Executive Summary Annual Report, 2007

Working Unit	Commission II
Title	Arc Welding and Filler Metals
Chairman	Vincent van der Mee

Sub-Commission and Working Groups

II-A Metallurgy
II-C Testing and Measurement of Welds
II-E Standardisation

Intermediate Meetings Summary	Meeting 1	Meeting 2	Meeting 3
Date **(remark: only one meeting due to late AA 2006)**	March 7-9, 2007		
Place	Berlin, Germany		
Number of attendees, average/day	23		
Number of countries involved	9		
Number of documents discussed	24		

Annual Assembly Summary	
Date	July 2-4, 2007
Place	Dubrovnik
Number of attendees, average/day	40
Number of countries involved	22
Number of documents discussed	30
Number of resolutions	15
Number of recommendations	0
Number of information	4

Technical topics considered

Diffusible Hydrogen	Weld Metal Cracking
Chemical Reactions	Ferrite in Weld Metal
Constitution of Welds	Hot Cracking and Micro Fissuring
High Strength Steels	Corrosion
Welding Fume	Standardisation

Joint meetings held with other IIW Working Units

Commission VIII

Interactions with Organisations outside IIW

List of Publications under preparation

Standardisation	**Other (e.g. Best Practice Documents).**
Confirmation ISO 6847, ISO 8249	Recommended for Welding in the World:
Preparation ISO 3690, 14343, 14344, 3580, 3581	II-1634-07, II-1658-07, II-1635-07, II1643-07, II-1644-07, II-1646-07, II-1647-07

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Technical Annual Report, 2007

Working Unit	Commission II
Title	Arc Welding and Filler Metals
Chairman	Vincent van der Mee

Technical Annual Report 2007, Dubrovnik, Croatia.

Sub-commission II-A, Metallurgy
Monday, July 2 8:30 - 12:30

Attendance:

Dr. T.Böllinghaus	Germany	Mr. K. Weiffels	Germany
Mrs. P Wongpanya	Germany	Dr. H. Herold	Germany
Dr. H. Herold	Germany	Dr. T. Kannengiesser	Germany
Mr. A. Kromm	Germany	Dr. A. Bhaduri	India
Dr. D. Widgery, Chair IIE	UK	Mr. M. Gittos	UK
Mr. J. Elvander	Sweden	Mr. C.O. Pettersson	Sweden
Dr. L. Karlsson	Sweden	Mr. H. Astrom	Sweden
Mr. K. Hakansson	Sweden	Mrs. S. Carlson	Sweden
Mr. D. Fedor	USA	Mr. J. Bruskotter	USA
Dr. G. Edwards	USA	Mr. G. Lawson	USA
Mr. D. Fink	USA	Dr. D. Kotecki	USA
Prof. J. Lippold	USA	Mr. C. Kim	USA
Mr. J.du Plessis	South Africa	Prof. M.Dutoit	South Africa
Dr. G. Posch, Chair IIC	Austria	Dr. N. Enzinger	Austria
Dr. D. Sefcik	Slovakia	Mrs. M. Solar	Slovenia
Mrs. A Lau	Canada	Mr. S. Keller	Switzerland
Mr. A. Robineau	France	Dr. C. Chovet	France
Dr. C. Chauvy	France	Mr. Y. Fujita	Japan
Mr. T. Yamaguchi	Japan	Dr Y. Sato	Japan
Dr. S. Manziej	Netherlands	Mr. V.v.d. Mee, Chair II	Netherlands
Mr. B. Dixon	Australia	Dr. H. Chang	Japan
Dr. O. Steklov	Russia	Dr. Alex Baranon	Russia
Ms. E. Mikheeva	Russia	Mr. V. Belyaev	Russia
Mr. V. Zinoviev	Russia	Mr Z. Bulanov	Russia
Mrs. O. Doronina	Russia	Dr. V. Karkhin	Russia
Dr. D. Savu	Romania	Dr. L. Costa	Italy
Mr. A. Schipani	Italy	Mr. M. Ferrarese	Italy

1. Opening remarks

-Announcement Annual Assembly and Conference in Graz 2008. Dr. Posch invited all to participate and contribute to the conference. Deadline for abstracts is **December 31st, 2007**.

