people's aptitudes or previous map knowledge, for example, may vary considerably.

A lot depends on the pupils' attention spans and maybe on the presenters' personalities too. Bigger groups tend to be more unwieldy and it takes longer to ensure everybody has understood the material.

The above University club generally uses two lessons, at least two tutors and a mixture of theory and practical tests.

## Content Of The Course

Once again, this is best decided by you, and it will depend on the length and number of sessions.

You may opt not to use all the stuff suggested in this Guideline, but it may give you some ideas. For example, you may decide to run a follow-up tutorial after your novices have done a few events, or maybe a stand-alone non-expert 'master-class'.

You may also have other ideas of your own, which is great. So what follows is a general outline, but not necessarily a hard and fast syllabus.

A brief description of the rally format is a good idea. Supplementary Regulations (SRs, or 'regs.'), final instructions, etc. should be explained, as well as start, finish and Control procedures, food provision, Damage Declaration form, insurance, and anything else that you may think of.

Whatever content you choose, it should be progressive and coherent and allow consolidation time. All areas should include visual demonstration and oral explanation, as well as practical opportunity.



## Some Meat On The Bones

### Session Introduction

The first thing that should be said in any introduction to navigational rallying is that these events are not races; that they take place on open public roads; and that drivers must always be responsible, and aware of other people, including pedestrians and those that may be trying to sleep near the route.

The next thing follows on from the above point, i.e. that car performance is the least important aspect of navigational rallying, and that any car is suitable, provided it is in a safe condition, especially as regards tyres, steering, brakes and lights. The most important part of the team is the navigator, which should become clear as the session progresses.

You should outline the basic behavioural and technical rules, like lighting, noise, warning triangles, Quiet Zones, Give Way junctions, etc.

Tell them about the importance of correct route and the use of code boards at an early stage, and give a brief explanation of timing. A detailed description of timing should be left until later.

Only after this pep-talk (mainly for the drivers) is it appropriate to start thinking about navigation.

### An Introduction To Maps

Maps are the most important piece of kit that any navigator requires. They must be the correct ones for an event, down to the 'edition number' quoted on the legend. They will usually be the latest versions of the maps, which are subject to frequent revision.

The 1:50,000-scale maps published by Ordnance Survey Great Britain (OSGB) and Ordnance Survey Northern Ireland (OSNI) are among the very finest in the world, although they are not flawless. A good understanding of maps is of major importance, so it is worthwhile labouring some aspects, especially how to interpret grid lines, grid squares, grid references, contours, spot heights, road colours, etc. But that can come later.

OSGB maps are called 'Landranger'. There are 204 sheets covering Britain and the Isle of Man.

OSNI maps are called 'Discoverer', and they comprise 17 sheets, and share their numbering system and grid with OSI (OS Republic of Ireland).

It would be good to have a sample of at least one of each type of map to hand, in case anybody wants to compare those from the different publishers. They are very easily obtained from various map dealers, many of which will

take online orders and dispatch for next-day delivery. See the short list **below**. [As an aside, the author received a map CD from a New Zealand supplier overnight. Wow!]

There are lots of interesting pictures that could be shown about maps. For example:

- The small-scale maps that contain the map catalogues of Britain or Ireland; here's the latter one;



Parts of the legend e.g.

TOURIST INFORMATION	
	Camp site
	Caravan site
	Garden
	Golf course or links
	Information centre, all year / seasonal
	Nature reserve
	Parking, Park and ride, all year / seasonal
	Picnic site
	Selected places of tourist interest
	Telephone, public / motoring organisation
	Viewpoint
	Visitor centre
	Walks / Trails
	Youth hostel

- Map samples to illustrate particular features (a picture tells a thousand words; there are several of them below).



All these are readily obtainable from various places, including OSGB's website and others.

If you want to impress your audience with some map trivia, you could tell them about the military re-triangulation of Britain in the middle of the 20th century that resulted in the fantastic maps we have now. It was led by a Major Martin Hotine, it took about 17 years to complete, and the results proved the value of having done it to very high standards.

An initial baseline was measured very accurately near the south of Britain. Trig points were built all over the land to exact specifications and standards. The surveying was done at night to eliminate heat haze. The whole country was cross-triangulated many times. After it was finished, a 24km northern baseline was measured, at a distance of 880 km from the start line, and the difference between the measured and calculated values was an amazing 42 cm. That beats the general surveying accuracy standards (1/100k) by a factor of over 20.

### Map Suppliers

There are many map supplies, below are a few websites that are worth trying.

[www.osni.gov.uk](http://www.osni.gov.uk)

[www.tso.co.uk](http://www.tso.co.uk)

[www.mapkiosk.com](http://www.mapkiosk.com)

[www.centremaps.co.uk](http://www.centremaps.co.uk)

### What Is A Road?

This may be obvious to most of us, most of the time, but just occasionally there is room for doubt. A local example should be sought out and discussed.

Here's one that arose in a real event.



The organiser considered the white at Purves Hall to be a through road, until it was pointed out at the finish that the broken line has a slightly longer pitch than an unfenced road (also shown). This means it is a path, but it looks like a road if you're not careful. It wasn't meant to be used, but it did affect the solution of the route instruction for one navigator, who had a mental block and couldn't see the other clues to the correct solution.

Other aspects of roads could be discussed. There are two types of yellows, for instance. And in Britain – not in Northern Ireland – there are two types of A-class roads, not counting dual carriageways.

An understanding of road types is fundamental, and often a driver can recognise them by their width and quality. Sometimes this can be useful.

### Navigators' Equipment

At some point you will need to introduce the Romer. They are not essential for basic exercises, but they should be introduced at the first lesson, so that the students can get one in time for the next. Some help should be given with procurement. The club could get a stock in for sale to students, or at least buy enough to go round before the next lesson.

You should take a full kit of other stuff to let them see how easy it is to gather most of it. It's just common stuff like pencils, rubber, compasses, ruler, tracing paper, calculator, etc.

The main exception is a Poti, but a novice navigator can do without one of these for a while. You should also have a head torch and a magnifying glass on display to prove this point.

Don't forget a map board, and explain why it should be made from a cardboard carton. In case you don't know, it's because, if the car comes to a sudden stop, the map board is softer than the stomach.

### Basic Clue Types

Yes, let's use the shorter term, as it's easier to type and it's in common parlance. So 'Route Instruction' becomes 'Clue', despite any protests you may hear.

This is where we really get down to the nitty-gritty of rally navigation.

There are hundreds of different types and variations of clues, but there are a few that are generally regarded as the basic ones. The following sequence is not necessarily based on any particular criteria.

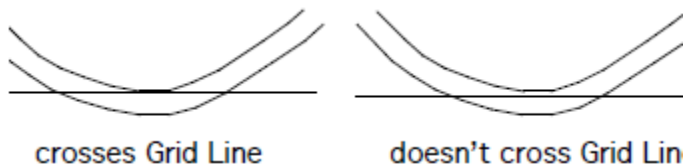
### Grid Lines (GLs)

Does it really need any explanation? Of course it does. Even if the concept of a GL is obvious, what are competitors supposed to do with them?

