



Report of the 20th Plenary Meeting of ISO/TC 197

15 December 2011 in Beijing, China

Dear members:

We are pleased to provide you with the *Report of the 20th Plenary Meeting of ISO/TC 197 on 15 December 2011 in Beijing, China*. Please refer to the minutes of meeting (**N 548**) for an overview of the discussions that took place during the meeting.

This report is comprised of the following N documents, which shall be considered as an integral part of it. Please note that some of these documents have already been circulated to the technical committee.

<u>N document</u>	<u>Subject</u>
N 548	Minutes of the 20th plenary meeting of ISO/TC 197
N 546	Attendance list
N 536	Resolutions (E) taken during the 20th plenary meeting of ISO/TC 197
N 549	Résolutions (F) adoptées lors de la 20 ^e réunion plénière de l'ISO/TC 197
N 550	Progress report of WG 5 <i>Gaseous hydrogen land vehicle refuelling connection devices</i>
N 551	Progress report of WG 6 <i>Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks</i>
N 552	Progress report of WG 8 <i>Hydrogen generators using water electrolysis process</i>
N 553	Progress report of WG 11 <i>Gaseous hydrogen — Fuelling stations</i>
N 554	Progress report of WG 12 <i>Hydrogen Fuel — Product Specification — Part 2: PEM fuel cell applications for road vehicles</i>
N 555	Progress report of WG 14 <i>Hydrogen Fuel — Product Specification — Part 3: Proton exchange membrane (PEM) fuel cell applications for stationary appliances</i>
N 556	Progress report of WG 15 <i>Gaseous hydrogen — Cylinders and tubes for stationary storage</i>
N 557	Progress report of WG 16 <i>Basic considerations for the safety of hydrogen systems</i>

Address reply to:



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<u>N document</u>	<u>Subject</u>
N 538	China's presentation
N 539	France's presentation
N 540	Germany's presentation
N 541	Italy's presentation
N 542	Japan's presentation
N543	USA's presentation
N 544	China's presentation on their new work item proposal on <i>Pressure swing adsorption system for hydrogen separation & purification</i>

We hope this report provides you with all the information that you require. Please advise if you have any comments including errors and omissions.

We wish to express our most sincere thanks to all participants for their contribution to this fruitful meeting.

Yours sincerely,



Sylvie Gingras, Secretary of ISO/TC 197
Bureau de normalisation du Québec
on behalf of the Standards Council of Canada

Circulation to:

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| <input checked="" type="checkbox"/> P-members | <input checked="" type="checkbox"/> ISO Central Secretariat | <input checked="" type="checkbox"/> TC Chairman |
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| <input checked="" type="checkbox"/> A liaisons | <input type="checkbox"/> WG experts | |

Minutes

of the 20th plenary meeting of ISO/TC 197 on 15 December 2011 in Beijing, China

1 Opening of the meeting

Mr. Randy Dey, the Chair of ISO/TC 197, opened the 20th plenary meeting by welcoming the attendees to Beijing. Mr. Geng Wang, the representative of the hosts, the Standardization Administration of China (SAC) and the China National Institute of Standardization (CNIS) also warmly welcomed the attendees to Beijing.

2 Roll call of delegates

The Chair reported that 11 member countries were represented at the meeting, namely Argentina, Brazil, China, France, Germany, Italy, Japan, the Netherlands, the Republic of Korea, the United Kingdom and the USA. He provided administrative information with regard to how the meeting would be conducted. He invited the delegates to introduce themselves. Ms. Sylvie Gingras, the Secretary, asked the delegates to sign the attendance list (ISO/TC 197 doc. N 546).

3 Adoption of the agenda

The draft agenda (doc. N 533) was reviewed and approved. The Secretary of ISO/TC 197 indicated that several participants had asked about the status of the ISO/TC 197 Chair renewal. She presented a letter from the Management of BNQ (ISO/TC 197 doc N 537), which provided an update of the situation.

4 Appointment of the drafting committee for this meeting

A drafting committee was appointed, consisting of Ms. Karen Hall from the United Kingdom and the Secretary of ISO/TC 197. During the meeting, the resolutions were drafted in English only (ISO/TC 197 doc. N 536). The French translation of the resolutions will be provided with the meeting report (ISO/TC 197 doc. N 5XX).