-Intermediate Commission II meetings have been proposed for:

-**October 10-12, 2007 in Bratislava, Slovakia**

-**March 12 - 14, 2008 in Paris, France**

2. Administrative matters

The Annual report from Quebec (document **II-1623-067**) and the Annual report from Subcommission II-A (**document II-1630-07**) were discussed and accepted as a true reflection of the work in progress.

Documents recommended for publication during the Annual Assembly in Quebec (documents **II-1595-06, II-1601-06, and II-1584-06**) are supplied to the secretariat, and are scheduled for publication in Welding in the World.

Document **II-1631-07** List of members of Sub-commission II-A and document II-1632-07 List of documents are available from the website.

3. Hydrogen in weld metal

Document **II-1629-07** Draft ISO 3690, Welding and Allied processes — Procedure for Determining the Hydrogen Content in Arc Weld Metal, was discussed in detail one more time.

Editorial as well as technical modifications have been made. These comments include:

-Table 1 lists **minimum** holding time, based on practical experiences

-There was a discussion regarding the TWI comment on hydrogen evolution small/large specimen

- Figure 2 should state MMAW, not SMAW

-4.1.4c Add "After removal specimen from ice water, ice still shall be present in the bath"

-Add ISO1011 to normative reference

-4.3.2.2 Change "sealed to" into "isolated from"

-4.3.3 Change "range of 0 to 5.0ml" into "calibrated over the appropriate range"

-4.4 Change "activation temperature" into "activation energy"

-Add a section 4.5 "Rounding off", using ISO 31-0 as reference

A revision, including these comments, will be prepared by Dr. Kannengiesser and forwarded to ISO secretariat. **[Resolution 1]**.

A Round Robin will be scheduled to demonstrate suitability to industry. Dr. Kannengiesser will inform potential participants, making discussion and final agreement at the fall meeting in Bratislava possible.

Mr. Weiffels gave a presentation on the measurement method by hot carrier gas extraction.

Mr Elvander presented document **II-1633-07** "Experiences accelerated test methods at elevated temperatures". A number of reports (2 investigations by TWI, a round robin within the UK and an internal investigation at ESAB) have been reviewed where comparisons are made between diffusible hydrogen measurements over mercury and methods using elevated temperatures. Good agreement was generally shown between the different methods and no principal arguments are raised against the use of these accelerated test methods. The round robin, as previously mentioned and being started by Dr. Kannengiesser, is intended to demonstrate the good correlation to industry.

Dr. Karkhin presented document **II-1634-07** "Computer aided determination of diffusible hydrogen in weld metal". This document discusses a calculation method to reduce the time of determination of diffusible hydrogen in deposited weld metal is proposed. It uses measurements at the beginning of the hydrogen effusion. The functional-analytical solution of direct 3D hydrogen diffusion problem for a parallelepiped-shaped solid is found. The inverse problem for unknown initial concentration of hydrogen introduced through a deposited metal is stated and solved numerically. It is demonstrated that as much as a quarter of total diffusible hydrogen can effuse prior to its measurement according to the standard procedure. The proposed method allows the time of determination of diffusible hydrogen to be reduced by several factors. **Resolution 2** was taken to recommend this document for publication in Welding in the World as Technical paper.