Well, usually they will be expected to cross them. Obvious enough? Yes, most of the time, but what if the road partially crosses a GL and then comes back? A definition is needed. Final instructions usually contain such a definition, but it is helpful if newcomers are warned of it.



Here's one.



### Grid Squares (GSs)

Once again, this is almost too simple to require any explanation, but it is so fundamental to an understanding of maps that it needs to be spelled out, to make sure people really do understand it.

A GS is the most basic form of Grid Reference (GR). It is often regarded as a 4-figure GR.

It should be spelled out that the square is right and up from the junction of the two lines that define it.

That brings us to the concept of the Easting and the Northing, and the easy way of remembering which comes first – along the corridor before climbing the stairs! Alphabetical order also applies.

And any reference to a GS should be explained. What does it mean? What are they supposed to do with it? Well, usually competitors are expected to pass through a list of GSs. Most of us know this, but newcomers aren't clairvoyant.

Lists of GSs can be presented in different ways. A straightforward list is obvious enough, but how about this fairly common variation?

1234 +1 –100 –1 –1

Find a local example and make them think about it.

There are other variations too, like N S E W to cross GLs in the specified directions, etc.

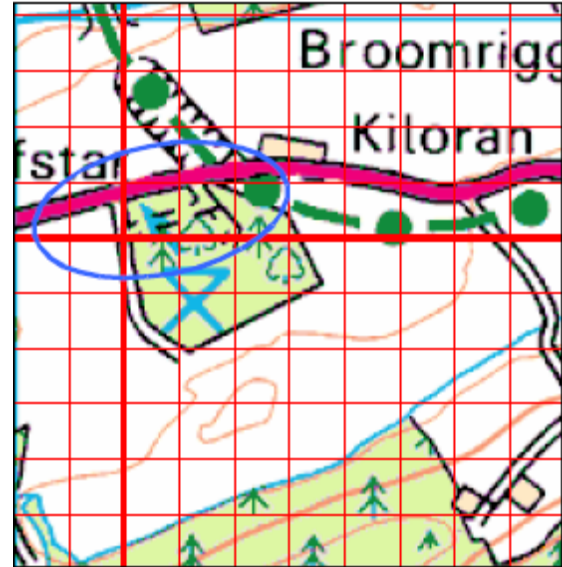
### Grid References (GRs) – 6-figure

There are plenty of explanations of how to create and plot these. It's spelled out on the map legends.

But there is also a lot of misinterpretation, even by organisers. A thorough organiser will explain and define exactly what he means by a 6-figure GR (often called 'map references', or MRs), but there are lots of organisers that don't, so it's worthwhile for novices to understand the different possible meanings. But it could be a bit over-complex, so it should only be gone into if the instructor believes the class will actually take it in.

Some detail is offered here, as it is considered very

important to get it right.



This is a real example to illustrate different ways of thinking on this matter. Here's a grid square with a 10 x 10 division constructed in it.

Consider the MR xx2yy6 (in reality, 422688). The relevant division lines are slightly thicker.

The organiser's intention was that the route should go along the short white, through the picnic area.

But some competitors considered (correctly) that the 6-figure MR is not the point at the junction of the two lines, but the 100-metre square to the right and above it, which completely covers the red road. Therefore you could drive along the red and still comply with an instruction to pass through this MR.

Strictly, the organiser should have used an 8-figure MR to define this diversion properly, e.g. 42206880 or 42306885. With hindsight his intention was obvious, but it was lax of him to define it as he did.

The point is that people should be made aware of such discrepancies, although not necessarily at a beginner level.

The real answer to this issue is for organisers to understand the issues, and to design their clues not to be ambiguous. Alas, some organisers are not sufficiently experienced to spot all these things.

A newcomer event should be done with particular care in this respect. If it is taken into account in the planning, then there is no need to bring up this point at the induction course. It can be left until later.





But maybe there is a case for making the point at an early stage. If newcomers aren't told exactly what a 6-figure MR means, they may never find out and the myth may be perpetuated ad infinitum.

### Grid references – 8-figure

Pretty obvious, really, after the previous example, but worth a few minutes to explain how and when the technique may be used.

For example, it will generally only be used to define points to the nearest 50 metres, because that is as accurate as anybody can normally be expected to work to at the 1:50k scale. But in some events it can be down to the nearest 25 metres, e.g. 123½456½, or 12350 45675.

As with GSs, usually a list of GRs will mean that the route passes through them. Occasionally it may be that you need to avoid them. If so, it will probably be stated, at least at novice level.

### Drawing The Route

At some point the students should be advised how to draw a route on a map. Consistency is the most important aspect. This means an individual choice of how to do it, but then maintaining that method.

This can be done at any convenient time. They should be advised to take care not to obscure a potentially important map feature that could throw their navigation later.

A line drawn across a very small white could cause confusion, especially if that white looks like a yellow.

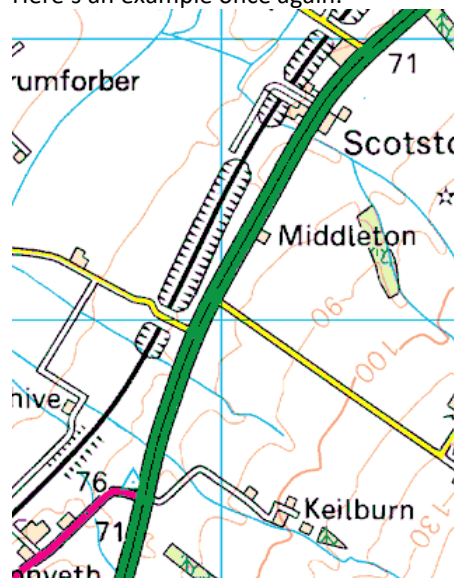
And yes, once again this cautionary tale is based on a novice navigator's experience. The pencil line obscured the small tarred white, which made him completely lose the place, and several minutes too.

### Spot heights (SHs)

The previous paragraph applies to these too, i.e. 'pass through' or 'avoid'.

The actual SH is not at the number, but you have to find the small dot. Some of these are slightly off the road, so you may need to be careful to decide if a particular SH is valid in view of this aspect.

Here's an example once again.



There's a 71 at the top right, but where is it? It's almost impossible to know, so it would be wrong to incorporate it into a clue.

Then there's another 71 at the bottom left. Where is that one? Well, there's a rather inconspicuous dot to the left of and fractionally above the 7, so that's it.

But how about the 76? Well, that's the 'Triangulation Pillar' (commonly called a 'trig point' or TP), and it's slightly off the road. So a clue that included it would need to state that you pass within 50 or 100 metres of it, rather than pass through it.

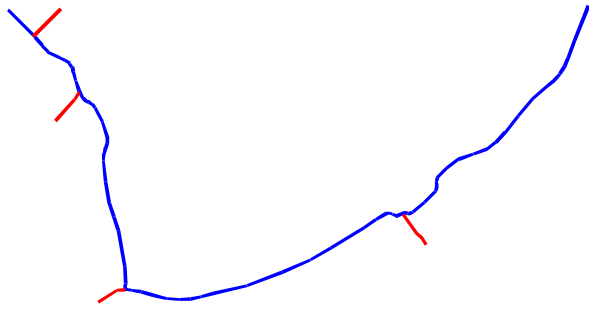
Yes, it's splitting hairs, but in a rally class, even if the students aren't made aware of it, the teachers should be, to ensure it doesn't become an issue in the training rally.