ISO/TC 197 agreed that a drafting committee for this 20th plenary meeting be established as follows:

- Karen Hall, United Kingdom
- Sylvie Gingras (Secretary of ISO/TC 197).

The resolutions would be drafted in English and translated in French by the Secretariat thereafter.
(resolution 342)

5 Approval of the Report of the 19th plenary meeting

The *Report of the 19th plenary meeting on 16 May 2010 in Essen, Germany* (ISO/TC 197 doc. N 495) was discussed under this item of the agenda. It was approved as drafted.

ISO/TC 197 approved the Report of the 19th plenary meeting of ISO/TC 197 (doc. N 495) as drafted.
(resolution 343)

6 Report of the Chairman

Mr. Dey presented the highlights of the *Report of the Chairman*, which had been circulated prior to the meeting as ISO/TC 197 document N 493. He indicated that his focus as Chair was to build global consensus to advance the commercialization of hydrogen technologies by providing the essential drive towards the goal of having one product, one standard that applies worldwide.

He indicated that ISO was on the same path with the ISO President's Forum on the Future of Vehicles. He explained that this was a high-level forum of automotive industry leaders that was held on 2 December 2011 in Geneva. This forum, which featured Mikhail Gorbachev as a special guest, discussed how International Standards can support the development of «the car of the future».

Mr. Dey reported that it was a successful event, where industry leaders presented their global challenges and where the ISO leadership and the Chairs of ISO/TC 22 *Road vehicles*, ISO/TC 197 *Hydrogen technologies* and ISO/TC 204 *Intelligent transport system* helped expose senior industry decision-makers to the strategic importance of the existing and planned work in ISO Committees.

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Mr. Dey informed the attendees that the key recommendations from this forum included the following:

- The need for global standards
- The need for new approaches and new methods of cooperation among industry and Standards Development Organizations (SDO)
- The need to speed up the standards development process to shape regulations as opposed to follow regulations
- The need for the industry to inform ISO of their needs.

7 Report of the Secretariat

Ms. Gingras indicated that the *Report of the Secretariat* (doc. **N 524**) reflected the situation of the technical committee at the time of its drafting. It would be used as the basis for the discussions during the meeting.

The United Kingdom asked for a clarification of the status of ISO/DIS 20100, which was included in the Chair's report. The Chair indicated that the report on the activities of hydrogen fuelling stations/WG11, which was provided on page 2 of ISO/TC 197 doc. **N 493** reflected the situation at the time of its writing but since then the change in the UK vote had resulted in the DIS having a "not approved" status.

8 Status of all items of the programme of work

The Chair explained that, under this item of the agenda, items 8 and 9 were to be combined so that working group conveners would be asked to provide a brief update of the progress achieved by their working group since the last ISO/TC 197 plenary meeting and target dates.

8.1 WI 17268: Progress report of the convener of WG 5

The report (ISO/TC 197 doc. **N 5XX**) from Mr. Livio Gambone, the convener of the ISO/TC 197 WG 5 (joint with ISO/TC 22) *Gaseous hydrogen land vehicle refuelling connection devices* was discussed under this item of the agenda. It was confirmed that the FDIS had been submitted to the ISO/TC 197 Secretariat for technical editing after successful resolution of the comments received on the second DIS, which had been 100 % approved following a successful workshop in November 2010 in Mainz-Kastel, Germany.

8.2 WI 15869: Progress report of the convener of WG 6

The report (ISO/TC 197 doc. **N 5XX**) from Mr. Craig Webster, the convener of the ISO/TC 197 WG 6 (joint with ISO/TC 22 and with ISO/TC 58/SC 3) *Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks* was discussed under this item of the agenda. It was announced that the DIS, which had been circulated for approval until 7 December 2011, had not been approved.

The Chair indicated that he would make sure that all comments are addressed by the working group and the technical committee, if necessary. However to facilitate this next step and in order to gain broader consensus on the topic of onboard tanks, the Chair announced that he was considering the organization of a workshop open to all stakeholders.