4. Chemical reactions

No documents

5. The constitution of weld metal

Document II-1628 "Non-equilibrium Phase Diagrams for Engineering Alloys" was presented by Dr. Lippold. Phase transformations and structural changes that occur during processing of engineering alloys to final products determine their microstructure and hence their mechanical and service properties. These phase transitions are also critically related to the manufacturability of advanced alloys, and consequently to their successful implementation as structural materials. The available methods for studying of phase transitions, such as DTA, DSC, and dilatometric analysis (DA), are limited in terms of heating and cooling rates, temperature range, and sensitivity. In this document techniques are proposed to study most of the non-equilibrium solid-liquid and solid-state transformations and structural changes, that occur during processing of metallic alloys and control their properties and manufacturability, and that are not readily available. The authors propose a Single Sensor Differential Thermal Analysis (SS-DTA) method developed by them. The SS DTA method allows it to study the non-equilibrium phase transitions during actual and simulated materials processing. It enables the development of a new type of non-equilibrium continuous heating and cooling transformation (CHCT) phase diagrams applicable to the thermal and thermo-mechanical processing conditions for metallic alloys. CHCT diagrams permit the determination and subsequent control of the phase transitions that are directly related to the service properties and manufacturability issues of specific alloys. This paper presents the development of a complete CHCT diagram for a novel Ni-base super alloy and of a partial CHCT diagram for steel HSLA 65 that will cover the solidification process and solid-state transformation during continuous cooling.

Mr Kromm presented document **II-1658-07** "Determination of Residual Stresses in Low Transformation Temperature (LTT-) Weld Metals using X-ray and High Energy Synchrotron Radiation". In general, crack and fatigue resistance are relevant evaluation criteria for welded joints and affected by residual stresses, which result from the welding procedure. Compressive residual stresses can thereby have a positive influence on the characteristics mentioned. A unique possibility to generate compressive stresses already during the welding procedure is offered by the so-called Low Transformation Temperature (LTT -) filler wires. Compared to conventional wires, these materials show decreased phase transformation temperatures, which can work versus the cooling-conditioned contraction. In consequence, distinct compressive residual stresses can be observed within the weld and adjacent areas. The strength of these fillers makes them potentially applicable to high-strength steel welding. In the document, first results of a series of weld metals is presented. **Resolution 3** was taken to recommend this document for publication in Welding in the World as Technical paper.

6. Weld Metal Cracking

Dr Kannengiesser presented document **II-1635-07**, being the final guideline version of a Cold Cracking Test Overview. The purpose of this guideline is to describe the most usual test procedures for determining the hydrogen-assisted cold cracking susceptibility of steels and filler materials to hydrogen assisted cold cracking during welding. This description will provide a survey of the cold cracking test procedures and facilitate the selection of a test procedure as well as the evaluation of the results. **Resolution 4** was taken to recommend this document for publication in Welding in the World as Guideline.

7. Working program Subcommission II-A

The proposed working program for 2007/2008 as laid-out in document II-1636-07, was accepted.

Sub-commission II-C, Testing and Measurement of Welds
Tuesday, July 3 8:30 - 12:30

Attendance:

Dr. T.Böllinghaus	Germany	Dr. A. Bhaduri	India
Mr. D. Jordan	UK	Mr. M. Gittos	UK
Mr. J. Elvander	Sweden	Mr. C.O. Pettersson	Sweden
Dr. L. Karlsson	Sweden	Mr. H. Astrom	Sweden
Mr. K. Hakansson	Sweden	Dr. B. Holmberg	Sweden
Mr. D. Fedor	USA	Mr. C. Kim	USA
Mr. D. Miller	USA	Mr. V. Mathews	USA
Mr. D. Fink	USA	Dr. D. Kotecki	USA
Prof. J. Lippold	USA	Dr. G. Posch, Chair IIC	Austria
Mr. J.du Plessis	South Africa	Prof. M.Dutoit	South Africa
Mrs. A Lau	Canada	Mr. S. Keller	Switzerland
Dr. D. Sefcik	Slovakia	Mrs. M. Solar	Slovenia
Mr. P. Dainelli	France	Dr. C. Chovet	France
Mr. B. Yrieix	France	Dr. D. Ayrault	France
Dr. C. Chauvy	France	Mr. E Deleu	Belgium
Mr. T. Yamaguchi	Japan	Dr Y. Sato	Japan
Dr. S. Manziej	Netherlands	Mr. V.v.d. Mee, Chair II	Netherlands
Mr. B. Dixon	Australia	Dr. F. Nunes	Brasil
Ms. E. Mikheeva	Russia	Mr. V. Belyaev	Russia
Mr. V. Zinoviev	Russia	Dr. V. Karkhin	Russia
Mrs. O. Doronina	Russia	Dr. B.Du	P.R. China
Mr. T. Kuwai	Japan	Dr. Schultze	Austria

