

**NOTES FROM THE MEETING OF ISO/TC 130/WG 3  
PROCESS CONTROL AND RELATED METROLOGY  
on 2006-04-26/27 in San Diego, USA**

## 1 Opening of the meeting

The meeting was called to order at 09:30 h by Dr. Friedrich Dolezalek, convener. The host, NPES, was thanked for the hospitality.

## 2 Roll call of experts and observers

The following were in attendance

Abe Hayhurst	Wedoprint	USA
Akihiro Ito	Fuji Xerox	Japan
Andreas Kraushaar	FOGRA	Germany
Astrid Weber	DIN	Germany
Beatrix Beckmann	IFRA	Germany
Brenda Pang	IPP	HK/China
Bryan Sunderland	BSI	UK
Danny Rich	NAPIM	USA
Dave McDowell	NPES	USA
Don Hutcheson	GRACoL	USA
Elie Khoury	AFNOR	France
Erwin Widmer	Ugra	Switzerland
Eudes Scarpeta	APTG	Brazil
Fred Dolezalek	FOGRA	Germany
Gengi Tao		Japan
Hitoshi Urabe	Fuji Photo Film	Japan
Ho Kar Hun	HK Printers assoc.	HK/China
John Davison	BSI	UK
John Iobst	NAA	USA
Karl Meinecke	BVDM	Germany
Larry Warter	Fuji Photo Film	US
Makoto Takahashi	Dainippon Ink	Japan
Mark Bohan	PIA/GATF	USA
Mark Priest	BSI	UK
Mary Abbott	NPES	USA
Mike Rodriguez	Donnelley	USA
Olaf Drummer	ECI	Germany
Peter Ehbets	GretagMacbeth	CH
Ray Cheydleur	X-Rite	USA
Richard Goodman	Kodak Polychrome Graphics	USA
Steve Smiley	Vertis/FTA	USA
Tom Collins	Quad Graphics	USA
Tomonori Yuasa	Muroran Inst.	Japan
Trish Wales	SAPPI	USA
Tsutomu Naganuma	JGASC	Japan
Uwe Bertholdt	FOGRA	Germany
Victor Tsang	HK Inst Voc. Training	HK/China

Walt Zawacki	NPES	USA
Wilco de Groot	IGT	NL
William Birkett	Dopplganger	US
Wynnie Man	APTEC	HK/China
Yuji Egawa	Dai Nippon Printing	Japan

A list of contact details for the experts of ISO/TC 130/WG 3 was reviewed and corrected. The attendance list will be attached to these notes.

### 3 Review and approval of agenda

(Doc. WG 3 N 569, N 569a)

Dr. Dolezalek discussed the agenda. Some document numbers on this document were revised. Dr. Ehbets suggests that the topic UV-cut filters for densitometry should be briefly discussed. With this revision, the agenda was approved.

The first half day of the Thursday session was to be devoted to the discussion of the future form of the process standards series ISO 12647-x, especially the part 2 and its description of half-tone colour reproduction (Item 7) and this had been reflected in the layout of the agenda. Agenda topic 7 was moved Thursday afternoon in order to accommodate the arrival of the delegates from Hong Kong. Therefore, the order of the meeting had to be rearranged.

### 4 Review and approval of the notes from the last meeting

(Doc. WG 3 N 561)

Dr. Dolezalek thanked Mr. Warter for his willingness to prepare the notes of this meeting. The notes of the previous meeting in Sao Paulo, prepared by Uwe Bertholdt and Fred Dolezalek, were unanimously approved.

### 5 Identification of new documents

The following new documents were identified.