### Tracings

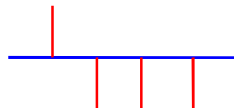
Too obvious, maybe? But an example or two should be tried. Not everybody has the same spatial awareness, and diagrams and such things can be a problem for some. So be patient and help them out.

### Herringbones

A few people seem to have difficulties with these, so it's worthwhile being prepared for a very basic and thorough description. This is where a link to another file would be good to have up your sleeve. If it's not needed, you can skip past it. But if somebody has a problem understanding the concept you can resort to it. Here's another example from a real event to illustrate it.



This tracing becomes this herringbone when it's pulled straight and condensed.



Don't even mention the more complex ones at this stage. It will just cause needless consternation. It's probably good to explain the usual convention for the driver reading a herringbone clue slip to the navigator with the car at rest. "Miss a left" = take the rightmost option, whatever it may look like. Etc.

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### Junction Descriptions

These can take many forms, but one very common one is

R Y R R B B B Y Y Y Y Y Y Y B B B Y

These can sometimes fox even an expert navigator. One guy chose the wrong tee-junction from a yellow to a green and then couldn't see how the rest of them worked. He had taken a blinkered view of the green TJ. He should have looked beyond the nearest one as soon as he saw there was a problem. Another mental block!

If you ever see RYY, it's an organiser mistake. There are only a handful of such junctions in the country. One organiser has done it at least twice. On the second attempt, fortunately it was spotted before the event. It should have been RRY, of course.

Another variation is

TJTL XRSO SRTL FR XRTR TJTL TJTL

### Approach and Depart Directions

Occasionally an organiser will give GRs with this additional information.

NNE 123456 NNW, for example, means that you approach the GR FROM the north-north-east and depart TO the north-north-west.

Pictorially, it would look something like this.



### Number Strings

There are numbers all over the place on a map, so a number string can be a combination of GLs, GSs, SHs, road numbers, GRs, and perhaps a few other odd ones that present themselves to an organiser on his map. The best advice is to take care.

Sometimes the number grouping will be deliberately wrong. For example, 123456 7890 could really mean GL 12, a 6-figure GR and GL 90, just to cause confusion.

### Tulip Diagrams

Again, there are lots of variations, and again there are some people that have problems with it. But it's not hard to explain the principles.

They may, or may not, be accurately depicted. Their orientation may, or may not, be correct. The arrows and/or balls may be omitted from some of them. But of course at novice level it will generally be easy.

Illustrations are very easy to draw in MS PowerPoint and copy into Word. You can draw them in Word too, but they can cause problems if they are moved, so it's best to use PPT and copy them into Word as composite bodies. There are several techniques for doing this.

### Clock Faces

These take many forms, but only the basic ones need be shown to novices.

Enter on the hour hand and leave on the minute hand, with correct orientation, is usually the easiest, but there is some debate about how to describe this example, say.



The route goes from east to west. Is it 2:45 or 3:45 though? Check where the hour hand is at each of these times.

There are different opinions on this. Whichever one you support, you should make your class aware that there are others.

This interpretation applies whether the clock faces are listed in pictorial or narrative form. The latter is the more usual.



## General Comments

It's best if all examples are based on your own local area. Apart from anything else, the map availability will be better (both new and old).

It may be useful to incorporate a little bit of local knowledge too. You can describe a place on the map that they will probably know, and it makes the map seem more real.

You should use as many examples and exercises as you can fit into the time available. Start drawing a route on a map right from the outset. If they are in pairs, get one to read instructions while the other plots, as if in a car. If need be, make more time. If anybody has problems, be patient and explain it again and again. And be prepared to use examples on the map to bring it into focus. If necessary, go out and look at the place in question and see how the map relates to the terrain. Point out map features, like phones, bridges, woods, etc.

If you have to help somebody that is struggling, you could offer the others something else to do, e.g. get them to create a clue of the type that you are currently working on. Give them a start and finish and let them get on with it. This will give them a challenge and consolidate what they have learned so far.

If necessary, run another lesson to make up for time lost with stragglers.

If you have some passion for maps you may be better able to explain their intricacies and their uses to those that don't have much experience of them.

It should be said, of course, that anybody that has no conception of what a map is should perhaps consider a different sport. Having said that, some individuals have struggled at the start, only to progress on to different motor sport disciplines that don't need the same degree of map skills, like stage rallying or autocross. So these people shouldn't be dismissed, but encouraged as much as possible and maybe guided towards other areas where their own talents can be brought out.

Such a person may be a perfectly good driver, and if he finds a navigator that is happy with this, then there is no problem. But many navigators benefit from having a driver that understands navigating, so it should be taken into account when seeking a regular partnership.

## Other Topics

If time and other constraints permit, you can add items like the three-quarters rule. It's unlikely that a newcomer crew will break this, but they will need to know about it pretty soon. Hence the item in the 'Timing' section below.

How deeply you go into these topics is for you to judge on the basis of the time available and the other aspects already mentioned.

Perhaps a follow-up session could be run after the students have done a few events. A small group of semi-experienced people can feed off each other under the guidance of an experienced tutor.

It is even better if that tutor can prepare a list of topics that may be brought up, and find examples to illustrate problems and their solutions. If the pupils have questions, he can deal with them. If they don't, he can fall back on what he has prepared.

## Insurance

This has changed from time to time, so the exact technical details are being left out.

But the students should be made aware of the legal requirements, and of the usual solution. You, the tutor, should know the current position on this, but if you haven't competed or organised for a while, you should consult people in your club that have, to check that it hasn't changed again.

You could offer the students a contact in your club that can help them to fill in their first entry form, etc.

## Advanced Topics

Some topics may be essential in some parts of the country, but in others it may just cause confusion if they are dealt with in a novice class.

The next item is one such case.

## Regularity Sections

There are various local philosophies on Regularity sections, so no technical material is offered here, as you probably know more about how it works in your own area than anybody else does.

In areas that don't use them, it's probably best not to even mention them, as it could cause confusion. So you should judge this one for yourselves.

There is no reason why stuff like this can't be dealt with at a subsequent lesson, of course. But maybe it should be dependent, yet again, on whether a person is likely to encounter the genre.

## Main Time Controls (MTCs)

These may have special provisions. They will almost always be mandatory to visit within maximum lateness (30 minutes).



In some cases late penalties may be applied with respect to Scheduled Time, if an MTC is at the start of a new 'sector', e.g. after a rest halt cum lateness reduction opportunity.

### Timing

This is an important part of any rallying. It can be quite daunting at first. It looks complex, but it isn't really when you understand it.

It is vital, therefore, that you, the instructors, should be thoroughly familiar with all the intricacies. For the benefit of anybody that isn't, a brief précis is offered here. It may also be useful for organisers or results officials that want to revise their knowledge.