8. Opening remarks
During the meeting, Mr. Beaufils gave an update regarding the secretariat and procedure for publication of documents in Welding in the World. He also announced to retire by the end of the year, and introduced his successor Mr. Andre Charbonnier.

Two ISO standards have been confirmed.
- ISO 8249 Welding -- Determination of Ferrite Number (FN) in austenitic and duplex ferritic-austenitic Cr-Ni stainless steel weld metals, **document II-1637-07**.**[Resolution 5]**
- ISO 6847 Welding consumables -- Deposition of a weld metal pad for chemical analysis, **document II-1638-07 [Resolution 6]**

9. Administrative matters
The Annual report from Quebec (document **II-1623-06**) and the Annual report from Subcommission II-C (II-**1639-07**) were discussed and accepted as a true reflection of the work in progress.

Document **II-1640-07** List of members of Sub-commission II-A and document **II-1641-07** List of documents are available from the website.

10. Study and testing methods on the effect of ferrite in weld metal

Mr. Aström presented document **II-1642-07** "The effect of delta ferrite and carbon content on sigma phase formation in 308/347 type weld metals" and discussed the embrittlement due to σ-phase formation in austenitic weld metals of 308L and 347 types featuring different levels of δ-ferrite and carbon content. Variations of δ-ferrite content through variation of Creq/Nieq ratio were made. FN varies from 3 to 12 for 308-type weld metal and from 4 to 14 for 347 weld metal. The FN and toughness are studied as a function of soaking time at 750°C. The conclusion of this study is that C addition tends to decrease the σ -phase formation, whereas Nb promotes the formation of σ -phase. An optimum of 2-6 FN for 308H is proposed. This document will be recommended for publication, once the study is completed (next year?). It is seen as important data for industry.

11. Corrosion testing of weld metal

Dr. Schultze presented document **II-1643-07** "Methods for corrosion testing and application for failure analysis". To investigate corrosion resistance of weldments, standardised corrosion tests but also electrochemical methods can be used. Practical applications of these methods are presented. For example, the pitting corrosion potential measure was used to investigate the effect of different post weld surface treatments on stainless steels weldments. The best results are achieved by pickling the surface. The electrochemical potentiodynamic reactivation (EPR) method was used to assess intergranular corrosion resistance of high-alloyed steels. Failure analyses cases are then shown. For example a pitting corrosion case in drinking water containers was caused by partially removed oxide layers on TIG welded 1.4301 material. Another example is the use of EPR method to check sensibilization of X6CrNiNb18-10 pipes operating at high temperatures (600°C), after service. The measures revealed that some sensibilization during service occurred, leading to a potential risk of intercrystalline stress corrosion cracking. All examples shown in this paper illustrate the various methods for investigations regarding the corrosion resistance of weldments or failure analysis. This method is not standardised but an ISO standard is in preparation. **Resolution 7** was taken to recommend this document for publication in Welding in the World as Technical paper, provided some minor modifications were made (For instance the conclusion that the increase in corrosion sensitivity is due to chromium depletion caused by carbide formation, should also indicate due to sigma phase formation).