- N 585 Press Digital Calibration, presentation relative to N 573 (McDowell)
- N 586 Revised Doc. N 573
- N 587 Problems of colour coordinates re. ISO 12647-5 and ISO 2846-4
- N 588 Presentation standardization of printing ISO 12647 (Meinecke)
- N 589 Comparison of GRACoLBeta02 to ISO 12647-2 PT1pos aims (Dolezalek)
- N 590 Suggestions towards future revisions of ISO 12647-2 (bvdm, fogra, etc)
- N 591 Presentation by Wynnie Man, APTEC, Hong Kong

### 6 Report of the convenor on the status of ISO 12647-2 :2004/DAM1, Graphic technology – Process control for the production of half-tone colour separation, proofs and production prints – Part 2: Offset lithographic processes, Amendment

Dr. Dolezalek reported that the standard has been amended to change the Lab values of the secondary overprint colours and the  $L^*$  value of Y. It is presently out for ballot till August 06.

**7 Discussion on process control parameters for the description of halftone colour reproduction. TVI, neutral density and grey balance, common TVI curve?**

Dr. Dolezalek introduced the topic. Mr. McDowell gave a presentation (N 585) on the background and rationale for a proposed technical report, Doc. N 573, in revised form: N 586. In view of its contents it was later suggested that if such a document were to be introduced as a New Work Item Proposal, this should be in the form of a Technical Specification rather than a Technical Report because the latter must not contain matter that could also be in a standard. The committee discussed the claims made in the presentation N 585 and in N 573, N 586, namely.

1. Eliminates the need to have separate characterizations for different screening techniques/rulings and plate making techniques. (Moves these variations from characterization data to the printer/plate maker where it more properly belongs)
2. Provides simpler and more sensitive control of printing than traditional TVI (i.e., black and neutral scale NPD lightness and chroma)
3. Makes it easier to move data prepared for one printing condition to a different printing condition (The use of a common highlight scale allows printing at different SIDs to provide a similar final appearance)
4. Makes it easier to enable different presses (and processes i.e., flexo, offset, and gravure) to use same characterization data.
5. Where users want to use TVI as the process control tool, it moves the calibrated press closer to the middle of the allowed range.
6. Complimentary to, and not in conflict with, ISO 12647 series. May enable simplification and broader acceptance.
7. Separate from, but supportive of, colour management, printing process control aims, and colour characterization."

Dr. Dolezalek expressed the view that the acceptance of N 586 should be delayed until it had been decided by the committee that a) the method proposed in N 573, N 585, N 586 constitutes an improvement over the present system for ALL printing conditions and processes covered by the ISO 12647 process standard series and b) that, consequently, the present primary parameters of that series (i.e. TVI curves and CMYKRGB solid CIELAB values) should be replaced by the set suggested by N 573, N 585, N 586 (i.e. ND curves and CMYKRGB solid CIELAB values). Presently he saw no compelling need for this move and he deplored the paucity of published thorough studies that would support the far-reaching claims 1 through 7 made earlier.

Ms. Wynnie Man gave a detailed presentation (N 591) of the results of their press trials of the methods proposed in N 586, in Hong Kong, generally supporting the process but also pointing to weaknesses such as the confusion as to what is the aim value for the black 50 % neutral density, the difficulty of density dry-back ((because of density measurement without polarization. Note that there is no dry-back with TVI)) and the CIELAB grey balance tolerances for  $a^*$  being too tight.

Mr. Smiley reported that he had successfully used the N 573, N 585, N 586 process to match flexography and offset on diverse substrates like film and newsprint and had obtained reasonable matches. It was commented that while this may indeed be so it had not been proved that an equally reasonable result could not be achieved by using the classical approach.

Mr. Meinecke gave a presentation (Doc. N 588) on the many publications (2 of them in English language), the certification programmes, and the mostly free software tools that have been provided by the bvdm, ECI, fogra, ugra in support of the ISO 12647 and 2846 series of standards. All of this material adheres 100 % to the current ISO standards mentioned and is much used in Europe. As a result of these efforts, the mentioned ISO standards have a profound impact on the European market and any change of the standard needs to be well researched and prepared.

