Minutes for the 47th meeting of
ISO TC 130/WG 3
PROCESS CONTROL AND RELATED METROLOGY

1 Opening of the meeting
The meeting was called to order at 09:00 h by Mr. Andreas Kraushaar, convenor. He thanked the sponsors (BSI, ExCel) for hosting the meetings and providing the facilities. Mr. Warter was thanked for taking the minutes. He introduced Mr. Andreas Lamm, the secretariat.

2 Roll call of experts and observers
A roll call of experts was held. The scanned attendance list (for each of the two days) can be found under document N 1573.

3 Approval of agenda
(N 1556)
Mr. Kraushaar discussed the agenda (N 1556). The agenda was unanimously approved.

4 Review and approval of minutes from the prior Berlin meeting
(N 1526)
Mr. Kraushaar introduced the previous minutes (N 1526). The minutes were unanimously approved.

5 Identification of new documents
During the meeting the following new documents were identified:

<table>
<thead>
<tr>
<th>Source</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>Revie</td>
<td>N 1557 Presentation on ISO 15311 restructuring</td>
</tr>
<tr>
<td>Rich</td>
<td>N 1558 Guidance on converting CIELAB Tolerances for graphic reproduction</td>
</tr>
<tr>
<td>Gaykema</td>
<td>N 1559 JWG 14 4th Meeting minutes</td>
</tr>
<tr>
<td>TC 130 Secretariat</td>
<td>N 1560 Urgent badge information</td>
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<td>TC 130 Secretariat</td>
<td>N 1561 Engineering work disruption on London underground</td>
</tr>
<tr>
<td>Beltrami</td>
<td>N 1562 ACIMAC – proposal of new part of 15311 - lowres</td>
</tr>
<tr>
<td>Warter</td>
<td>N 1563 Quality framework for digital printing</td>
</tr>
<tr>
<td>Kraushaar</td>
<td>N 1564 GASIC RPC2013 versus ISO 12647 2013</td>
</tr>
<tr>
<td>Green</td>
<td>N 1565 Media relative colorimetric</td>
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<tr>
<td>Gaykema</td>
<td>N 1566 JWG14 Status report 2014-03-14 London Meeting</td>
</tr>
<tr>
<td>Carnelli</td>
<td>N 1567 Spot Color Study TAGA Italy</td>
</tr>
<tr>
<td>Carnelli</td>
<td>N 1568 WG3 AI 13-25 Spot Colors incorporation in standards</td>
</tr>
<tr>
<td>Smiley</td>
<td>N 1569 TC130 SCHMO Project London 2014</td>
</tr>
<tr>
<td>ISO/CS</td>
<td>N 1670 ISO 186 Paper and board – Sampling to determine average quality</td>
</tr>
</tbody>
</table>

* Documents marked "N xx" will be distributed later or will be tabled at the meeting.
6 Report of the convenor on the status of standards and advanced work items (N 1544)

Mr. Kraushaar reviewed the status of all WG3 related documents as indicated in N 1544. There was some question as to the status of ISO 12647-1, -2 and -3 and whether the version of ISO 12647-3 being sold was not perfectly worded. There are no technical problems and ISO assured to correct the editorial errors. This has already been done, but the publication date remains December 2013. The report was unanimously accepted.