12. Testing of weld metal for hot cracking and microfissuring

Dr. Bhaduri presented document **II-1644-07** "Evaluation of hot cracking susceptibility of some austenitic stainless steels and a nickel-base alloy". His objective was to evaluate weldability of different materials used in Fast Breeder Reactors. Stainless steels 316L, 316L(N), 316 with Ti, and Ni base materials have been investigated. Weldability was assessed by hot cracking Varestraint test. The brittle temperature range (BTR) was measured for different alloys. Influences of N on hot cracking in 316L and of Ti and N on hot cracking of 316LN were investigated. N appears to have no detrimental effect in 316 material. But N impairs hot cracking behaviour for material solidifying in austenitic mode. Effects of Ti, C and N on cracking in HAZ were also assessed: cracking in HAZ increases with Ti/(C+N) ratio. **Resolution 8** was taken to recommend this document for publication in Welding in the World as Technical paper

13. Testing of high strength weld metals

Dr. Posch presented document **II-1645-07** "Properties of AC-GMAW welded high strength joints" and discussed the influence of AC-MAG in comparison to DC- and DC-pulsed MAG high strength weldments. The influence of current type on seam geometry and on mechanical properties is investigated. For a constant wire feed rate, AC welding leads to a higher current. On bead-on plate tests, AC welding leads to a higher dilution of the base metal. In the case of fillet welds, 1.5 mm thickness welds were possible only with AC current. On the contrary, it was not possible to use AC current to weld 20 mm thick fillet welds due to lack of missing power sources. AC welding induces also a higher deposition rate and a higher recovery rate. Concerning mechanical properties, no influence of current type was seen on tensile properties and on toughness. But AC current led to a higher burn out of Si, Mn and Ti elements, and a higher quantity of Nitrogen (twice the amount of N obtained with DC welding). Diffusible hydrogen values were lower with AC current than with DC or DC pulsed mode. The main advantages of this technique are the welding of thin sheets, the higher recovery rate, the lower diffusible hydrogen content and an improved drop separation.

14. Testing of creep- and heat resistant weld metal

Dr. Chovet presented document **II-1646-07** "Effect of various factors on toughness of P92 SAW weld metal". The effect of various chemical elements on weld metal toughness in P92 steels was evaluated. All weld metal characterisations using submerged arc process were done. Chemical elements that were varied are Carbon, Chromium, Nitrogen and Tungsten. Variations of W, C and Cr within the base material range did not significantly affect toughness of the weld metal. However Nitrogen content has a great influence on toughness level, decreasing N content resulting in a toughness improvement. The detrimental effect of B and Ti on toughness of weld metal for P92 steels has also been confirmed. An optimised chemical composition has been defined on the basis of this work. This solution features a promising toughness / creep compromise, as good toughness at room temperature and satisfactory creep behaviour have been obtained. **Resolution 9** was taken to recommend this document for publication in Welding in the World as Technical paper

Dr Manziej presented document **II-1647-07** "Accelerated creep testing of new creep resistant weld metals". P91 MMA weld metals were tested by Accelerated Creep Testing (ACT) procedure. This procedure allows to transform microstructure of creep resisting weld metal in less than 50 hours similarly to that after multi-year creep. This transformation of microstructure is confirmed by observations and microanalytical studies. The phase composition after ACT agrees with Thermocalc equilibrium calculations. The ACT procedure appears useful in fast screening of newly developed creep resisting materials. **Resolution 10** was taken to recommend this document for publication in Welding in the World as Technical paper

15. Working program of Subcommission II-C

The proposed working program Subcommission II-C for 2007/2008, as laid-out in document II-1648-07, was accepted.