### Standard Time

This is the time of day at which a notional Car 0, which doesn't actually exist, is supposed to be at each Time Control (TC).

It is pre-determined by the organisers and is the fundamental building block of an event's timetable.

### Scheduled Time

This is fixed for each crew in turn, and is equal to Standard Time plus the crew's competition number.

In general, the Scheduled Time for each crew is printed on their respective Time Cards, but if not, there should be an easy way for the navigators to calculate it, either from the Standard Time or by adding up the Time Allowed for each section in turn.

It is much easier for all concerned, including results crews, if Scheduled Time is printed on Time Cards. And organisers have no excuse for not doing it, as spreadsheet programs like MS Excel make it very easy to print bespoke Time Cards for each crew.

### Early Arrival

A competitor that reports to a Time Control ahead of Scheduled Time is penalised by 2 points per minute, generally.

### Late Arrival

A competitor that reports to a Time Control after Scheduled Time is penalised by 1 point per minute, initially.

But then a change takes place. Scheduled Time is unchanged, but a new concept is introduced.

### Due Time

This is Scheduled Time plus the lateness that has just been applied.

Any subsequent lateness is calculated with respect to this revised timetable, so a crew is not penalised repeatedly for having dropped time previously.

This means that they can stay on the same lateness as long as they want without further penalty. This is designed to discourage lateness reduction where it may not be appropriate, and is known as 'Penalty-free lateness'.

Any subsequent additional lateness is penalised on its own merits with respect to Due Time, and Due Time is adjusted again by the amount of that fresh lateness. As a result, the difference between Scheduled Time and Due Time should equal the total amount of accrued lateness – unless a crew has reduced lateness (next item).

### Lateness Reduction

This is allowed, subject to certain rules.

1. If they report before Scheduled Time they will get the usual penalty for that infringement.
2. They are not allowed to complete a section in less than three-quarters of the time allowed for that section, if the section is greater than 4 miles. There is no specification for sections up to 4 miles, and lateness reduction is generally taken to be unrestricted in these cases.

In some cases organisers will impose more restrictions of their own. This will always be spelled out in some way. For example, they may say that lateness reduction is not permissible except at certain named Controls.

Some organisers will tell you (usually on the Time Card) the allowable lateness reduction for each section – often called 'make-up time'.

3. A competitor that 'cuts and runs', and misses at least one Time Control, is allowed to make up as much lateness as he wants, subject only to the 'early' penalty.

### Outside Total Lateness (OTL)

The maximum lateness allowed is 30 minutes, unless the organisers decide to specify a different figure, or to extend it in special circumstances, and in writing.

Anybody arriving at a TC later than this is deemed not to have even been there and gets a big penalty.

It may, therefore, be worthwhile for a crew to make up time if they can, to reduce the risk of going OTL if they have a big problem later. But of course any such time make-up must be done carefully to comply with the above conditions.





### When To Report To A Time Control

Generally they will be allowed to report to a TC up to 1 minute ahead of the desired time, and wait for that time to come. In the meantime, the marshal can fill in the Time Card, etc.

They will generally be credited with the minute that is showing on the clock as they pass the Control Board, unless the organisers are being extremely fussy about the rule that says, "The time of arrival at or departure from a control will be the time at which the Time Card is presented by the competitor concerned, providing all crew members and car are within the control area", which is to be found (with some difficulty) in the part of the Road Events Section of the Blue Book that deals with Timing.

### Late Arrival At A TC

If a competitor arrives late, he/she may ask for the minute that is showing on the marshal's clock at the time of reporting to the Control.

However, it may be worthwhile waiting for the next minute, if it is about to turn, for various reasons, albeit tenuous or trivial ones:

- Unless there is a good chance of completing the following section in the time allowed, starting it a few seconds later can reduce pressure a little in that next section.
- If their own minute has another car occupying it, it could reduce congestion at the following TC if the competitor waits for the next minute.

These apply especially if the crew has been able to reduce lateness at the TC in question. Why bother taking an early time if they could lose it again at the next TC?

### Further Topics

Some of these items are out of sequence, and you may feel they are important enough to be included early on in your course.

### Following Another Car

Novices should always know the locations of all the TCs, so it really shouldn't be necessary to resort to following, but sometimes, if all else fails, it can be useful. Of course it's always possible that the crew being followed is equally unsure of the route, so it is a risky move.

However, even expert crews have used this tactic to good effect, where they know their opponents, and they trust them to have plotted the route correctly.

If one navigator plots it before another, the second crew may opt to follow the first car while continuing to work on the clue. By the time they have it plotted, they may have

made significant progress, thereby gaining a slight edge on the other crew. The author has been the driver of the winning car at least twice in such circumstances.

### Interior Lighting

It may be good to mention this if you have time. These pictures may be helpful.



Fluorescent strip-light that can be clipped to visor

One brand of 'Poti'. There are others, including at least one that uses LEDs (view below)



One type of LED strap-on head torch

Clip-on LED head torches



View through LED Poti

### In-Car Dialogue

You may decide to tell them how the crew members communicate almost continuously, and how they describe things to each other. But perhaps it should be in sketch form until after a couple of events, so as not to overstretch them.



## Map Editions

Even organisers have got this one wrong, so it can't be emphasised enough.

It's important to ensure that every aspect of the edition number is taken into account.

It usually has a letter, and perhaps a number and/or underlining. Some even contain an asterisk.

Here's an example that has some underlining. There's more you could glean from this map extract if you want to. Sample point? Grid letters?

## Navigator comfort

It's vital for the navigator to be as comfortable as possible. The most important aspect is the stomach.

The best advice that can be given is to eat a small meal about 2 hours before a rally, and then to take an anti-sick pill at the time advised on the packet.

Other useful things to consider are drinking water, car temperature and fresh air at the face. In a long event, some top-up food may be worthwhile, e.g. sandwiches, sweets, flask of coffee and/or a biscuit or two.

**Technical Information**

**NORTH POINTS**

Difference of true north from grid north at sheet corners

NW corner 0° 54' (16 mils) E	NE corner 0° 21' (6 mils) E
SW corner 0° 53' (16 mils) E	SE corner 0° 21' (6 mils) E

To plot the average direction of magnetic north join the point circled on the south edge of the sheet to the point on the protractor scale on the north edge at the angle estimated for the current year

Diagrammatic only

Magnetic north varies with place and time. The direction for the centre of the sheet is estimated at 3° 58' (71 mils) west of grid north for July 2004. Annual change is about 11' (3 mils) east

Magnetic data supplied by the British Geological Survey

Base map constructed on Transverse Mercator Projection, Airy Spheroid, OSGB (1936) Datum. Vertical datum mean sea level (Newlyn)