7 Review of open Berlin action items (N 1545)

<table>
<thead>
<tr>
<th>Document</th>
<th>Who?</th>
<th>What?</th>
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<tbody>
<tr>
<td>11/25 ISO 15790</td>
<td>McDowell</td>
<td>To take the lead in the systematic review of Certified reference materials</td>
<td>Cancelled</td>
</tr>
<tr>
<td>12/10 ISO 15311</td>
<td>Kraushaar, Ito, Warter, Pitigoi, Zeise and Gaykema</td>
<td>To test M-score in a round robin test.</td>
<td>Cancelled Test materials have been damaged. It is being used by JWG 14</td>
</tr>
<tr>
<td>13/2 ISO 12646</td>
<td>Cheydleur</td>
<td>to identify known existing conflicts with IOMD/SID/VESA.</td>
<td>Closed</td>
</tr>
<tr>
<td>13/17 ISO 12646</td>
<td>McDowell</td>
<td>To add wording for the introduction to clarify the intended audience (manufacturer)</td>
<td>Closed</td>
</tr>
<tr>
<td>13/18 ISO 14861</td>
<td>Kraushaar</td>
<td>To add a quantitative tolerance to the visual correction (4.3)</td>
<td>Closed</td>
</tr>
<tr>
<td>13/19 ISO 14861, ISO 12646</td>
<td>Kraushaar, McDowell</td>
<td>To check all occurrences with “Percentages” and define a clear usage</td>
<td>Closed</td>
</tr>
<tr>
<td>13/20 ISO 14861</td>
<td>Kraushaar, Warter, McDowell, Rodriguez, Smiley</td>
<td>To rewrite 4.4.2.2 &amp; 4.3.1</td>
<td>Closed</td>
</tr>
<tr>
<td>13/21 ISO 12647-4</td>
<td>Battrick, Meinecke, McDowell</td>
<td>To reflect the change in US 43 (from Accepted to Not Accepted) and prepare a version that incorporates the resolved DIS comments for 4 week WG3 email review. After the review the document should be sent to ISOCS to publication. Also implement US46 (&quot;M1 should be used” after ISO 13655).</td>
<td>Closed</td>
</tr>
<tr>
<td>13/22 ISO 12647-5</td>
<td>Warter, McDowell</td>
<td>To resolve the discussed comments and prepare a version that incorporates the resolved DIS comments for 4 week WG3 email review.</td>
<td>Closed</td>
</tr>
<tr>
<td>13/23 ISO 12647-7</td>
<td>Revie, Smiley, Widmer, Mortara, Beltrami, Pitigoi, Bickeböller, Warter</td>
<td>To put together a list of potential changes and propose a modified text for a minor revision of ISO 12647-7.</td>
<td>Closed</td>
</tr>
<tr>
<td>13/25 General</td>
<td>Carnelli, Smiley, Khoury, Mortara, Pitigoi</td>
<td>To start a study group to investigate the incorporation of spot colour requirements into TC130 standards (focussing on WG3 TF3, WG13, WG4, WG2). Compile a list of items and requirements that substantiate a New work item.</td>
<td>Closed see N 1568</td>
</tr>
<tr>
<td>13/28 ISO 15311-1</td>
<td>Warter, Revie, Pitigoi, Kraushaar, Chung, Mortara, Ito, Sherfield, Qiao, Smiley, Pfeifer</td>
<td>To propose a colour accuracy framework to be included in ISO 15311-1</td>
<td>Closed see presentations to Agenda item 8.6</td>
</tr>
<tr>
<td>13/29 ISO 15311-x</td>
<td>Lamm</td>
<td>To contact ISO and sort out possibilities to make (JWG14) documents available to interested parties.</td>
<td>Closed see N 1534</td>
</tr>
</tbody>
</table>

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The Committee discussed all the implications of ISO15790 Certified Reference Materials. This is a needed but misunderstood and unused component of most measurement processes in our industry. We need to place it under the proper jurisdiction to give it meaning and application. JWG 8 has agreed to consider it.

8  Review and discussion of standards and current work items

8.01  ISO 12647-5:2014
There has been a 4 week review prior to the WG 3 meeting, where no comments were raised. Therefore the document (see N 1538) will be send to ISO/CS for FDIS ballot (as agreed at the Berlin meeting).

8.02  ISO12647-6:2012
The Committee discussed the implications to this standard of the previous decision to withdraw parts of the related standard ISO 2846-5. This is a process change to use hue angle as opposed to Lab as the target for printing.

ACTION ITEM 14/1: Smiley to edit paragraph 1 of 4.3.4 in ISO 12647-6 to remove the reference to 2846-5 and show the tables below. Also delete the normative reference in the document. Prepare the document for ballot as a minor revision.

8.03  ISO 12647-7:2007
Graphic technology – Process control for the manufacture of half-tone colour separation, proofs and production prints – Part 7: Proofing processes working directly from digital data
Mr. Revie led the discussion. He reviewed the list of needed changes that led to the decision for a minor revision at the last meeting. Since that time ISO/CS has determined that this level of change will require a major revision. Mr. Lamm explained that the new ISO/IEC Directives allow a very speedy revision since the CD ballot and the FDIS ballot can be skipped if WG 3 fully agrees to the proposed changes. The draft was presented with only the intended changes noted. Mr. Mortara questioned as to how these changes will affect 12647-8. Mr. Review reviewed all the changes many of which were adapted from ISO 12647-8: handling of proofing paper colour and permanence as already done in part 8; the basic use of spot colours and the proper tolerances where they apply (tints may be included by the user with the proper reference in the PDFX); tonality (curve shape) assessment from part 8; colour measurement will reference ISO 13655 for all cases; margin information. The Committee had a long discussion as to what is pertinent margin information. Is it more important to include printing condition process control parameters, characterization data or profile information. It was agreed not to specify the information and only include a note with perspective on meeting the level of sophistication of the proof receiver.