Dr. Dolezalek gave a first presentation (N 590) on a comparison of the GRACoL Beta 02 characterization data (which is based on the methods proposed in N 573, N 585, N 586) with that of ISO 12647-2 including DAM1, the amendment, for PT1 pos. His conclusion was that the characterization data GRACoL Beta 02 is technically just within the standard's TVI tolerances if the reference is the PT1pos or the PT1neg printing condition. The ISO TVI tolerances had been purposely made extra wide to accommodate the results of "fine tuning" efforts by the press operator but characterization data needs to be much closer to the aim than a single sheet of an arbitrary job. He reasoned that one could expect that an up-to-date characterization data set would represent an ISO printing condition as well as technically possible and not "only just". This is not the case with GRACoL Beta 02, as no TVI curve of the standard, much used in Europe, has actually been emulated as well as had been technically possible. He then compared the grey conditions, as a function of tone value, of the data set "fogra39" (that exactly replicates the parameters specified for the printing condition "ISO 12647-2 PT1 pos") with that of "GRACoL Beta 02". While the magentas agree, the tone values of Y differ by about 2 % for the mid-tone. The example also showed that a shift in the primary specification from "tone value aims" to "grey balance aims" does not only require an agreement of a suitable grey condition (process-specific or universal?) but a workable definition of what is neutral. Especially for the latter he saw only scarce evidence in the literature in support of the choice made by GRACoL. He also observed that a basic premise underlying the GRACoL approach is the hypothesis that if the tone scale aims for the three colour neutral density and the black density were to rise linearly up to 50 % tone value then there would be a better appearance match than hitherto observed. Dr. Dolezalek went on to show, by calculation, for a very unlike pair of printing conditions, namely "offset paper type 1" and "newsprint", that such a linear rise of neutral densities is already the case for these present, traditional printing conditions. He remarked that he knew of no claim of like appearance for that pair. A further difference of the two approaches is that ISO 12647-2 does not indicate a priority, in case of conflict, to either TVI or the colours of the solids because it is meant to equally apply to half-tone rich and to solid tone-rich subjects. The GRACoL approach, however, is clearly directed to optimize the appearance of half-tone-rich subjects where one would reasonably insist on keeping TVI, half-tone density or neutral density constant, at the expense of SID. Press manufacturers provide production run control software for both cases, namely half-tone-predominant and solid-tone-predominant printing jobs.

In the course of further discussion, some clarifications were made but no general resolution regarding the technical differences of the two approaches was achieved.

Dr. Dolezalek gave a second presentation (N 589) on European suggestions as to what changes were thought to be reasonable for future revisions of ISO 12647-2. The process control strategy for the coming up to colour phase and production run phase should be addressed: For jobs with a predominance of solid tone subjects, such as with most packaging jobs, SID should rule over TVI or half-tone density (density of half-tone patch). For jobs with a predominance of half-tones, the reverse should be recommended. The OBA content of printing and proofing papers should be addressed. As a short-term change, SC paper should be added for web offset. The properties listed for the proofing stock categories should be revisited, the paper colours brought into line with the present market, the gloss made informative, opacity to be listed instead of mass per area. The production run tolerances need to be revisited. He then went on to discuss the possibilities for a unified TVI curve for all offset printing conditions. Finally, the tone value sum needs a better definition and the aims would need to be adjusted to that. Register and solid colours to remain unchanged.

The German experts expressed concern that the proposed TR, Docs. N 573, 586, was in conflict with the present make-up of ISO 12647, parts 1 to 6, and that the necessary resolution of the technical issues involved would not be easily reached within the next few years. The US delegation asked whether the GRACoL G7 efforts were in violation of 12647. It was noted that a given printed OK sheet that conforms to GRACoL G7 would also (only just) conform to ISO 12647-2 PT 1, pos. or neg., but that a characterization data set is normally expected to come much closer to the aim than just a single sheet.