**HOW TO GIVE A NATIONAL GRID REFERENCE TO NEAREST 100 METRES**

**SAMPLE POINT: Seaton Ho**

1. Read letters identifying 100 000 metre square in which the point lies **NO**
2. FIRST QUOTE EASTINGS  
Locate first VERTICAL grid line to LEFT of point and read LARGE figures labelling the line either in the top or bottom margin or on the line itself **65**  
Estimate tenths from grid line to point **8**
3. AND THEN QUOTE NORTHINGS  
Locate first HORIZONTAL grid line BELOW point and read LARGE figures labelling the line either in the left or right margin or on the line itself **42**  
Estimate tenths from grid line to point **6**

**SAMPLE REFERENCE NO 658 426**

For local referencing grid letters may be omitted

IGNORE the SMALLER figures of the grid number at the corner of the map. These are for finding the full coordinates. Use ONLY the LARGER figure of the grid number. EXAMPLE: **334000m**

Edition B revised 1998-99  
Revised for selected change 2002  
Reprinted with minor change 2004  
**B1**

**INCIDENCE OF ADJOINING SHEETS**

The red figures give the grid values of the adjoining sheet edges. The blue letters identify the 100 000 metre square

# 1: 50 000 scale Second Series OS Landranger Map 54

ISBN  
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Series M 726  
Sheet 54  
Edition 8-GSGS  
6/02/021021 5



## Abbreviations and Glossary

Most of those reading this will be experienced competitors, but for the benefit of others, the following glossary / aide-memoire may be useful.

It could be re-produced and added to for your own classes. Well, we do use rather a lot of jargon, and we tend to take it for granted, and you should be conscious of the need to explain it.

<b>AR</b>	All Roads (see CAR)
<b>B</b>	Brown Road (As shown on map)
<b>CAR</b>	Consider All Roads (When solving a clue)
<b>CL</b>	Contour Line
<b>CRO</b>	Coloured Roads Only
<b>E</b>	East
<b>F</b>	Fork, or perhaps Ford (Context makes it clearer)
<b>G</b>	Green Road
<b>GI</b>	Graticule Intersection
<b>GL</b>	Grid Line
<b>GR</b>	Grid Reference
<b>GS</b>	Grid Square
<b>GW</b>	Give Way
<b>IGR</b>	Ignore Grated Roads
<b>INTR</b>	Ignore 'No Through Roads'
<b>L</b>	Left
<b>MR</b>	Map Reference (=GR)
<b>MS</b>	Mile Stone
<b>MTC</b>	Main Time Control
<b>N</b>	North
<b>NAM</b>	Not As Map
<b>OTL</b>	Outside Total Lateness
<b>PC</b>	Passage Control
<b>R</b>	Red Road or Right
<b>RA</b>	Roundabout
<b>S</b>	South
<b>SO</b>	Straight On
<b>SR</b>	Side Road (Often called 'SLOT' for short)
<b>TC</b>	Time Control
<b>TJ</b>	Tee Junction
<b>TL</b>	Turn Left
<b>TP</b>	Triangular Pillar or 'Trig Point'
<b>TR</b>	Turn Right
<b>W</b>	West or White Road (context usually makes it clear which one it means)
<b>WD</b>	Wrong Direction
<b>XR</b>	Crossroads
<b>Y</b>	Yellow Road
<b>Etc...</b>	



## RUNNING A NAVIGATIONAL RALLY

### Introduction

This task is fraught with difficulties. Many novice organisers have succeeded only in creating more problems, resulting in lots of competitors getting put off the sport forever. We have a big enough issue of losing members without making it worse in this way.

So it **MUST** be done correctly to be of any value. It needs to be thoroughly planned and prepared. Every possible pitfall should be taken into account and a solution designed into the plan. Right, that's all very well in theory, but even the best organisers can get it wrong. So the purpose of this article is to try and help you to foresee and minimise the problems before they happen. It should be read in conjunction with Guideline 31.

### Overall Strategy

The club must ensure organisers are competent to run an event of the relevant status and type. A novice team can sometimes be used on a 12- car, but bigger events need properly qualified people.

Generally, the Clerk of the Course should be an experienced competitor, and have done as many other jobs as possible in a team before he gets to take charge. This applies to all disciplines of course, but it is often neglected in navigational rallying, which can be a big mistake.

Other team members should also have at least some experience of competing in this type of event, which has unique requirements.

### Route Planning

Before you can do anything else, you need to find start and finish venues.

Then when planning the route, you should avoid, as far as possible, built-up areas, known PR-problem areas, places that may be susceptible to flooding, etc. Or if you do choose to use a road that could be affected by water, you should plan an alternative one and incorporate all the necessary paperwork to enable a switch to be made a few hours prior to the event if it becomes necessary to divert.

### Glossary

There's a short glossary at the end of Guideline 31, which is a companion to this one. If there is any jargon below that you don't understand, try there.

### Route Survey

After you've drafted a possible route, you need to drive round it at an early stage to log mileages, etc.

It's worthwhile noting trip-meter readings at every junction and potential Control location. This way, you can calculate the length of each section (when you decide where to put the Controls), and of the whole event. If you have to make any changes later, you don't need to measure an entire section from scratch. You can piece it together and estimate new distances, and confirm it by measurement later.

### Control Locations

During the initial survey you should look for potential Control sites. If you see a promising place, note the map reference and trip-meter reading, write a brief description and move on. You may find a better one just round the next corner. You can decide which places to use when you get home, based partly on the mileage, but mainly on the overall suitability.

What determines this suitability? The major factors are:

- No houses within 500 metres, unless you are prepared to get written consent from them all
- Parking space for marshal's car, off the road; a gateway, hard verge, layby or passing place will usually suffice, subject to not causing undue congestion to other traffic, especially if the road is narrow (usually OK after dark)
- Not on an A-class road, unless in a layby
- Away from bends that could cause danger or congestion if a queue forms; a Control or a Control Board just after a bend or a brow is asking for trouble; don't scoff, it has been seen
- Other Public Relations (PR) issues; no, you'll have to work these out for yourself, as there are no hard and fast rules on dealing with the public.



## Paperwork

There are lots of things to do here:

- Supplementary Regs. and final instructions;
- Permits, including for 12-car rallies
- Route authorisation
- Police approval(s)
- Council approval(s)
- Landowner and/or resident approval in some (very limited) circumstances; more below
- Insurance provision
- Preparation of results spreadsheet
- Signing-on sheets, including insurance
- PR letters, including bespoke ones for certain circumstances; and it's good to make one for the competitors and marshals to carry; it should contain a brief statement of what is happening, and a contact number for any complaints
- Entry list
- Time Cards
- Route instructions (a.k.a. 'Clues')
- Marshal information packs
- Damage declaration forms

## PR Work

This is an important part of any rally. We don't want to antagonise the public. Most of the time, it's simply a matter of letting them know what's happening. This is best done by personal contact.

You do need to have letters to leave where there is nobody home, but normally you should knock on doors and speak to as many people as you can.

Try not to give the impression that you're seeking their consent. That can invite trouble. All you're doing is politely letting them know that a few cars will be passing their house. Give them the date and approximate time and direction. You should also be willing to chat to them for a while if they want you to.

The only time you need consent is if you want to place a Control within 500 metres, or in some cases where there is timing to less than a minute.

