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## **Guidelines for using non-offset printed maps in World Ranking Events**

### **1. General**

All orienteering maps which are going to be used in IOF events shall be printed according to the IOF's Map Specifications (ISOM 2000, ISSOM 2007). Symbol sizes must be correct within the margins given in the specifications. Colours must be as close to the PMS colours given in the specification as possible.

Even though new printing methods are developing rapidly, traditional (spot colour) offset is still superior in quality when printing detailed maps. Organisers and event advisers must ensure that maps in all IOF events are printed by a high quality method in order to guarantee that competitors receive a high quality product.

The spot colour offset is currently the best way of printing orienteering maps and also very affordable, compared to the total amount of money spent by organisers and competitors on an IOF event.

The quality of the orienteering map depends not only on the quality of the cartographic content but also on the graphic quality (sharp line edges and symbols, correct colours, even colour areas etc.) and the quality of the paper (water resistance, durability etc. in all weather conditions). When all of these factors are put together, the quality of spot colour offset printed maps is better than the quality of CMYK offset and non-offset printed maps.

In the highest-level IOF Foot Orienteering events (World Championships, World Cup, Regional Championships) only spot colour offset-printed maps are allowed.

### **2. WRE**

World Ranking Events (WRE) are the only IOF events where non-offset printed maps are allowed and then only if the quality is very good.

If the WRE organiser is planning to use non-spot colour offset printed maps, the quality of resulting maps shall be tested very carefully with respect to readability (resolution, sharpness and colour) and durability.

When choosing the printing method for the competition maps of a WRE, one must have in mind the vital importance of map quality (the combined quality of the field work, drawing and printing) for an orienteering event. The costs of map printing is very low compared to the total costs of travelling to the event, and also compared to the total cost of mapping.

The convenience of CMYK printing is integrated course overprinting and the wider availability of print shops that support CMYK printing. The problem with CMYK printing is that it is complicated to print readable maps



according to the IOF Map Specifications (colours, symbol dimensions, crispness of symbols).

### **3. IOF Map Commission's PrintTech Test Sheet**

In 2002, the IOF Map Commission (MC) started a project called PrintTech to gather the latest knowledge about non-offset printing. The MC has listed the advantages and disadvantages of the use of non-offset printers on the web page

<http://lazarus.elte.hu/mc/print-tech/index.html>

In April 2006 MC published a test sheet, which has been printed by using spot colour offset printing. The test sheet can be ordered from the IOF Secretariat.

Everyone can compare it to the non-offset printed test sheet. The original file can be downloaded from the web page.

The instructions for using the test sheet can be downloaded from the web page. With the test sheet everyone can test:

- Basic colours of orienteering maps
- Most common screens on orienteering maps and the permissible combinations of screens
- Vertical and horizontal accuracy of measurements.
- The resolution of the printer
- The technical quality of the printed test sheet

There are also some sample maps at different scales in the test sheet.

### **4. Paper**

Paper must be suitable for the discipline and format. Things to consider are water resistance, durability (folding and rough handling), properties of the paper and colour under different temperature conditions.

### **5. Resolution**

ISOM 2000 requires the symbol dimensions on the final map to be within 5 % of the given sizes – this is a very strict requirement. For instance the marsh symbol has lines with a width of 0.10 mm. The resolution of the printer will then have to be better than 0,005 mm. 0.0005 mm/dot: 0.000196 inch/dot -> 5102 dpi.

For instance the contour symbol has a line width of 0.14 mm. The resolution of the printer will then have to be better than 0.007 mm. -> 3629 dpi.

With current technology it is not possible to achieve this kind of accuracy using CMYK printing. But when using CMYK printing, it is very important to pay attention to the setup of the printer driver (RIP) in order to achieve the best possible symbol accuracy.

### **6. Colours**

To achieve the best possible readability of the map, the map specification says that the colours are to be printed in a certain sequence. If non spot



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colour offset printing (for instance CMYK printing) is to be used, the overprinting effect of spot colour printing has to be simulated.

## **7. Approval process**

If an organiser wishes to use a non-offset printing method for the map at a WRE, then the following steps must be followed:

- As soon as the event is approved as a WRE the organiser will discuss with the EA the proposal to use non-offset printing.
- The EA checks the quality.
- If the EA considers that the quality is satisfactory for the event then the Organiser sends three printed maps (with course overprint), three printed test sheets, contact email address and a short explanation of the request to the IOF Secretariat, who will forward the request to the Map Commission.
- This should be at least three months before the date of the event. Late requests will only be considered in exceptional circumstances.
- The MC will check the quality and a) approve the proposal or b) suggest how to make the map better or c) reject the proposal with reasons
- In case b), there will then need to be new test prints and a further check by the MC.