The vision of a worldwide unified characterization data set for commercial offset was raised by Dr. Rodriguez. After much discussion the committee agreed that a good short term goal would be to develop such a unified characterization based on curve B of ISO 12647-2:2004 and that this could possibly be introduced as a Technical Specification at ISO. Mr Khoury re-raised the question of the value of the G7 approach and proposed that some mechanism be determined to allow testing and reporting under the ISO umbrella. He proposed a compromise using FOGRA 39 as the characterization data set plus a Technical Report of the process to be incorporated in 12647-2. The proposal was not supported. Dr. Rodriguez proposed that the FOGRA 39 data (which conforms to curve A of ISO 12647-2:2004) be adjusted to curve B. Two options are to be prepared for tests, one based on "identical tone value increase curves", i.e. the present ISO aims, and one based on "a grey balance of 50 40 40 that is neutral". Mr. Kraushaar agreed to go to work on this task. Note added in retrospect: The exact definition of what is "neutral" was not settled in the meeting.

**Action Item 06-01:** Mr. Kraushaar will try to develop the proposed characterizations with assistance from Mr. Hutcheson and Mr. Khoury.

The committee again discussed the path forward for the GRACoL method N573, N586. Other experts were asked for their opinions. Most had not made up their minds but were not opposed to continuing the exploration of the method. Mr. Egawa recommended that the US submit the proposal as a new work item. The US experts agreed to revise the document, with guidance from this meeting, and submit it as the basis for a new work item.

## **8 Report of the convenor on the status of other advanced work items** (Docs. N 556, N 567)

**ISO/DIS 12647-6, Graphic technology – Process control for the production of half-tone colour separations, proofs and production prints – Part 6: Flexographic printing.**

Dr. Dolezalek reported that the DIS has been accepted, has been prepared for publication and is now with ISO for publication.

## 9 Review and discussion of current work items

(Doc. N 567)

### 9.1 Review of Sao Paulo action items

Action items from the previous meeting, part of doc. N 561, were reviewed. Status is as follows: All completed except for 05-16 and 05-17.

No.	Docum.	Who?	What?	c, o
05-09	Paper info day	Dolezalek, Revie, Smythe	to propose a one day joint meeting of experts from paper manufacturer's, TC130, TC6, ICC and PAB re. definition of paper descriptions in the USA and the rest of the world. Dolezalek etc are to contact Dr. Jordan of Paprican, CANADA, for contacts and possibly help.	C
05-10	12646	Egawa and Urabe	: Define the measurement method and the limits of the reflection level of a coated monitor in the off-condition.	C
05-11	12647-2	Dolezalek	The corrected Amendment to be sent out to WG3 for a 3 week scrutiny before sending it off to ISO CS for publication as DIS	C
05-12	12647-6	Dolezalek, Eudes, Smiley	Dolezalek to prepare a resolution of comments, doc. can then be prepared for final publication as there were only yes votes.	C
05-13	12647-7	McDowell	to propose revised wording for 4.1.1 regarding types of PDF/X, TIFF/IT,	C
05-14	12647-7	Dolezalek	to prepare a new CD for reg. as DIS	C
05-15	12647-2	Dolezalek	to explore how ISO 12647-2 could be extended o encompass spot colour	C
05-16	Exchange colour space	Craig Revie, pab, ECI, SWOP, GRACol	to investigate the possibilities for exchange colour spaces	o
05-17	profiles	McDowell	McDowell to investigate possibilities for registration of profiles	o

McDowell reported that WG2 has moved to define PDF/X-4 that allows for external referencing of profiles. The need for a profile registry is therefore all the more apparent, ICC is working on the problem.

### 9.2 ISO/CD 12647-7, Graphic technology – Process control for the manufacture of half-tone colour separation, proofs and production prints – Part 7: Off-press proofing processes working directly from digital data

#### Discussion and resolution of comments

(Doc. ISO/TC 130 N 1017, ISO/TC 130/WG 3 N 570, N 581, N 582)

Dr. Dolezalek reported that 7 P-members had voted affirmative and 1 negative. The committee reviewed the comments, N570.