It really is about Public Relations. Treat it as a chore and it could come back to bite you later. Treat it as a way of maintaining the public's support and you will get on much better.

Most people, if approached sensibly, will be positive, appreciative and friendly. Some may have relatives that compete, so you can have something to chat about. Some

may even be motor sport people themselves. Others may be future competitors.

It's the difficult people that can cause problems. If anybody is totally unreasonable, you may have to decide whether it is all bluster, or whether you really do have a problem and it may be better to find an alternative route.

Normally, a previous organiser in your club will know these people and how to deal with them. There is one known to the author that just likes to make a noise, so he is always the last person in that cul-de-sac to get a visit, and he doesn't get the friendly approach any more, just the formal letter. His complaints have never gone beyond the bluster.

Everybody within 100 metres of the route must get a PR visit or letter. The Blue Book says so, sensibly.

But there is more to it than that. Farmers may live a long way off the road, but they may have livestock alongside it, so you need to be aware of this and speak to them too, even if it means driving a mile up a white road to find the farmer.

Some large estates can be hard to contact, but over time you can compile a list of the people that ought to be advised. The author met a Chief Executive of one of these while recceing a route on one occasion and has kept him informed of all events around the relevant lands ever since. Now that is good PR. The man has been very helpful subsequently. He gives information about people that should be contacted, including names, addresses and phone numbers.

## Route Instruction Planning

This needs very careful thought. More importantly, it needs to be very carefully checked and vetted by at least two other people, and preferably by a lot more.

And they must be competent people, who are willing to be thorough, frank and positive in their criticism, although they (and you) should also be fair and willing to engage in debate. You should always reach a consensus.

The ideal method of having instructions checked is to send the first draft to two people, get their comments and incorporate the results of the debate, then send them to two more people, who will see them fresh and without prejudice. The reason for suggesting two is that one may be tardy in replying, perhaps for good reasons. It's a belt and braces approach, which never does any harm.

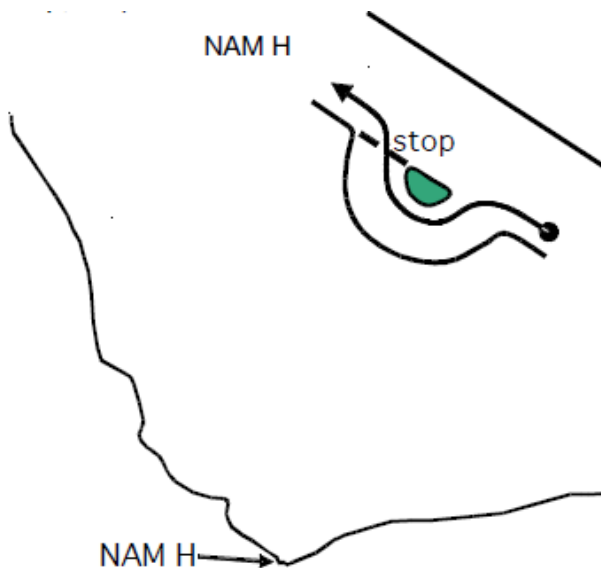




## Route Instruction Creation

There is almost nothing that cannot be produced in Microsoft Office, or other similar program, so it is possible to create an entire set of very detailed and elaborate instructions without putting pen to paper. Indeed, the author has done this. The only time a pen was used was to make survey notes in the car. Even this could have been done on a laptop, but a paper and pen method was actually easier.

Diagrams were drawn in PowerPoint (part of MS Office) and the whole lot was assembled in Word. Here are three examples (NAM = not as map, etc.).



	A	B	C	D	E	F
1	W	SRSO				FL
2					E2	
3	XRSO				SRTR	
4		SH			+	TJTR
5		U		F	XRTR	
6		FR	XRTL			TJTL
7			SRTL		H	
8	GL					Y

If you, the Clerk of the Course, don't have the requisite Office skills, it shouldn't be hard to find someone in your club or organising team that does.

You can add maps, subject to copyright, if applicable. And you can add things to maps, as shown here.



This one was not handed out, but was used to create the tracing opposite.

Maps are available on CDs from at least three different software companies and probably dozens of map retailers:

[www.ordnancesurvey.co.uk/oswebsite/getamap](http://www.ordnancesurvey.co.uk/oswebsite/getamap)  
[www.multimap.com](http://www.multimap.com)

OS Northern Ireland is not so co-operative, but you may be able to download small samples of their Discoverer maps from the Multimap site. Look for a reference to an 'old site', if it still exists.

Just remember that their use in any kind of publication is restricted, and permission may need to be obtained.

A way round this is to give competitors links to the relevant website in advance and suggest that they download any required material themselves. This clearly has limited usefulness, but it may help in some situations. An example is where a tiny portion of a map adjacent to the prescribed ones is needed. To save the competitors buying another map, a small extract can be helpful.

Generally with OSGB, any extract can be distributed to a limited number of people without permission. So those without internet access can still get a hand-out. Hence the above 'if applicable' reference.



## Route Authorisation

The exact procedures for this vary around the country, so the best way to find out about your individual requirements is to seek local advice.

Usually, a map needs to be prepared showing the route. It is submitted to the Route Liaison Officer for approval.

The same map can usually be sent to the police and council authorities.

It is often possible to do all this electronically. The map can be prepared in PowerPoint as above, using samples off the OSGB **Get-a-Map** website or commercially available CD maps, and sent by email to the relevant people, provided you can find their email addresses.

## Marshal Briefing

This is a much-neglected area. Marshals are usually the last people to be told what is going on. It's good to keep them informed, especially about their own posts. But there is other information that they can be given about the overall strategy if they are recruited far enough in advance. This may enable them to help competitors if a query arises.

For their own posts, it's not enough just to give them a Map reference and a time. They need to know the direction of approach, the time of the opening car and the first competitor, the closing time, and whether they need to wait for the closing car if they have another post to go to, etc.

The approach needs to be stated unequivocally, in the form 'FROM the north' or 'southbound', not just 'North'. Such lack of precision has been seen, causing disputes between marshals and opening officials. We don't need that kind of problem.

It's also good to give them the latest entry list, so they will know if all the cars have reported.

A picture of their location can be helpful, and an A4 map extract to help them find it exactly. Well, there's no guarantee they will have a map of their own.

For this reason, a few old maps should be on hand at the start to issue to those that don't have one. And some of them may not read the regs,, so it's worthwhile telling them in advance which maps they should bring.

Most of the time, though, an A4 page of 50k and an A4 page of 250k should be enough to help them find it, the latter in case they don't know the area.

## Marshal Recruiting And Management

It's important that somebody is delegated the job of finding enough marshals. There is always a shortage of willing people, and somebody usually has to spend an evening on the phone trying to drum up enough manpower to go round.

More often than not, there will be just enough, if you have a strategy that enables them to be re-deployed at another post. This needs some planning too. You need to work out how long it takes a marshal to drive from one post to the next and try to calculate the most efficient overall strategy.

You also need to take account of each individual marshal's experience and abilities. That's why you have a Chief Marshal. These are his jobs.