The Committee discussed Mr. Revie’s proposals in detail and refined many of the revisions. The next step is to develop the CD for a 2 month ballot and determine whether more significant changes are also required.

ACTION ITEM 14/2: Revie, Carl, Carnelli, Mortara, Rich to insert a note in 12647-7 4.2.1 giving perspective to gloss and colour measurement of stock and specifying the use of either proper gloss measurement from ISO 15397 or the manufacturer’s reported gloss to categorize the stock surface.

ACTION ITEM 14/3: Lamm to draft a TC 130 resolution for the revision of ISO 12647-7 and send it to TC 130 for a one month ballot by May 2014.

ACTION ITEM 14/4: Revie to complete 12647-7 and circulate to the Committee for CD ballot by July 2014.

ACTION ITEM 14/5: Kraushaar, to share Fogra measurements with Ito who will test of the use of delta H versus delta Cₐ in conformance tolerances for 12647-7+.

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ACTION ITEM 14/6: Smiley and Revie to draft a note to clarify the technical meaning and use of “printing condition” in the margin information of 12647-7+

8.04 ISO/DIS 15339-1, Graphic technology — Printing of digital data — Part 1: Basic principles
Mr. McDowell led the discussion. He reviewed the proposed resolution of comments (ROC) N 1539 and N 1540 (proposed FDIS). Mr. Kraushaar raised the fundamental objection to the use of printing in the title of the document. He alerted the committee that a “double standardization” will be created since two (or more) standards can be used for one use case (here printing conformance). Mr. McDowell reminded everyone that this has been the accepted title for many years. Mr. Warter suggested that this might be solved by a return to the original intention of process agnostic/cross media. The committee discussed whether this is important enough to merit a change. Mr Mortara suggested it is unfair to change the title on principles this late in the process. Mr. Beltrami pointed out that the scope and introduction were clear on the application. Mr. Kraushaar replied that it is up to the committee (national bodies) to determine by ballot to create a situation where two standards address the same matter.

The committee then discussed the use of tolerance bands in the informative Annex B and whether there is an intended, implied or arbitrary basis for these specific bands. This use essentially lumps all printing together in the same tolerance ranges whether that is intended or not. Many reasons in favour and against tolerances bands (A, B, C etc) were discussed. The committee could not resolve the matter and it was agreed to keep the informative annex.

The committee discussed the specification of M1 measurement over white backing which essentially affects all future parts of the document. It was agreed that measurement conditions should be defined separately in all future parts as needed.

Next the committee discussed Annex A and whether it should be normative or informative. After some debate it was agreed to keep it normative. Mr. Kraushaar pointed out that there are inconsistencies in the diagram in Annex C.

ACTION ITEM 14/7: McDowell, Lindstrom, Khoury, Chung to revise the diagram in 15339-1 Annex C.

With that action the document should be sent out for FDIS ballot.

8.05 ISO/DIS 15339-2, Graphic technology — Printing from digital data across multiple technologies — Part 2: Characterized reference printing conditions – 2013
McDowell led the discussion of the proposed ROC of 15339-2. Mr. Kraushaar raised the point that the characterization data are based on a near neutral calibration and hence not universal. The data sets were renamed “typical” instead of “universal”. The committee heatedly debated the attributes of the proposed family of referenced printing conditions. The fundamental DE comments have not been accepted. Mr. Khoury, who attended remotely, summarized that printing according to datasets is popular in some regions of the world and printing according to ISO 12647-2 in other regions. Hence he proposed to have two standards in coexistence to reflect industry practice. Mr. Kraushaar reminded the committee of the following “double standardization”.

