Appendix I : Electronic Punching

1. Introduction

1.1 General Information

1.1.1 This Appendix presents a general overview of the use of electronic punching systems (EPS). In particular it addresses issues associated with the overall fairness of an event from a competitor viewpoint. It is not intended to be a guide to a particular system.

1.1.2 This Guideline cannot replace the more detailed information that will be built up for each specific system as more experience of use is obtained, and which all officials should be familiar with before staging an EPS event.

1.1.3 Experience of both SportIdent and Emit within British Orienteering have shown that the systems can provide enhanced event quality for competitors, as well as reducing the workload on event officials. These benefits apply from the smallest training and local events, right up to major championship events. Clubs and Associations are encouraged to use EPS wherever possible.

1.1.4 EPS provides many benefits, but at the possible expense of problems with an event if things go wrong. It is particularly important that all officials are familiar with the equipment to be used and the procedures to be followed.

1.2 Approved Systems

1.2.1 Two systems are currently approved for use. These are:

- Emit
- SportIdent.

1.2.2 Other systems may be used if they are approved by the IOF, or on application to British Orienteering Event Standards Committee.

1.3 To Use Or Not To Use?

1.3.1 The organiser of an event should be responsible for deciding to use an electronic punching system. This should include consultation with the planner and controller. The use of EPS at an event should be publicised in advance.

1.3.2 Experience of vandalism to date is that this is not as big an issue as was anticipated. Patrolling of controls is recommended in certain areas (e.g. city parks) to deter vandals. The stakes should carry a needle punch to allow for loss of function of the unit, and to provide limited protection against vandalism.

2. Organising and Planning Considerations

2.1 Registration

2.1.1 Competitors who own their own e-card should be allowed to use them. The organiser should also ensure that a stock of spare e-cards is available for hire on the day.

2.1.2 A demonstration control should be available so that competitors unfamiliar with the system can practice punching. There should also be someone available to

answer queries about the use of the system from the competitor viewpoint. Brief written instructions could be included with the final details of the event.

2.2 The Start

2.2.1 Special actions may be required at or before the start, such as the clearing of an e-card. Competitors' cards should be checked before the start to ensure that they are clear. Details may also be provided in pre-event details, at registration, or as a prominent notice in the start area. Careful thought is required about where to locate clear, check and download units to ensure that competitors do things in the correct order. Beware in particular any possibility of a competitor finding a clear unit between the finish and the download point.

2.2.2 The traditional timed start interval system may be used, with competitors starting at pre-allocated start times. In this case there is no need for them to punch at the start.

2.2.3 A punching start can allow competitors to start almost whenever they are ready and no pre-allocated start times are necessary. The start official allows people to start at minute intervals in order to avoid bunching. Competitors can be allowed to start more frequently if a queue starts to form, subject to the availability of master maps,

2.2.4 A hybrid system can be used, whereby competitors are issued a start time and (if they turn up for it) they are guaranteed that they can start at that time. However, a punching start is still used, and competitors can have the possibility of starting earlier or later than their allocated start time if there is a vacant slot on their course. By having one start lane for each course, it should be immediately obvious to the competitors whether such a vacant slot exists.

2.2.5 For events of Level 1 and 2 a timed start should be used. This allows a secondary timing system to be used at the finish. More importantly it ensures fairness with regard to seeding and start intervals. A punching start allows competitors to manipulate their start time to be close to a rival, it removes any pressure to get to the start on time if late, and it makes seeding extremely difficult to enforce.

2.3 Control Sites

2.3.1 Planners should be aware that it may require more effort to put out EPS controls than for a normal event. EPS controls require a firm mounting stake, and this makes them bulky to carry. In addition there may be time pressures if it is decided to put out all controls on the day of the event rather than on the previous day. It may be possible to put stakes and markers out much earlier than the control units themselves. For lower key events in areas (such as high fells) where access is difficult, it has been found that the competitors are quite happy to punch an EPS unit which has been simply placed on the ground next to the flag. This can save the planner a lot of effort which would have been required to put out and retrieve the metal stakes, making the use of EPS a practical proposition where, for logistical reasons, it might otherwise have been rejected.