## More Detail On Clue Planning

Anything that makes a competitor ask, "What on earth does this mean?" is generally too hard and may be unacceptable.

It's always a difficult balancing act. Knowing your competitors' abilities is helpful. Having said that, any organiser can get it wrong, and competitors can have the odd mental block too.

The main thing to remember is that the competitors are the paying customers. They may also be your friends and you probably don't want to be lynched at the finish, so you need to tread a fine line between making it too hard or too easy.

Generally, if you are on the easy side you won't be far wrong.

This is also why you need to seek as many opinions as possible. It's not only to check for mistakes. Others may be able to see problems that you can't. And if anybody sees an alternative solution or has problems in finding any kind of solution, then you MUST re-think it.

Some organisers don't use devious stuff, but use time-consuming clues to separate the top crews. They can even spell out all the STOP junctions without giving too much away, because it takes time to plot them all.

Others rely on the odd trick to get a result.

One of the best events that the author competed in comprised lots of short, easy sections. Two crews were clean until the second last section, when a small trick was thrown in. One crew dropped 4 minutes, the other 5. Both crews had had a very enjoyable night, and the organisers got a result. Job done!



## Supplementary Regulations (SRs)

Most organisers use previous SRs as a template for their own. This is fair enough, but care should be taken to ensure that every detail is fully considered, rather than just changing dates and leaving everything else in place, parrot-fashion.

## Final instructions

This is another oft-neglected part of organising.

There are lots of things that need to be defined, clarified or explained, but some people seem to be a bit lax in this respect.

You should remember that there are novices taking part as well as old hands. If you assume they will all know what you mean you could be asking for trouble.

Lots of things can be slightly ambiguous, so if there is anything that can be misconstrued you should define it. Examples are:

- Whether a road crosses a Grid Line; see Guideline 28 for a typical diagram of this
- Whether a crossroads can be used twice; and if so, what constitutes a crossroads; you may need to define it with diagrams if there are any that could be taken as two junctions (staggered crossroads)
- What a gated road is
- Reinforce the Give Way and Quiet Zone messages; and define how these should be recognised – boards, street lighting, white lines on road, ascending order of colours, etc.

## Setting Up The Route

You need to go round the whole route a few hours before the start and check for last-minute problems, place code boards and Quiet boards, etc. You may also want to mark the exact position that you want your marshals to be in, using a small piece of red and white tiger tape tied to a fence or a bush, for instance.

Most of these boards will be well away from routes that competitors will be using to get to the start, however if there is one that can be spotted, it may be best to leave that one for the opening car to place, but don't ask the opening car to put out loads of them as it takes too long. An opening car can sometimes struggle to maintain schedule as it is, so try not to overburden it.

## Verbal Competitor Briefing

This should be used to emphasise particular points of concern, or perhaps to clarify a matter that has been raised as a question.

It's also an opportunity to display the various boards in use, e.g. Control, Code, Quiet, Caution, etc., and to give a pep-talk on behaviour, warn of conditions, explain unusual or complex features, etc.

## Opening Car Official

It's best to get somebody that is familiar with the route, but in case you don't, you should prepare a marked map for him. It's best if he can do it himself, preferably by being one of your clue checkers, but if this is not feasible – and realistically, sometimes it's not – then you will have to do it for him. An old map is good enough for this purpose.

He also needs to be able to make decisions on problems that may arise, and to advise marshals if they have queries. For this reason he should be well-informed and knowledgeable.

The Chief Marshal may be an ideal person to do this task, as long as he hasn't been unduly held up at the marshal briefing room.

## Lack Of Marshals

This is an increasing problem as numbers dwindle. There are mechanisms for coping with it, though.

One way is to issue clues in batches, jumbled and coded so that the correct one for any given section cannot be discovered until a 'decode number' is issued by a marshal, or by a 'special code board' in the absence of a marshal. You could use this technique for some of your clues, if not all.

## Marshals Missing

It may also be worthwhile making provision for a marshal getting lost and not being in place.

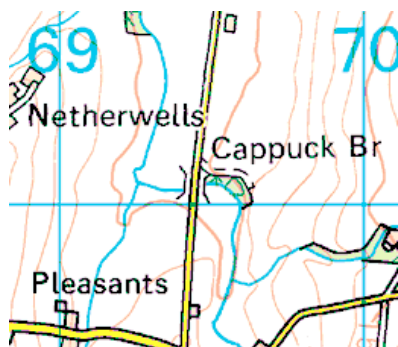
One way to do this is to have somebody following the opening car, to be left behind if necessary.

If the marshal turns up later, the 'roving marshal' should have enough information to let him catch up with the opening car in case it happens again. An assistant chief marshal would be ideal for this role, as he should be fully briefed in all the marshalling requirements.

## Caution Boards

These should be used sparingly, so as not to create a 'cry wolf' situation. But there are places where the conditions, the terrain or some other factor can make a corner or a brow potentially very hazardous.

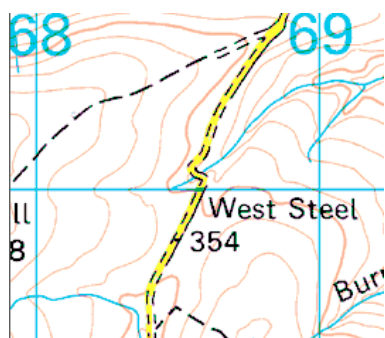
There are some very nasty hump-back bridges, for instance, which are not always very obvious.



This one is extremely lumpy and not conspicuous from a distance. And it's compounded by being at the very bottom of a map. Even a top crew could miss it, especially approaching from the south.

There are also cases where a bend after a brow can be especially prone to being misread by a driver. Some hairpin kinks are not shown well on maps.

The next example is even tighter than it looks here, and bearing in mind that this map is shown at twice the normal scale, it can easily be overlooked by a novice navigator.



But the main problem is that both approaches are prefaced by a slight brow, and the driver can see the road beyond the kink. If the navigator fails to spot it, the driver could come over the brow at high speed and see a hairpin about 20 metres away.

The next one is similarly deceptive if you're coming from the north.



It has the additional problems of weight reduction due to the brow, and a lot of loose gravel on the road, reducing grip even further.

These are all definite candidates for cautions.

### Lateness Reduction

There are some myths that should be corrected. At least one organiser has said, "The three-quarters rule will not apply, except at certain stated Controls", but this rule is strictly inviolable.

What he really means is that lateness reduction will not be allowed and vice-versa. Another one has wrongly imposed penalties for lateness reduction in sections of less than 4 miles. But the 4-mile limit applies to the three-quarters rule, not the lateness reduction rule.

To summarise, lateness reduction is allowed unless the SRs specify otherwise. And there is no  $\frac{3}{4}$  rule in sections up to 4 miles! There is no restriction!

However, lateness reduction is not allowed at all in a Neutral Section, only in a Standard or Transport Section. Regularities are best dealt with by seeking local advice, as the local conventions vary a bit.

### Results

This needs careful preparation. Most people use computer spreadsheets nowadays, and they seem to work well. But even here there are pitfalls.

For example, on one occasion a crew was given a clean sheet for one of its time cards, when in fact that time card was never handed in. The results team had failed to spot it.