4 initial US editorial comments accepted

US1	Clause1	Accepted
US2	Clause 2 and 4.1.1 Paragraphs 1+2	Accepted
US3	Clause 2, 4.2.10, 5.1	Accepted
US4	3.3	Not Accepted The Committed decided that present usage would be the least confusing term
US5	4	Accepted In principle "Proof print made using similar screening technology" plus a note
US6	3.5	Accepted in principle "Proof that does not Qualify to be a halftone proof" Decided to delete term
US7	4.1.1 p 1+2	Accepted
US7a	Clause 4.1.1 p 3	Accepted
US	4.1.2 ed	Accepted
US	4.1.4 ed	Accepted
US8	4.2.1, p. 1	Accepted "close match" as defined In the comment
US9	4.2.1 p 2 ed	Accepted
US9a	4.2.1 p 2, 3 ed	Accepted
US10	4.2.1 Note 2	Accepted in p. "will" significantly
US11	4.2.2	Not accepted, 2000 lx test period would be too long
US	4.2.2 table 2 ed ( marked te)	Accepted
US12	4.2.2 table 2	Accepted in principle: "Other than solids deleted from Title of Table 2. Bullets in 5.1 will be numbered, entered into Table 2
US12a	4.2.3	Accepted in principle: Separate within and between sheets variation. Allow calibration before
US	4.2.4 ed	Accepted, Action item McDowell
US	4.2.9 ed	Accepted
US13	4.2.9	Accepted in principle, Delete requirement
US14	4.2.9 para 2	Accepted in principle, Delete requirement and include a note
US	4.2.10 ed	Accepted
US	4.2.10 ed	Accepted, will be annex C
US15	4.2.11	Accepted, suggest 5 %
US	5.1 ed	Accepted
US	5.1 ed	Accepted
US16	5.1	Not accepted, presently too difficult
US17	5.1 black	Not accepted, Already included
US	5.3 ed	Accepted in principle. Note that 5.1 only says how colour should be measured. Check that aperture is normative
US18	5.3 uv	Accepted, Will reference 13655 with white backing.

US19	5.3	backing	Accepted
US20	5.3	p3 ed	Accepted
US	5.3, 5.4	p 4 ed	Accepted Replace by a reference to part 1. 5.4 and 5.5 to be shrunk to virtually nil, 5.5 visual appraisal to be added.
US20	5.5		Accepted Replace 5.5 by reference to part 1 New 5.3 with pointer to Annex C with qualifier
US	A.1.1		Accepted
US	A.1.2		Accepted
US21	Annex A		Not accepted. The committee discussed N 581 Rub tester evaluation, it did not indicate a superior, simple method
US22	Annex C		Accepted. Refer to both Annexes A+ B

Mr. Ito presented N 582 which gave the background on the Japanese comments and made a case for considering different quality levels for digital proofing. The committee discussed the relative merits of the proposal and determined that the best way to handle the request was to establish a part 8 for ISO 12647, that would pertain to proofing for less demanding market segments.

**Action Item: Mr. Ito to develop recommendations for a draft document to be appended to the proposal for a new work item.**

Concerning the addition, Mr. McDowell supplied the following paragraph to be included in the introduction of ISO 12647-7:

"This document is the first of a two document set relating to the subject of digital proofing requirements. This document establishes the proofing requirements for the most stringent part of the printing and publishing market. ISO 12647-8, which will follow shortly, will provide a set of proofing tolerances with broader applicability in both the printing and publishing market and the office market.

Japanese comments addressing a widening of tolerances were not addressed, see the above.