8.3 WI 22734: Progress report of the convener of WG 8

Mr. Dey provided the report of ISO/TC 197 WG 8 *Hydrogen generators using water electrolysis process* (ISO/TC 197 doc. **N 5XX**). He announced that ISO 22734-2 *Hydrogen generators using water electrolysis process — Part 2: Residential applications* has been published on 15 November 2011. It was agreed that the next step would be to harmonize the requirements of Part 1 and Part 2, where applicable.

8.4 WI 20100: Progress report of the convener of WG 11

Mr. Dey provided the report of WG 11 *Gaseous hydrogen — Fuelling stations* (ISO/TC 197 doc. **N 5XX**). He reported that the DIS had not been approved.

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The Chair indicated the WG would be asked to address the comments to come up with a second DIS. However to facilitate this next step and in order to gain broader consensus on the topic of fuelling stations, the Chair announced that he was considering the organization of a workshop open to all stakeholders.

The Chair also reminded that, after the publication of the international standard, the WG would continue to work to include requirements for indoor warehouse, retrofit and multi-fuel refuelling. The USA pointed out that there would be a need to clarify the scope when multi-fuel refuelling is considered. Mr. Dey agreed that this would be looked at.

8.5 WI 14687-2: Progress report of the convener of WG 12

Mr. Yasuo Takagi provided the report of WG 12 *Hydrogen fuel — Product Specification — Part 2: PEM fuel cell applications for road vehicles* (ISO/TC 197 doc. **N 5XX** and **N 5XX**). He indicated that the WG has completed the work of addressing the comments received on the DIS. The FDIS was ready for review by the technical editing committee.

8.6 WI 14687-3: Progress report of the convener of WG 14

Mr. Osamu Tajima provided the report of WG 14 *Hydrogen Fuel — Product Specification — Part 3: Proton exchange membrane (PEM) fuel cell applications for stationary appliances* (ISO/TC 197 doc. **N 5XX**). He indicated that the WG had completed the review of the comments received on the CD and had submitted the DIS text to the ISO/TC 197 Secretariat.

8.7 WI 15399: Progress report of the convener of WG 15

The report (ISO/TC 197 doc. **N 5XX**) from Frederic Barth, the convener of ISO/TC 197 WG 15 *Gaseous hydrogen — Cylinders and tubes for stationary storage* was discussed under this item of the agenda. It was confirmed that the committee draft would soon be released for circulation among the technical committee.

A change in scope was requested and agreed as follows:

ISO/TC 197 approved the change in scope of ISO 15399. The new scope is to read:

This International Standard specifies the requirements for design, manufacture and testing of cylinders, tubes, and other pressure vessels of steel, stainless steel, aluminium alloys or of non-metallic construction material intended for the stationary storage of gaseous hydrogen of up to a maximum water capacity of 10 000 L and a maximum allowable working pressure not exceeding 110 MPa, of seamless metallic construction (type 1) or of composite construction (types 2, 3 and 4) hereafter referred to as pressure vessels.

This International Standard is not intended as a specification for pressure vessels used for solid, liquid hydrogen or hybrid cryogenic-high pressure hydrogen storage applications.

(resolution 344)

8.8 WI 15916: Progress report of the convener of WG 16

Mr. Ulrich Schmidtchen, convener of ISO/TC 197 WG16, provided his report of *Basic considerations for the safety of hydrogen systems* (ISO/TC 197 doc. **N 5XX**). He indicated that the WG had been working by correspondence and had a first meeting on 13 December 2011 in Beijing, China. He reported that significant progress had been achieved, in particular about material properties and detonations. He thanked all the experts involved for their contribution.

9 Establishment of the work priorities

9.1 Update of target dates for work in progress and confirmation/withdrawal of items on which no progress has been made

This agenda item was combined with item 8. The following resolution was adopted to record the target dates agreed.