Mr. Ito presented a comparison of CRPC-6 to other major colour sets (12647-2, FOGRA39 and Japan Colour, see N 1572). He concluded that the CRPC-6 is “unfairly” close to GRACoL bearing a priority toward near neutral press calibration. He demonstrated that all sets could be brought together by adjusting the cyan solid and black TVI to achieve a compromise. Mr. Mortara proposed to move on with the existing data sets. The committee had a long discussion about the relative merits of the two systems (press calibration defined in ISO 12647-2 or near neutral calibration (G7)) and whether it is possible to adjust CRPC-6 to reflect a universal data set, which is not

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benefiting a press calibration. Mr. Kraushaar referred to an ICC presentation (N 1564) where the properties of near neutral based and ISO 12647-2 based characterization data sets are explained. He summarized that it is technical not possible to combine both approaches across printing substrates and screenings (for offset printing).

Since the fundamental concerns could not be resolved the following action item was drafted.

**ACTION ITEM 14/8:** McDowell, Lamm, Revie to contact ISO and determine the proper status of 15339-2 in terms of consensus and the proper path forward

**Note on the Action item:** Mr. Lamm contacted ISO and explained the situation to the ISO program manager responsible for ISO/TC 130. The ISO program manager recommended moving forward to the FDIS ballot, because the DIS ballot has been approved and that was the origin decision of the committee to move forward. Based on this recommendation the project editor, convenor and secretary agreed to move forward to FDIS ballot.

**8.06 ISO/TS 15311-1, Graphic Technology - Requirements for printed matter utilizing printing technologies for the commercial and industrial production – Part 1: Parameters and Measurement measures**

Mr. Revie led the discussion. He presented a document N1547 that he had developed from changes proposed at the previous meeting. His attempt has been to bring the document more in line with the work of JWG 14 in grouping and development of the metrics. This document will be limited to defining the proper reporting method for the image quality attributes required in the pertinent uses cases (to be referred to in the subsequent parts). Mr. McDowell clarified that this document will reference other fully suitable standards where possible. Mr. Kraushaar pointed out that the development for image quality attributes will be on-going and a document reflecting the current state of technology must be flexible and subject for continuous review. Hence the group agreed to use both the already published metrics (attributes) and the attributes under development (e.g. L-Score, M-Score, etc) in ISO/TS 15311-1. Mr. Warter clarified that the published document will probably not include placeholders for unpublished metrics. It was agreed that the not finally published metrics should be addresses by means of an information annex.

Mr. Revie reviewed the lists of existing metrics and potential metrics that have been identified for inclusion in the document. He proposed that, at any time in the future, the document have a published version but also be in constant revision in order to include all necessary metrics. Currently the document will include metrics for single sheets but this could be extended to multiple sheets (to evaluate a print run) with the proper guidance for sampling. Mr. Lanat recommended ISO 186 on paper sampling (see N 1570). The committee discussed whether this reference should be in part 1 or in the use-case parts where the need for sampling will be identified. Mr. Pitigoi clarified that this is just a general method and a reporting procedure. It does not define what to measure, which will be identified in subsequent sections. In order to resolve that issue the following action item was drafted.

**ACTION ITEM 14/9:** Revie, Chung, Ito, Kraushaar, Warter, Pitigoi to develop a reporting procedure for sampling sheets in 15311-1

Mr. Warter gave a presentation N 1563 which concluded that an action item committee could not agree on any quality framework for 15311-1 that was meaningful but not use-case specific. Mr. Kraushaar was surprised that the committee could agree on tolerance bands in Annex B of ISO/DIS 15339-1 but not ISO/TS 15311-1. It was agreed to not have tolerance bands in ISO/TS 15311-1 but to encourage editors of the subsequent parts to align and synchronize the tolerance bands to avoid confusion of identical names.
of bands but with different content. In order to assure a precise wording for the
document to be published the following action item was agreed.

**ACTION ITEM 14/10:** Kraushaar, Pitigoi, Revie, Warter, Smiley, Li, Pfeifer to draft a paragraph
for 15311-1 to define the colour accuracy-reporting criterion.

With the results of the action items it was concluded that Mr. Revie will prepare a
document for DTS ballot (similar to CD ballot) in a way that the ballot results can be
discussed at the upcoming WG3 meeting in China.

Mr. Baah gave a presentation on acceptability of proof to press match with changing
media relative white points (N 1565).