Remaining Japanese comments:

JP1	3.5	ed	Accepted in p,.3.5 was eliminated
JP2	4.2.1	p1	Accepted, Same as US
JP 7			Accepted in principle Note to explain that it is superfluous in case substrates are identical
JP12			Accepted in principle

**Action Item: Mr. McDowell and Mr. Rich to develop a better definition for “rub test”**

JP13			Not accepted, other colorant may also come off
JP 17			Accepted in principle
JP 19			Not accepted, see part 1
JP 20			No change proposed. A pair of scissors can exert a higher pressure on a proof
JP 21		ed	Accepted



### 9.3 ISO/CD 12646, Graphic technology – Displays for colour proofing – Characteristics and viewing conditions Discussion and resolution of comments

(Doc. ISO/TC 130 N 1028, ISO/TC 130/WG 3 N 583rev)

Dr. Dolezalek reviewed the comments N 583rev. The ballot passed with all positive votes or abstentions. Editorial comments were accepted except where noted.

US1	Scope	Accepted. The committee discussed the use of D 50 on flat panel displays and whether this gives a visual match to the white point. Delete the next to last sentence in Annex A1, delete DE94. Make Annex A Informative McDowell to revise wording of Scope
US 4.7.3		Accepted, revise using scalable levels for ambient lighting depending on display brightness constrained by need to see the darker levels.
US 5.6.1 bullets 1 9		Accepted in principle, add a note of explanation, align with ISO 15790
US	Annex 1 p4	Accepted, must be in compliance with ISO 3664 and make the document self consistent and clear
US	Annex 1 p8	Accepted
US	Annex 3	Accepted
US	Annex 4	Accepted Dr. Dolezalek noted that there were old tolerances in the annex which should be removed
JP1		Accepted
JP2		Accepted, this will be addressed later in the document
JP3		Accepted, both constraints are compatible and 13406-2 will be referenced in a note. Mr McDowell recommended that definitions of on and off states be included
JP4		Accepted, the committee agreed this is a reasonable value, but it should not conflict with the first paragraph software intent. Mr. Hutcheson pointed out that a D50 white point requirement will cause errors in custom set ups which are actually superior. 4.10 white point needs to be checked
JP5		Accepted

The concepts ON-state and OFF-state need to be defined up front.

The committee agreed to recommend that the amended draft (by Mr. Kraushaar) be balloted as DIS, without a precirculation period.

### 9.4 ISO/WD 13655, Graphic technology – Spectral measurement and spectrometric computation for graphic arts images

The document is in progress at ISO/TC 130/JWG 8

Dr. Dolezalek reported that the standard is being edited by a joint working group It is ready for submission for ballot for a DIS and should be ready for the meeting in Scottsdale.

## **9.5 ISO 3664:2000, Viewing conditions – Photography and graphic technology In progress at ISO/TC 42/JWG 24**

Dr. Dolezalek reported that the standard is being edited by a joint working group. It is ready for submission for ballot for a DIS and should be ready for the meeting in Scottsdale.

## **10 New projects**

### **10.1 Categorization of papers**

(Doc. ISO/TC 130/WG 3 N 554, N 568)

Dr. Dolezalek reported that there will be a meeting in Leeds, UK, on 15 June, called jointly by ISO TC 130 and by ICC, to address these concerns. About a dozen of the attendants will represent ISO TC 130 at that meeting. He remarked that various methods are presently being tested with the aim to develop a quick laboratory method for predicting the relative TVI of a given production paper. Such information would be very helpful to the printer, it would have to be provided by the vendor. Other paper properties to be communicated by vendors should include: Colour, gloss, amount of coating; opacity, OBA category, gamut.

Mr. McDowell pointed out that a document that relates the existing paper release tests to printing characteristics relevant to colour management, primarily the gamut, would also be very helpful.

The committee identified a subgroup comprising of the following

Warter, McDowell, Smiley, Wales, Bertholdt, deGroot, Rich, Rodriguez, Widmer, Beckmann, Egawa, Collins, Khourie, Priest, Meinecke, Kraushaar, Hutcheson, Bowen, Zawacki, Dolezalek.

to explore these properties by email. Ms. Weber undertakes to send an email to the above group and to establish a discussion group at the DIN server.