2.3.2 The Planner has the advantage that competitors are no longer able to take controls out of order. This removes the need for manned controls. It also

introduces the possibility of convoluted courses with many cross-overs. Care should be taken not to overuse this feature.

2.3.3 It may still be necessary to provide a second map to ensure that a course is obvious, rather than to prevent cheating. This can be done by providing two overprinted maps back to back in the same map bag, or by having two sets of master maps both at the start. Care should be taken to ensure that competitors understand what has been done.

2.3.4 It is likely that only one control unit will be available for most control sites. EPS punching is significantly quicker than the use of standard control cards, and therefore this is not necessarily a major issue. A control loading of over 500 competitors per hour per control unit is easily supported for normal events. Relay and score competitions may need a greater number of control units at certain controls, particularly early in the course.

2.3.5 Control sites should be marked with a standard control banner. Care should be taken when siting control units that stakes are inserted firmly into the ground, and that the control layout does not cause unnecessary inconvenience to competitors.

2.4 The Finish

2.4.1 Where a traditional timing system is in use then there are no specific new requirements at the finish. However a punching finish offers significant organisational advantages and is recommended.

2.4.2 It is important to ensure that the finish is easily located. "Navigate to finish" should not be used except (sometimes) for score events where the finish will normally be next to the start. In other cases, there should be an ordinary last control (with description) and then a taped route, which can be just a few metres, to the finish. As a minimum the finish should consist of a punch unit and control flag, preferably with a prominent finish banner. There should be no possibility of a competitor being unable to find the finish after they have visited the last control.

2.4.3 When a punching finish is used then at least two punch units should be available at the finish (even if one is kept in reserve out of sight until needed), to allow for equipment failure. The arrangement of the finish area needs careful consideration to allow fast-finishing competitors to stop and punch safely, and then move out of the way of other competitors. A punching finish should be supervised to ensure that all finishers punch, and to deal with congestion if it arises.

2.4.4 In the particular case of the last lap of relay events it is important to use a timed finish and not a punching finish. Relay results are based on the order in which a team crosses the finishing line, and this element must not be compromised by EPS. A finish official should be present to adjudicate if necessary. Competitors should then be kept in order after the finish line and punch at a finish unit. This provides the correct finish order, and also gives times to a sufficient accuracy.

2.4.5 It is possible to put the finish some distance from the car park and assembly area. This has the advantage that it can improve courses by removing dead running near the end. However this does not remove the need to have an official

at the finish, both to supervise competitors and to act as a point of contact in an emergency. The finish is the most likely place for somebody to go to report a problem such as an injured competitor. Facilities should be available to allow this situation to be handled.

2.4.6 If possible the finish should be designed to allow competitors to pass the download point as soon as possible, both to provide splits and to recover any hired e-cards.

2.4.7 One of the great benefits of EPS is the ability to provide results, including split times, almost immediately after a competitor has finished. This is a very popular feature with competitors, and should be done whenever possible. Competitors are normally given their own slip of paper, and sheets containing all results should be put on display at regular intervals. The provision of individual splits does not remove the need to display results on the day.

2.4.8 The organiser should work out in advance how missing competitors are to be identified towards the end of the competition, now that the old method of matching control card stubs is no longer available. At an event where entries are entirely on the day, the missing competitors will be those who have entered but have not downloaded. At an event with pre-entries, it is necessary to identify those who actually started. Ideally, this can be done electronically by downloading the memory of the start or check units. It is important to make sure that those units have sufficient memory to store the expected number of competitors.

2.5 Equipment Failure

2.5.1 A major concern with the increased use of electronics and computers is the possibility of equipment failure. Event officials need to be aware of the various failures that can occur, and of what can be done. This information should be included in the specific user instructions built up for each system.

2.5.2 It is also important for the competitors to understand what they should do in the event of equipment failure (or vandalism). This information should be available at registration or in event details. Where pin punches are provided as a back-up then competitors should be informed where they should punch. The most obvious place is the map, but this will then require someone at the finish who can deal with the collection and checking of maps if necessary.