Sub-commission II-E, Standardisation
Wednesday, July 4 8:30 - 11:00

Attendance:

Dr. A. Bhaduri	India	Dr. T. Kannengiesser	Germany
Mr. J. Elvander	Sweden	Mr. K. Hakansson	Sweden
Dr. B. Holmberg	Sweden	Mr. J.du Plessis	South Africa
Mr. D. Fedor	USA	Dr. D. Kotecki	USA
Mr. C. Kim	USA	Mr. D. Fink, Chair II-C	USA
Dr. G. Posch, Chair IIC	Austria	Mrs. M. Solar	Slovenia
Mrs. A Lau	Canada	Dr. C. Chovet	France
Mr. P. Dainelli	France	Mr. A. Robineau	France
Mr. H. de Jong	Netherlands	Mr. V.v.d. Mee, Chair II	Netherlands
Mr. T. Yamaguchi	Japan	Dr Y. Sato	Japan
Prof. T. Iamboliev	Bulgria		

16. Opening remarks

Intermediate meetings have been agreed upon for:

-October 10-12, 2007 in Bratislava, Slovakia

-March 12 - 14, 2008 in Paris, France

17. Administrative matters

The Annual report from Quebec (**document II-1623-06**) and the Annual report from Sub-commission II-E **(II-1649-06**) were discussed and accepted as a true reflection of the work in progress.

Document **II-1650-06** List of members of Sub-commission II-A and document **II-1651-06** List of documents are available from the website. Members were asked to check their e-mail addresses and inform Mr. Fink in case of any modification.

Document **II-1627-07**, Business plan, excerpt for commission II was discussed. No further comments made.

18. Standards for welding consumables

Draft of ISO 14343 "Welding consumables - Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels - Classification", was discussed. In the document, modifications are highlighted. Some additional comments were made and the document got number **II-1624-07r3.** **Resolution 11** was taken to forward the document to ISO for DIS voting, with comment that in table 1, for grade 21 10 N, the Ce content needs to be added, which will be done next week.

Document **II-1652-07** ISO 14344 "Welding and allied processes — Flux and gas shielded electrical welding processes — Procurement guidelines for consumables", was discussed. **Resolution 12** was taken to forward the document "as-is" to ISO.

Document II-1653-07, ISO 3580 "Welding consumables — Covered electrodes for manual metal arc welding of creep-resisting steels — Classification", was discussed. Some additional comments were made (changes are highlighted) and the document got number **II-1653-07r1**. **Resolution 13** was taken to forward it to ISO for DIS voting.

Document **II-1654-07** ISO 3581 "Welding consumables - Covered electrodes for manual metal arc welding of stainless and heat-resisting steels - Classification (Corrigendum)", was discussed. **Resolution 14** was taken to forward it to ISO.

Document **II-1626r1-07** "Matrix of ISO Filler Metal Draft Standards" was presented by Dr. Kotecki. He highlighted the modifications since the last version, based on their current status.

19. Route I / Route II documents

There has been discussion on the Commission II resolution 7 from 2006. A mistake was made in the title of the resolution which, not intentionally, lead to misunderstanding. The intent of the resolution was expressed in a related document and not in the text of the resolution.

Commission II accepts the Board of Directors resolution Res 523-07 (commission II document II-1655-07), and will continue, for the current systematic review cycle, to treat consumable standards as route II standards **Resolution 15**. There is a mechanism whereby responsibility for international standards prepared by IIW can be transferred to an ISO Working Unit on a case by case basis.

20. Hardfacing consumables

Document **II-1625-07** "The benefits of AS/NZS 2576 Welding consumables for build-up and wear resistance" was presented by Mr. Dumovic. This joint Australian/New Zealand Standard was written to specify the requirements for welding consumables for build up and wear resistance of worn industrial metallic components. The Standard offers a comprehensive classification system of welding consumables, providing solution for cost effective build up and repair of worn industrial components. An overview of consumables designation, testing requirements as well as qualitative assessment (hardness, microstructure, chemistry) is given. Comparison with International Standards such as ISO, AWS, JIS and DIN is also discussed. The overall objective should be to have it linked to the ISO standard.

21. Working program Subcommission II-E
The proposed working program for 2006/2007 as laid-out in document **II-1656-07**, was accepted.