Mr. Egawa reported that Dr. Mishina has offered to supply the AMPAC data base for categorizing the properties of all production papers.

### **10.2 Introduction of spot colour into the ISO 12647-2 process standard**

(Doc. WG 3 N 584)

Dr. Dolezalek presented the document N 584, where he had made an attempt to indicate what changes would have to be introduced into ISO 12647-2 in order to accommodate spot colours. He noted that ISO 12647-2 is presently limited to process colours. The committee discussed the complex issues of using spot colours as replacement for or addition to process colours on the one hand and secondly creating spot colours using process colours. Mr. Druemmer said it was important to also cater for spot colour as a constituent of half-tone images. Mr. Meinecke stated that the mid-tone TVI figures for a Pantone swatches set ranged from 5 to 33 %. It was further debated whether the requirements for spot colours would be best addressed in a single standard that would cover the various printing methods of the 12647 series, or individually in the parts of ISO 12647-1-6. For the latter case, Mr. McDowell suggested that the information could be included in informative annexes with normative content. Mr. Smiley said that it would

be helpful to have an informative annex with information as to how the desired colour of spot colour ink should be communicated.

### 10.3 Inks for screen printing

Dr. Berthold reported on problems of the colour coordinates in 12647-5 versus 2846-4. Germany has no standard ink set that can meet the requirements of ISO 2846-4.

Mr Meinecke reported that screen experts from Germany and other FESPA experts from the Netherlands had met recently to discuss the problem. ISO 12647-5 is up for review in June 2006. The committee decided to recommend reaffirmation of the process standard -5, while at the same time working to identify possible options. This is necessary in order to avoid cancellation of the project should it take some time to work out a solution. Once it is clear that and what change is necessary, a new work item proposal could be established quickly.

## 11 Liaison matters

### 11.1 ISO/TC42/JWG 21 (ISO 5 series) (ISO TC 130/WG 3 N0577 to N0580)

Dr. Dolezalek reported that the Joint Working Group ISO TC42/ JWG 21 has met in San Diego. It has developed new drafts for the series, including a change from illuminant A at a given colour temperature to illuminant A with the UV removed. This will directly affect 14981 which, likewise, will have to be changed accordingly.

### 11.2 ISO/TC6

Nothing to be reported.

## 12 Summary of San Diego action items

See attached list, next page.

**Action Item:** Mr. Ito to develop recommendations for circulation of specifications for this new work item on proofing.

**Action Item:** Mr. McDowell to provide revised wording for the introduction to Annex A of ISO 12646, describing its purpose.

**Action Item:** Mr. McDowell and Mr. Rich to develop a better description for “rub test”

## 13 Requirements concerning a future meeting

Next meeting will be in Berlin on Tuesday/Wednesday 26/27 Sept. 2006.

**14 Any other business**

No other business

**15 Adjourn**

Dr. Dolezalek adjourned the meeting, thanked NPES for hosting the meeting and all the delegates for their valuable input. He wished everybody a safe trip home.

## San Diego action item list, as of 27 April 2006

No.	Docum.	Who?	What?	C, O
06-01	12547-2	Kraushaar	will try to develop the proposed characterizations with assistance from Mr. Hutcheson and Mr. Khoury.	
06-02	12647-7	McDowell	Rephrase 4.2.4	
06-03	12647-8	Mr. Ito	to develop recommendations for a draft document to be appended to the proposal for a new work item.	
06-04	12647-7	Mr. McDowell and Dr. Rich	to develop a better description for "rub test"	
06-05				
06-06				