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ISO/TC 197 confirmed the need for all the work items currently registered in its programme of work and, considering the report of the working group conveners, agreed with the following target dates:

WG	Work item	Title	Target dates
5	17268	Gaseous hydrogen land vehicle refuelling connection devices	FDIS: 2011-12 IS: 2012-06
6	15869	Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks	DIS2: 2012-07 FDIS: 2012-12 IS: 2013-06
11	20100	Gaseous hydrogen — Fuelling stations	DIS2: 2012-03 FDIS: 2012-09 IS: 2013-03
12	14687-2	Hydrogen Fuel — Product Specification — Part 2: PEM fuel cell applications for road vehicles	FDIS: 2011-12 IS: 2012-06
14	14687-3	Hydrogen Fuel — Product Specification — Part 3: Proton exchange membrane (PEM) fuel cell applications for stationary appliances	DIS: 2011-12 FDIS: 2013-06 IS: 2013-12
15	15399	Gaseous hydrogen — Cylinders and tubes for stationary storage	CD: 2011-12 DIS: 2012-06 FDIS: 2013-06 IS: 2013-12
16	15916	Basic considerations for the safety of hydrogen systems	DTR: 2011-12 ADTR: 2012-05 TR: 2012-11

(resolution 345)

9.2 Published standards

The list of published standards (see ISO/TC 197 doc. N 524, Clause 8) was reviewed. It was indicated that ISO 22734-2 *Hydrogen generators using water electrolysis process — Part 2: Residential applications* has been published recently, in November 2011.

9.3 New work item proposals and creation of working groups

Under this item of the agenda, China was invited to present their new work item proposal (NWIP) on pressure swing adsorption system for hydrogen separation & purification, which was being circulated for approval as ISO/TC 197 doc. N 529 until 5 March 2012.

Mr. Gao Yuchuan, the proposed convener for this work, made a presentation on the purpose of the PSA system used for hydrogen separation and purification, the current use of the technology in China and worldwide as the reasons why an international standard was required.

Mr. Takagi, the convener of ISO/TC 197 WG 12, pointed out that there would be a need for collaboration between this new working group and ISO/TC 197 WG 12.

The USA commented that the technology had been in use for decades and asked if there were specific gaps that China wanted to address. Mr. Yuchuan indicated that each country had its own sets of rules, which made the

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approval of any new plant a challenge. He indicated that the availability of an international standard would resolve this problem.

The Chair thanked Mr. Yuchan for his presentation and indicated that his presentation (see ISO/TC 197 doc. **N 544**) would be circulated to the P-members of the technical committee after this meeting.

Under this item of the agenda, the USA asked if there was an intent to initiate a new work item proposal on test methods for fuel quality. The Chair indicated that this was not the case since ISO/TC 197 WG 12 had recommended leaving it for the time being.

10 Strategic discussion of committee's work

10.1 National presentations

The Chair explained that P-members had been invited to present their National Hydrogen Energy Program through ISO/TC 197 document **N 528**. He then invited China, France Germany, Japan, Italy and the USA to make their presentations (see ISO/TC 197 doc. **N 538 – N 543**).

10.2 Membership

The current membership list was reviewed (ISO/TC 197 doc. **N 524**, Clause 3). The Chair indicated that Belgium and Poland had joined the ranks of the O-members since the last plenary meeting.

At the request of the USA, the Secretary explained the differences between O and P-membership. O-members are kept informed of the work of the technical committee, but do not have any obligations while P-members have the obligation to participate in the work and to vote on the relevant ISO documents. The Secretary mentioned that the voting records of P-members on DIS and FDIS was monitored by the ISO Central Secretariat and that P-members that did not respect their obligations could see their P-membership status changed to O status for a minimum period of one year.

10.3 Ad hoc groups

The Chair presented the status of the work of the ad hoc group on hydrogen components. He reminded the objective of the work, which was to come up with a path forward for the standardization of hydrogen components. He explained that the work consisted in identifying existing ISO and IEC components standards and evaluating their suitability for hydrogen applications. For this purpose, the existing ISO and IEC components standards had been separated in the following categories:

- **Cat. 1:** The international standards can be used as is for hydrogen applications.
- **Cat. 2:** The international standards can be used for hydrogen applications with the addition of a few hydrogen specific requirements (e.g. material compatibility).
- **Cat. 3:** The international standards would require many changes to be considered suitable for hydrogen applications.
- **Cat. 4 (N/F):** No international standard was found for these components.