Combined meeting Commission II-E / Commission VIII
Wednesday, July 4 11:00 - 12:30

22. Combined C-II / C-VIII meeting
Following previous combined meetings of Commissions II and VIII, this initiative was repeated this year.
There were 48 participants, from 15 countries.
Presentations were from

Mr. D. Jordan	Conformity to exposure limits for welding fumes
Mr. X. Verni	Exposure limits for some possibly dangerous substances for some countries
Dr. C. Chovet	Low fume and low Cr^{VI} consumables for welding stainless steel

Minutes will be issued by Mr. S. Hedrick, from Comm VIII.

23. Decisions

-Resolutions

- 1- Forward revised version of **II-1629-07 (ISO 3690)** "Welding and Allied processes — Procedure for Determining the Hydrogen Content in Arc Weld Metal", including comments made during annual assembly, to ISO for DIS vote.
- 2- Document **II-1634-07** "Computer aided determination of diffusible hydrogen in weld metal" is recommended for publication in Welding in the World as Technical paper.
- 3- Document **II-1658-07** "Determination of Residual Stresses in Low Transformation Temperature (LTT-) Weld Metals using X-ray and High Energy Synchrotron Radiation" is recommended for publication in Welding in the World as Technical paper.
- 4- Document **II-1635-07** "Cold Cracking Test - Overview" is recommended for publication in Welding in the World as Guideline.
- 5- Confirmation of document **II-1637-07** "ISO 8249 Welding -- Determination of Ferrite Number (FN) in austenitic and duplex ferritic-austenitic Cr-Ni stainless steel weld metals" to ISO.
- 6- Confirmation of document **II-1638-07** "ISO 6847 Welding consumables -- Deposition of a weld metal pad for chemical analysis" to ISO.
- 7- Document **II-1643-07** “Methods for corrosion testing and application for failure analysis” is recommended for publication in Welding in the World as Technical paper.
- 8- Document **II-1644-07** “Evaluation of hot cracking susceptibility of some austenitic stainless steels and a nickel-base alloy” is recommended for publication in Welding in the World as Technical paper.
- 9- Document **II-1646-07** “Effect of various factors on toughness of P92 SAW weld metal” is recommended for publication in Welding in the World as Technical paper.
- 10- Document **II-1647-07** “Accelerated creep testing of new creep resistant weld metals” is recommended for publication in Welding in the World as Technical paper.
- 11- Confirm document **II-1624-07r3** ISO 14343 "Welding consumables - Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels - Classification", to ISO for DIS voting (with comment that in table 1, grade 21 10 N needs Ce to be added)
- 12- Confirm document **II-1652-07** ISO 14344 "Welding and allied processes — Flux and gas shielded electrical welding processes — Procurement guidelines for consumables", to ISO for DIS voting
- 13- Confirm document **II-1653-07r1** ISO 3580 "Welding consumables — Covered electrodes for manual metal arc welding of creep-resisting steels — Classification", to ISO for DIS voting
- 14- Confirm document **II-1654-07** ISO 3581 "Welding consumables - Covered electrodes for manual metal arc welding of stainless and heat-resisting steels - Classification (Corrigendum) to ISO
- 15- Commission II accepts the Board of Directors resolution 523-07, and will continue, for the current systematic review cycle, to treat consumable standards as route II standards.

-Recommendations

None

-Information

- 1- Intermediate meetings have been agreed upon for:
  - -October 10-12, 2007 in Bratislava, Slovakia
  - -March 12 - 14, 2008 in Paris, France
- 2- The proposed working program Subcommission II-A for 2007/2008 as laid-out in document **II-1636-07**, was accepted.
- 3- The proposed working program Subcommission II-C for 2006/2007 as laid-out in document **II-1648-07**, was accepted.
- 4- The proposed working program Subcommission II-E for 2006/2007 as laid-out in document **II-1656-07**, was accepted,