Oceania Mapping Workshop 2019

• Map Commission News

• Map Walk, Middle Distance Qualifying Race Map, 2019 WOC, Norway

Presented by Adrian Uppill
Member, Map Commission
MC News

- Apologies for unavailability to visit Australia received from:
  Christer Carlsson, Map Commissioner
  Ludek Krticka, MC Member
  Willing to visit Australia 2020
  Has offered his mapping service

- Current MC Members
  Chairman - Christer CARLSSON (Sweden)
  Robert DITZ (Austria)
  Ludek KRTICKA (Czech Republic)
  Ueli SCHLATTER (Switzerland)
  Jean-Philippe STEFANINI (France)
  Adrian UPPILL (Australia)
The past 3 years have been very intensive for the MC

- **ISOM 2017 finally published**
  - Revision process commenced 2008
- **ISOM 2017-2 (Jan 2019) published**
- **New ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions**
- **New Control process of the mapping for major IOF events**
  - Updated Feb 2019
- **ISSprOM 2019 published** (valid from 1 Jan 2020)
  - Revision process commenced 2017
- **Rules removed from mapping specifications**
  - Now in IOF Foot Competition Rules 2019 – ‘17. Restricted areas and routes’
- **New Symbol Set for School Orienteering Maps 2019**
- **Revision of ‘PrintTech’ test sheet**
- **Revision of MTBO in progress**
- **Revision of Ski O just completed, preparing for publication**
Reactions to ISOM 2017-2 and ISSprOM 2019

- Changes too frequent
  - Agreed to wait 2 years for the next update

- Removal of Impassable / forbidden Green in Sprint ie the 4th Green
  - Some objections to removal of 4th green for Sprint maps
  - 4th green often too dark / virtually black on printed map
  - 410 Vegetation (100% Green) when printed to specification is OK and in Sprint for it to be used as “forbidden” to be crossed
  - Review in 2 years time
MC News

Recap of the main changes ISOM2017 to ISOM 2017-2

• Removal of ‘2.12 Printing and colour’ section to Appendix 1
• ‘Overprinting symbols’ section renamed ‘Course planning symbols’
• Symbols:
  – 4th green removed
  – 202 Cliff - thicker main line, round ends if no tags
  – 107 Erosion gully – shorter min length to 17m
  – 311 Well, fountain or water tank – size reduced, can rotate to fit / align
  – White mask to 417 & 419, small white centre to 418
  – Thicker line to Alternative 416 Distinct vegetation boundary – green dash
  – Bounding line to Olive green
  – 532 Stairway – new
• Text edits and corrections
ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions

- **Permits laser printing**
- Blue CMYK settings now 100% Cyan to improve sharpness of line edges
- **Note setting for Purple**: 35% Cyan, 85% Magenta. Works well in most cases, is a compromise

<table>
<thead>
<tr>
<th>Purple colour swatch: Cyan%, Magenta %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.100, 5.100, 10.100, 15.100, 20.100, 25.100, 30.100, 35.100, 40.100, 45.100</td>
</tr>
<tr>
<td>0.95, 5.95, 10.95, 15.95, 20.95, 25.95, 30.95, 35.95, 40.95, 45.95</td>
</tr>
<tr>
<td>0.90, 5.90, 10.90, 15.90, 20.90, 25.90, 30.90, 35.90, 40.90, 45.90</td>
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<tr>
<td>0.80, 5.80, 10.80, 15.80, 20.80, 25.80, 30.80, 35.80, 40.80, 45.80</td>
</tr>
</tbody>
</table>

**Purple**: 35.85, 40.85, 45.85
ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions

- To include separate colour tables for all disciplines
- Table sets out colour order and CMYK values
- Ongoing discussions with OCAD AG on various issues
  - Colour order for some symbols, Upper & Lower colours & treatment of contours / roads

ISOM 2017-2 colour order and colour shades for offset (in OCAD)

ISSprOM colour order and colour shades for offset printing (in OCAD) only as reference, sprint maps are not recommended to be offset printed
MC News

ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions

- Blending not recommended as this can create confusing third colours due to mixing of colours

  ie OCAD example illustrating ‘blending’        LHS off      RHS on
ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions

- OCAD enables the Map file to be merged with the Course file, and then moving Lower Purple to the position as per Colour table (example in previous slide) for the respective disciplines (forest, sprint, ski, mtbo)