**8.07 ISO/TS 15311-2, Graphic Technology - Requirements for printed matter utilizing
digital printing technologies for the commercial and industrial production – Part 2:
Commercial Production Printing**

Mr. Warter led the discussion. His plan is to cross consolidate metric definitions from
part one, with use-case definitions from the Fogra Digital Printing Working Group
(DPWG) and typical use cases from the past draft and the IDEAlliance test programs
and solicited manufacturers input. Mr. Beltrami questioned whether workflow will be
reflected by the metrics. Mr. Kraushaar responded that the driving (device mode or
simulation mode) will be required to be reported since the driving (RIP settings, colour
management transforms etc.) has a major impact on the resulting print image quality.
With that the resulting image quality can be related to different use cases.

Mr. Chung clarified that the intent was to make these standards applicable to all types of
printing not just digital (reflecting the title change during the last Berlin meeting).

Mr. Warter will prepare a document for email review of one month by July and, based on
feedback, develop a working draft for distribution of NWIP Ballot.

**8.08 ISO/TS 15311-3, Graphic Technology - Requirements for printed matter utilizing
digital printing technologies for the commercial and industrial production – Part 3:
Large Format Signage Printing**

Mr. Pitigoi reviewed a draft of a proposed document. He segmented his approach into
process check metrics and product/output check. He talked about some definitions that
he is using to distinguish the factors that will affect the output of industry relevant use-
cases. The committee discussed the concept of defining use-cases by both viewing
distance and diagonal size (either separately or simply as a ratio). The committee
agreed that there is a need for different distances to differentiate use-cases but one
ration ratio is sufficient to determine the image size. He also talked about non-paper
stocks and how to best adapt the goals to those specific use-case. Mr. McDowell
pointed out that, as long as D50 is used throughout, colour management can be applied.
For transparent materials there are D50 viewers.

Mr. Pitigoi will prepare a document for email review of one month and, based on
feedback, develop a working draft for distribution of NWIP.

Mr. Beltrami gave a presentation (N 1562) on ceramic tiles printing. It is a large market
with a real but different printing needs. The committee discussed what aspects of the
process lend themselves to standardization. Members of the committee who are
interested in this application should contact Mr. Beltrami in order to coordinate work on a
draft for a potential ISO/TS 15311-4 candidate to be presented at the next meeting.
8.09 Further focus points
Mr. Carnelli reviewed N 1568 from the spot colour action item. He listed all ISO documents that mention spot colours and his committee’s recommendations on additions to properly address spot colours in each instance.
Mr. Smiley reviewed the “Schmo” group who are attempting to calculate tone response curves for spot colours N 1569. He discussed the planned program and some potential results.

9 Supporting Activities (Task Force, Study Groups, Working Groups, etc)

9.1 Printing Certification Requirements - Working Group 13
Status update (N 1550) Mr. Chung reported. Three documents are in process.

9.2 Environmental Impact of graphics technology - Working Group 11
There was nothing reported.

9.3 Postpress Processes - Working Group 12
Status update (N 1552). Uwe Bertholdt reported briefly.

9.4 TF 3 – Workflows Standards Roadmap
Mr. Beltrami updated the group. TR 19300 is in process

10 Liaison matters

Mr. Rich reported on a minor revision of 13655.

10.2 ISO/JTC1 SC28 WG4 / JWG 14 "Print quality measurement methods”
Mr. Gaykema gave the update (N 1501).

10.3 ISO TC42 Liaison report
Mr. Urabe gave an update. (N 1491)

11 Summary of London action items

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<thead>
<tr>
<th>Document</th>
<th>Who?</th>
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<tbody>
<tr>
<td>14/1</td>
<td>12647-6</td>
<td>Smiley</td>
</tr>
<tr>
<td>14/2</td>
<td>12647-7</td>
<td>Revie, Carl, Carnelli, Mortara and Rich</td>
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<tr>
<td>14/3</td>
<td>12647-7</td>
<td>Lamm</td>
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<tr>
<td>14/4</td>
<td>12647-7</td>
<td>Revie</td>
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<tr>
<td>14/5</td>
<td>12647-7</td>
<td>Kraushaar</td>
</tr>
</tbody>
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### 12 Requirements concerning the future meeting

The committee will require two full days at the China meeting Nov. 14-19

### 13 Any other business

Mr. Lamm presented the changes to the ISO/IEC Directives Part 1 that will be effective as of May 2014.

### 14 Closing of the meeting

Mr. Kraushaar thanked Mr. Warter for taking the minutes and Mr. Andreas Lamm for his excellent support and BSI again for providing the facility. He applauded Mr. McDowell for his long-lasting contribution and wished him a farewell. He closed the meeting and wished the experts a safe trip home.