2.6 Punch Checking and Disqualification

2.6.1 Punch checking should be done as soon as possible after a competitor has finished. This provides the opportunity to investigate any problem with punching immediately. In cases where punches are missing through no fault of the competitor (such as failed or stolen control units) it is clear that the competitor should be reinstated.

2.6.2 Most competitors when confronted with the evidence that they have missed a control will accept that this is the case. Electronic punching offers the capability to show a competitor which control they went to in the case of a mistake, and it is useful to have an "all controls" map available for this.

2.6.3 Missing punches have proved to be the most controversial problem to address. In some cases it is possible for a competitor to visit a control and believe they have punched, but for there to be no record in the e-card. This may simply be a mistake (such as forgetting to punch at a road crossing or the last control) but more often the competitor believes they have punched correctly. The normal explanation is that they have not punched correctly, either having punched too quickly for SportIdent, or not fully inserted the e-card for Emit. In these cases the competitor should be disqualified, even if there is evidence (from spectators or electronically in the control box) that the competitor was at the control.

2.6.4 The Organiser and Controller may consider disqualification to be harsh in cases where the competitor clearly believes they have visited the control, particularly at low key events or for junior competitors. For consistency it is preferable to enforce this approach at all events. It should certainly be adopted for Level 1 and 2 events. The underlying principle is that if competitors use the system in the approved manner then it works correctly. If competitors were allowed to get away with not punching properly, it could easily become the norm (and an organisational nightmare) to punch sloppily, or not punch at all at a spectator control such as the last control in a relay.

2.7 Results Adjustment

2.7.1 Electronic punching offers what at first sight appears to be unlimited opportunities for "adjusting" results to overcome problems at an event. If time adjustments are made then they should be applied equally to all competitors. Experience has shown that this capability should be used sparingly if at all, since the outcome is not always as expected.

2.7.2 It may be appropriate to consider adjusting results in certain situations. These may include controls that are stolen or vandalised, and planning errors such as misplaced controls or incorrect codes. It should certainly not be used as an excuse for poor planning and controlling.

2.7.3 If a problem occurs near the end of a course then results can be declared based on time up to a certain control. In particular this might allow problems with a finish unit to be addressed by taking times at the last control. What constitutes "near the end" is inevitably subject to discussion.

2.7.4 Attempts have been made to compensate for problems in the middle of the course by removing the times for the legs to and from an affected control. This seems reasonable, but it should be recognised that many runners may stop competing seriously after an obvious problem on a course, and their subsequent times may not be a true reflection of ability. It may also be found that this method gives unexpected results, since it can alter the relative positions of runners who were not affected by the particular error it is trying to address.

2.7.5 If there is a serious problem with a course that significantly affects the fairness of the competition, then the course should normally be voided.

2.8 Results Publishing

2.8.1 One of the most important benefits of EPS is the enormous potential for post-race analysis by competitors and coaches. The split times issued to each

individual at the end of the race provide some information, but much more can be learnt from an analysis of the splits with all the competitors on the course. The interest in this analysis is highest soon after the event but drops off quickly as the days pass. Therefore it is essential to publish the split times on the web as soon as possible after the event. Every effort should be made to publish the split times on the evening of the event. The split times should be published via the special splits analysis web sites (e.g. Winsplits) and the progressograph sites as these provide a much more informative analysis than the raw split times.

3. Controlling Considerations

3.1 Factors to Consider

3.1.1 In general the role of the Controller is as for any event. There are certain areas where extra care should be taken when using EPS, and where the Controller may want to ask specific questions:

- Are all event officials familiar with the system in use?
- Have the preparation of controls and the control hanging process been carefully planned, and are sufficient resources and time available?
- Will all the controls be checked on the morning allowing sufficient time to replace any defective units?
- How will the start be run?
- How will the finish be run?
- What contingency plans are in place to handle equipment failure (particularly of computers)?
- What back-up timing facilities are available?