- OCAD example
- Not possible in Purple Pen
MC News

ISOM 2017 Appendix 1 – CMYK Printing and Colour Definitions

- 100% Green

Investigate changing 100% Green to a darker shade from CMYK 71 00 91 00 to say 85 00 95 00

100% GREEN COLOUR SWATCH: Cyan%, Yellow%

```
70 85  75 85  80 85  85 85  90 85  95 85  100 85
70 90  75 90  80 90  85 90  90 90  95 90  100 90
70 95  75 95  80 95  85 95  90 95  95 95  100 95
70 100 75 100  80 100  85 100  90 100  95 100  100 100
```
Map control review for 2019

- Except for Norway and now China, the process was not used universally

<table>
<thead>
<tr>
<th>Events</th>
<th>MC Member in charge</th>
<th>Maps sent to MC before the event</th>
<th>Comments made by MC</th>
<th>Changes made</th>
<th>Maps sent to MC after the event</th>
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<tbody>
<tr>
<td>WOC Norway Foot-O</td>
<td>CC</td>
<td>yes</td>
<td>yes</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
<tr>
<td>JWOC Foot-O</td>
<td>LK</td>
<td>yes</td>
<td>Yes</td>
<td>For the sprint only</td>
<td>NO</td>
</tr>
<tr>
<td>WMOC Foot-O</td>
<td>JPS</td>
<td>NO</td>
<td></td>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>WYOC Foot-O</td>
<td>US</td>
<td>NO (requested)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oceania Regional C Foot-O</td>
<td>AU</td>
<td>NO (requested)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World Cup Event China Foot-O</td>
<td>LK, CC</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
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<tr>
<td>World Cup Event Switzerland</td>
<td>RD</td>
<td>Yes after a first refusal</td>
<td>Recently made</td>
<td></td>
<td>n.a.</td>
</tr>
<tr>
<td>World Cup Event Finland Foot-O</td>
<td>JPS</td>
<td>yes</td>
<td>Yes (minor)</td>
<td>NO for the sprint</td>
<td>NO</td>
</tr>
<tr>
<td>All major events MTBO events</td>
<td>JPS</td>
<td>NONE</td>
<td></td>
<td></td>
<td>NONE</td>
</tr>
</tbody>
</table>
MC News

Map control review for 2019

• MC seeking ways to strengthen map control process
  – Seeking support of Rules and Foot-O Commissions
  – Seeking guidance from IOF Council

• Footnote to Oceania
  – Request in August 2019 for map check from the mapper of ‘Racecourse Creek’, Oceania Middle Distance
  – 3 main issues
    • Wide use of 418 Prominent bush or tree: old symbol & should be used sparingly
    • Undersize areas of 214 Bare rock (225m2)
    • Objects of the same colour closer than minimum gap requirement (0.15mm)
  – All issues promptly resolved
Map control process – What is it?

- A desk top map check done **before** the event
- No field visit
- Aim is to help the Senior Event Advisor/Controller, Organiser and Mapper in preparing a legible printed map for an orienteer on the run
- A three step process:
  - Check for minimum dimensions (lengths, widths & areas) and gaps for some critical symbols
  - Check for correct size of symbols according to the specification
  - A visual check of the use of form lines and an overall check of the drawing
Map control process

- a useful tool to aid the visual check is a new function in OCAD 2018 ‘Check Legibility’
  - Example below is for a Scale of 1:10000 (for 1:15000 the minimum gap is 0.15mm)
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Map control review for 2019

- Some issues identified from MC map reports:
  - Poor drafting ie edge / border matching, touching / overlapping symbols of same colour
  - Violation of minimum gaps between symbols of the same colour
    - Min gap is 0.15mm
    - Purple dot here is 0.10mm
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Map control review in 2019

• Some issues identified from MC map reports:
  – Inappropriate use of symbols ie Pillars used as buildings on sprint maps
  – Use of undersize symbols
  – Areas under minimum size ie 214 Bare rock (225m2)
  – In Sprint maps not cutting contours (especially the Index) crossing steps and other features, so details are obscured by the contour
  – Mapping fallen trees with 100% Green line is not implemented, use 419 Prominent vegetation feature.
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- Example of a compliant map
- Mid Dist Q 2019 WOC, Norway - ‘Check Legibility’ where the purple dot / line = minimum gap between objects of the same colour