The solution is to have a check sheet that can be ticked for each time card.

Alternatively, in Excel you can use an IF function. IF the value of a sub-total is zero, a column can display an X, or similar, to flag up a possible omission. This should prompt the operator to check if it is genuine. The relevant column can then be hidden or deleted before the results sheet is printed.

Spreadsheets can also sort rows into any order of your choosing, so you may decide to rearrange the rows into the finishing hierarchy, to make it easier for everybody to see their relative places.

It is vital that the results team understand the timing and penalty mechanism. Ideally, they should be experienced competitors.



They should know the penalty structure and the time schedule of the event, and the number of route checks in each section. Generally, the last item will be planned, but the exact details will not be known until the codes are placed on the day of the event.

There is an explanation of timing in Guideline 28, but another slant is offered below to help you to understand it, if you don't already.

If a computer spreadsheet is being used to log the penalties and produce the results, it should be created by the results leader, in collaboration with the Clerk of the Course, the Timekeeper, the Chief Marshal and anybody else that may have input to offer. This is very easy with email, where each person can examine the file and offer ideas to the results official.

## Timing And Penalties

As a reminder of how this works, there are a few things for a results official to consider when marking the time cards.

Firstly, there are the route checks. He should be given the up-to-date list of those in each section and compare that with the ones written down.

Secondly, are there any 'Wrong Directions' (WDs), missed TCs or double visits?

Thirdly, there is the timing to consider. This takes a little more thought.

Assuming the results official knows the Scheduled Time for each Time Control as he is proceeding through the time card – and why shouldn't he, when you can print them on the time cards (see below) – he can compare the recorded time at each Control in turn with that Scheduled Time and make a decision on penalties based on the following criteria:

1. Is the competitor more than 30 minutes behind Scheduled Time at any given TC, i.e. 'Outside Total Lateness' (OTL)? If so, a 30-minute penalty must be applied, unless the SRs specify a different penalty or maximum lateness.
2. Is the section Standard, Transport, Neutral or Regularity? This can affect make-up.
3. Is the recorded time ahead of Scheduled Time? If so, apply an 'early' penalty, at the rate of 2 points per minute ahead.
4. Is the recorded time later than Due Time?
5. You need to work out Due Time, by adding the section time to the previous recorded time.
6. You then compare the current recorded time

with Due Time to assess lateness.

7. Alternatively, work out the time taken for the section and compare it with the time allowed.
8. So, has more time been dropped? If so, then a penalty will have to be applied, except in Transport or Neutral sections.
9. Has lateness been reduced? If so, has the three-quarters rule been broken? If this is in order, then there is no penalty.
10. It's good to print the allowable 'make-up time' (lateness reduction) on the time cards.
11. Are you allowing lateness reduction? If you want to restrict it, you must say so in the SRs.
12. Has the previous TC been missed? If so, then there is no  $\frac{3}{4}$  penalty, as the route has not been followed – they have missed some of the route. Due Time is based on the last recorded time. A lateness penalty may be appropriate.

## Time Card Design

The time cards are very important, and their design should be considered carefully.

They must be as simple as possible, so that each marshal can find his bit easily and quickly. A sample card for the marshals will help prepare them for this.

The cards should also be results-team friendly.

For example, each results person should be able to see each competitor's Scheduled Time at each Time Control, at a glance, without having to refer to previous time cards or other documents. Previous cards may not be available, because the results team may be split into more than one group. In any case, cross-referencing takes time.

Therefore you should print individual Scheduled Times on the time cards. It's easy in a spreadsheet, such as Microsoft Excel.

You could just print Standard Time and let the crews work out their own Scheduled Times. But this makes more work for the results people, with potential for errors and time taken. Bespoke cards help every-body and ensure the best possible accuracy.

You should also make provision for the last recorded time on each time card to be carried forward into the start of the next time card, so that the results team can keep track of Due Times too.

Time card designs have taken many forms, but one user-friendly style has been around for a long time, although maybe not used by many organisers. It has a kind of multiple-choice method, as shown in the sample on the next page.





It reduces the amount of writing by competitors and marshals, and therefore also the potential for handwriting to be misinterpreted, or for codes to be written in the wrong place.

The green ellipses would be drawn round the codes by the competitor and the red ones round the times by the marshals.

Each section can have the same fixed number of potential code boxes, but the number used will vary between sections. Any boxes incorrectly marked are liable to penalty.

Looking at the sample time card in detail, you can see that two codes have been recorded in Section 1, and the time is clean.

In Section 2, without even doing any arithmetic, you can see that car 6 has dropped 1 minute and gets 1 penalty. (Codes are ignored here from now on, as the point has been made.)

In Section 3 another 2 minutes have been dropped, so 2 more penalties are incurred.

In Section 4 the crew has made up a minute, so there is no penalty, assuming make-up is allowed.

In Section 5 they get a further 4 penalties.

At TC 6 they get a 30-minute penalty for not reporting.

At TC 7 they get a WD, but no time penalty, because they have reduced lateness. Even if they had apparently broken the three-quarters rule, there is no penalty, as they have missed some of the route by not reporting to TC 6.

It's not hard to see how it works. Due Time is immediately underneath the recorded time at the previous TC, so lateness can be worked out just by a simple visual count of boxes.

The same applies to lateness reduction, and the comparison with the allowable reduction, without even using any arithmetic.

Codes are easier too, as the results crew can see where they have been circled, and they don't need to read them or check if they are in the right row.

There is one small drawback with this time card design. You need to plan exactly which code boards will be placed in each section. This may mean a little more time is needed to find each one when placing them at the roadside. But it is a small price to pay for a slicker results system. It's an essential part of good preparation.

## Time Card Production

Even this relatively complex Time Card is very easy to produce in a spreadsheet, as the program can be made to do all the changes from one competitor to the next, just by a single entry in the cell that shows the car number. The author is not an expert with Excel, but even he managed to work out how to achieve this task.

If you don't have the requisite spreadsheet skills, it's likely that you will be able to find somebody that can help, just as with the route instructions.

To offer some guidance, the file used to produce the template below has 3 worksheets.

1. The 'front page', the one that will get printed, and into which the car numbers and crew names will have to be typed, one at a time just before printing – although even the names could be automated if you want.
2. The basic timing table, which will calculate the Standard Time at each TC from the start time and the individual section times. Of course, you can change these at any time before printing without having to do lots of calculations, as the program will do it for you.
3. The main calculation sheet for all the individual Scheduled Times, which takes data from sheet 2 and from the car number on sheet 1.

The data calculated here are then automatically copied into sheet 1 to create the finished product. So once you have the spreadsheet set up, just by typing the car number in the relevant cell in sheet 1, you can start the calculation process, and sheet 1 will automatically display the entire range of times.

The template has no provision for an early time to be entered. Well, it would be an extremely silly competitor that accepted an early time with such an obvious system, wouldn't it? But you could modify it if you really want to!

**Time Card 1**  
**Car Number 6**

PERMITTED  
LATENCY  
REDUCTION[illegible]