ISO/TC 130/WG 3 Process control and related metrology  
**Attendance List**

Meeting of ISO/TC 130/WG 3 on 2006-04-27, San Siego

Name	Country	Signature
Weber, Astrid	D	
Anderson, John	USA	
Bailey, Martin	GB	
Batrick, George	D	
Beckmann, Beatrix	D	<i>Beckmann</i>
Bertholdt, Uwe Dr.	D	<i>U. Bertholdt</i>
Birkett, William B	USA	<i>William Birkett</i>
Cialone, Bruno	BR	
Claypole, Tim C. Dr.	GB	
Davison, J. W. Prof.	GB	<i>J. W. Davison</i>
Dolezalek, Friedrich Dr.	D	
Drehle, Dutch	USA	
Drümmer, Olaf	D	<i>Olaf Drümmer</i>
Egawa, Yuji	J	<i>Yuji Egawa</i>
Goodman, Richard M. Dr.	USA	<i>Richard M. Goodman</i>



ISO/TC 130/WG 3 Process control and related metrology  
**Attendance List**

Meeting of ISO/TC 130/WG 3 on 2006-04-27, San Siego

Name	Country	Signature
de Groot, W.	NL	
Iobst, John W.	USA	
Khoury, Elie	F	
McDowell, David Q.	USA	
Meinecke, Karl M.	D	
Naganuma, Tsutomu	J	
Pöller, Martin	D	
Priest, Mark	GB	
Revie, Craig	GB	
Rich, Danny Dr.	USA	
Scarpeta, Eudes	BR	
Schaul, Ronald Professor	D	
Schowalter, Chris	USA	
Smiley, Steve	USA	
Songsermsawas, Santi	T	



ISO/TC 130/WG 3 Process control and related metrology  
**Attendance List**

Meeting of ISO/TC 130/WG 3 on 2006-04-27, San Diego <sup>D</sup>

Name	Country	Signature
Steiger, Walter F. X.	CH	
Takahashi, Yasusuke Dr.	J	
Tangvichachan, Theera Prof.	T	
Thongpetch, Supree	T	
Warter, Lawrence C.	USA	<i>Lawrence C. Warter</i>
Widmer, Erwin	CH	<i>E. Widmer</i>
Zawacki, Walter F.	USA	<i>Walter F. Zawacki</i>
Zhiyong, Ma	VRC	
Abbott, Mary	USA	
Coleman, James E.	USA	
Jordan, Byron Dr.	CDN	
Mauro, Vanessa	BR	
<i>Andreas Kreis haer</i>	DE	<i>[Signature]</i>
<i>Makoto Takahashi</i>	J	<i>Makoto Takahashi</i>
<i>DON HUTCHESON</i>	USA	<i>[Signature]</i>





ISO/TC 130/WG 3 Process control and related metrology

Attendance List

Meeting of ISO/TC 130/WG 3 on 2006-04-27, San Siego

Name	Country	Signature
Akihiro Ito	JP	<i>Akihiro Ito</i>
Hitoshi Urabe	JP	<i>Hitoshi Urabe</i>
Genji Tao	JP	<i>Genji Tao</i>
Tomonori Yuasa	JP	<i>Tomonori Yuasa</i>
Michael Rodriguez	US	<i>Michael Rodriguez</i>
Raymond Cheydeon	US	<i>Raymond Cheydeon</i>
Abe Hayhurst	US	<i>Abe Hayhurst</i>
MARY ABBOTT	US	<i>Mary Abbott</i>
MARK BOHMAN	US	<i>Mark Bohman</i>
Peter Elberts	CH	<i>Peter Elberts</i>
Wilco DE GROOT	NL	<i>Wilco de Groot</i>
Bryan Sunderland	UK	<i>Bryan Sunderland</i>
Tom Collins	USA	<i>Tom Collins</i>
TRISH WALES	USA	<i>Trish Wales</i>
Wynnie Man	HK/china	<i>Wynnie Man</i>

*Brenda Pang* HK/china

*Victor Tsang* HK/china

*Victor Tsang* HK/china

*VICTOR TSANG* HK/CHINA

*[Handwritten signature]*