Aim: apply common sense to achieve a legible map for running navigation
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- Another example of a compliant map
- Czech Rep. LD Champs 2019: comment by Ludek

‘Level of generalization was good and the head cartographer did a perfect job in controlling all the minimum distances, so the map was nicely legible’
MC News

- Another example of a compliant map
- Czech Rep. LD Champs 2019: comment by Ludek

‘Level of generalization was good and the head cartographer did a perfect job in controlling all the minimum distances, so the map was nicely legible’
New PrintTech Test Sheet 2019

- OCAD file and instructions on use on IOF web site
- Paper prints in both spot offset and laser
  - Spot offset sheet for matching colour
  - Laser sheet standard for laser print quality
- Printed Sheets available from Neil Barr
Request to change the name of ‘impassable / uncrossable’ symbols

- Following a recent event, a request by Foot-O Commission and Rules Commission to change the terminology which may be considered confusing.

Background: On a leg over a lake some competitors swam across rather than running around – Long distance event, 2019 WMOC, M40A
This is permissible in ISOM.
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Request to change the name of ‘impassable / uncrossable’ symbols

- Foot-O Commission / Rules Commission propose:
  - **High or dangerous cliff** instead of Impassable cliff (201)
  - **Deep or dangerous body of water** instead of Uncrossable body of water (301)
  - **Dangerous marsh** instead of Uncrossable marsh (307)
  - **High or dangerous wall** instead of Impassable wall (515)
  - **High or dangerous fence** instead of Impassable fence (518)
  - **Prominent high or dangerous line feature** instead of Prominent impassable line feature (529).

- MC opinion that the example was more of a problem with inappropriate course planning rather than mapping specifications, and that OOB symbols should be used to identify specific features forbidden to be crossed for a particular event ie application of IOF Competition Rules 17.2

- MC to review in 2 years and to investigate the potential risk regarding civil liability of either the mapper or organiser due to such renaming
School symbol set

- School symbol set published 2019
- 125% larger symbols compared to ISSprOM 2019
- Additional symbols

- Lamp post, pole
- Table, bench
- Playground equipment
MC News

Addressing colour blind issues

• The problem – these maps all look the same to a colour blind orienteer

Normal vision

Protanopia (can’t see red; uncommon, ~1-2% of men, rare in women)

Deuteranopia (can’t see green; relatively common, ~6% of men, 0.5% women)

These green areas are easily mis-interpreted as brown knolls
Addressing colour blind issues

- Presentation to the 18th International Conference on Orienteering Mapping, Prague, 2019
  ‘Solutions for orienteers with colour vision defects’
  by Adrian Uppill & Ludek Krticka

- Introduction of geometric coding in ISOM2017

<table>
<thead>
<tr>
<th>Specific symbols per colour:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown △ Green × ○ Blue □ ✫</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Colour perception:</th>
<th>ISOM 2000</th>
<th>ISOM 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>○ ○</td>
<td>□ □</td>
</tr>
<tr>
<td>Prominent large tree</td>
<td>○ ○</td>
<td>○ ○</td>
</tr>
<tr>
<td>Prominent features</td>
<td>× × ×</td>
<td>△ ✫ ✫ ✫</td>
</tr>
</tbody>
</table>
Addressing colour blind issues

- Further enhancements in ISOM 2017 – 2
  - 417 Prominent large tree - addition of white mask
  - 418 Prominent bush or tree - addition of white dot to centre
  - 419 Prominent vegetation feature - addition of white mask
Addressing colour blind issues

- Further solutions for consideration
  520 Area that shall not be entered
  Often confused with other map colours
  nb currently must use with a bounding black line - 0.10mm
  Possible use of texture pattern:
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Addressing colour blind issues

• Further solutions for consideration
  Yellow screens, particularly the 50% screen, often confused with some other colour screens
  Possible solution - increase saturation of 100% Yellow
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ISSprOM 2019

• Valid from 1 January 2020
• Scale 1:4000, contour interval 2.5 /2.0m or 5m for steep terrains
• Rules removed as requested by IOF Council (against MC recommendation)
• Adoption of same numbering system as ISOM 2017-2
• Greater focus on legibility - like ISOM 2017-2
• Removal of urban and non-urban option for footpath and track symbols
• Printing section removed to ISOM Appendix 1, to include the colour order and CMYK settings
• ‘Overprinting symbols’ renamed ‘Course Planning Symbols’ - same as ISOM2017-2
ISSprOM 2019

- Main symbol changes

- Step or edge of paved area (all 0.10mm)
- Light traffic 30% Brown
- Heavy traffic 50% Brown
- Paved area with scattered trees (new)
- Passable wall (grey removed)
- Passable retained wall (new)
- Paved area in multilevel structures
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ISSprOM 2019
- Objective to clearly show passibility of mapped features
- Rules need to be updated from 1 Jan 2020 with new symbol numbers of forbidden features (lines and areas)

Barriers

Course markings

Obstacles (& areas) which can be crossed

Features easily crossed
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ISSprOM 2019

- Min gaps: 0.40mm and 0.15mm
- Min track width: 0.35mm
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Other matters

• PrintTech sheet to be used for assessing certification requirement of printing companies for major IOF events
• Successful mapping workshop held in China mid 2019, presented by Ludek and Robert
• Question from Council about creating a combined specification for Forest and Sprint
  • MC considers impossible
• Discussion about reduction of symbol sizes in complicated terrains ie use 1:15000 symbols for 1:10000 scale maps
  • MC considers not a solution
  • current scale and symbol sizes are a balance between the needs of long distance course planning, paper size, need for generalisation, mapping cost
  • They support the intent that “the orienteering map is read whilst running fast through the terrain and that the perceptive capabilities of the human brain and eye have limits”
Map Walk on WOC Middle Distance Map, Norway

Led by Kristen Treekrem

- 3rd time WOC mapper
- Field worked during summers of 2017 & 2018 and at a time period when the vegetation would resemble the condition of the WOC events
Map Walk on WOC Middle Distance Map, Norway

- Used a prepared base map from LIDAR and other sources

Basemap Roar Forbord

- open area
- dense vegetation
- boulder
- cliff
- marsh
- watercourse
- footpath
- fallen tree

Målestoffk 1: 5000
Ekvidistanse 5m/1m

Terje Mathisen from LIDAR (ISOM):

From cliff and slopefiles:
- cliff
- footpath
- watercourse
Map Walk on WOC Middle Distance Map, Norway

- Used a prepared base map from LIDAR and other sources

Base map (1m contours)  Completed map
Map Walk on WOC Middle Distance
Map, Norway

- Point 16: 404 Rough open land scattered trees  LHS
  Rough open land scattered bushes  RHS
Map Walk on WOC Middle Distance Map, Norway

- Point 16: 202 Cliff?

Not mapped for this terrain
Points 12 & 13: Discussion about minimum size and choice of symbol: 214 Bare rock 225m², 401 Open land 65m², 403 Rough open land 225m², 405 Forest (min. area within greens & yellows). An area of rock covered with some vegetation and moss shall not be mapped as 214, hence 401 & 403.
Map Walk on WOC Middle Distance Map, Norway

- Between Points 11 & 12: 404 Rough open land with scattered trees could be extended over gully and the 3 Cliffs
Map Walk on WOC Middle Distance Map, Norway

- Near Point 11: 109 Small knoll and 202 Cliff
Map Walk on WOC Middle Distance Map, Norway

- Point 11: Which symbol for hut?
Map Walk on WOC Middle Distance Map, Norway

- Point 10: Displacement of Cliffs to create space for 506 and 305
Map Walk on WOC Middle Distance Map, Norway

- Point 9: 403 Rough open land and 508 Narrow ride or linear trace through the terrain
Point 8: 409 Vegetation: Walk / good visibility or 410 Veg: Fight?

- Note blending issue in respect to watercourse and 409
Map Walk on WOC Middle Distance Map, Norway

- Point 3: Discussion on using 405 Forest or 406 Vegetation: slow run - risk of twigs / low branches causing eye injury therefore need to run slower (needs to be 20% slower to change from 405)
Map Walk on WOC Middle Distance Map, Norway

- Point 2: Junction of 505 Footpath, 507 Less distinct small footpath, 508 Narrow ride / trace through forest
Map Walk on WOC Middle Distance Map, Norway

• Point 1: 204 Boulder 0.8m? Map specification says ‘should be higher than 1m’ but OK if distinct / obvious even if only 0.7m.