The Chair reported that no other standards than the ISO/TC 197 standards fell in Category 1. He indicated that new work item proposals would be required for the standards included in Categories 3 and 4. He also mentioned that consideration was being given to transfer the automotive components to ISO/TC 22/SC 25.

In the case of Category 2, the Chair indicated that there were about 50 component standards that could be used if requirements on material compatibility could be added. He said that the work was getting close to an end and asked the P-members if work was done on this topic in their country.

The USA reported that significant amount of work was done on the topic of material compatibility around the world, including in the USA and in Japan. Both the USA and Japan expressed interest to contribute in this area. Japan explained that most of the work was done under government projects and they would check if the results would be available in the near future.

The Chair thanked both the USA and Japan for their expression of support. He suggested that the USA and Japan come up with a paper that could be considered by the ad hoc group to complete its work.

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The Chair thanked the members of the ad hoc group and especially Ned Stetson from the US DOE, Julie Cairns from CSA and Frederic Barth from Air Liquide, for their contribution.

11 Permanent editing committee

The role and composition of the permanent editing committee was discussed and confirmed under this item of the agenda.

ISO/TC 197 confirmed the composition of its permanent editing committee. The members are comprised of:

- Karen Hall, United Kingdom;
- Sylvie Gingras (Secretary of ISO/TC 197).

This permanent editing committee is responsible for:

- updating and editing enquiry drafts (DIS) and Final Draft International Standards (FDIS) considered at meetings or circulated between meetings;
- ensuring their conformity with Part 2 of the ISO/IEC Directives;
- ensuring the equivalence of the texts in the official languages.

(resolution 346)

12 Liaisons and report of liaisons

12.1 Existing liaisons

12.1.1 ISO/TC 11 Boilers and pressure vessels

The report (ISO/TC 197 doc. **N 532**) provided by Mr. John Koehr, the observer appointed by TC 11 to follow the work of ISO/TC 197, was discussed under this item of the agenda.

12.1.2 ISO/TC 22 Road vehicles

Mr. Dey reported that, since the appointment of Mr. Michel Potvin as Chair of ISO/TC 22, the two chairs had been working together to establish a strong relationship between the two technical committees. Several meetings were held to discuss items of cooperation, namely the ISO/TC 22 and ISO/TC 197 joint WGs (WG5 and WG6) as well as the work being done by ISO/TC 22/SC 25.

Mr. Dey reported that both chairs had a good understanding on how the cooperation would take place to ensure that there is no duplication and no conflicts. It was suggested by the USA that a liaison officer could be appointed to follow the work of ISO/TC 22. The Chair agreed to take up this matter up with the chair of ISO/TC 22 at an appropriate time of their cooperation discussions.

12.1.3 ISO/TC 58 Gas cylinders

Under this item of the agenda, the items of interest in the ISO/TC 58 work programme were presented. They include **ISO 11114-4 Test methods for selecting metallic materials resistant to hydrogen embrittlement** under ISO/TC 58 WG7 which is convened by Hervé Barthélémy and **ISO 10286 Gas cylinders – Terminology** under ISO/TC 58 WG 11, convened by Stephan Aris.

12.1.4 ISO/TC 58/SC 3 Gas cylinder design

Under this item of the agenda, the items of interest in the ISO/TC 58/SC 3 work programme were presented. They include the work of the following WGs:

- WG 19 Test methods on fracture performance for high strength aluminum (ISO 7866)
- WG 24 Factors of safety for composite cylinders (ISO/TR 13086).
- WG 26 Refillable seamless steel gas cylinders (ISO 9809)

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- WG 27 Composite cylinders (ISO 11119)

It was pointed out that ISO/TR 13086-1 *Gas cylinders — Guidance for design of composite cylinders — Part 1: Stress rupture of fibres and burst ratios*, which is convened by Norm Newhouse had been published in 2011. The United Kingdom indicated that hydrogen experts in the UK had been consulted on this document.

It was noted that ISO/TC 197 was pleased to benefit from the fact that Mr. Norm Newhouse was involved in both ISO/TC 58/SC 3 and ISO/TC 197.

12.1.5 ISO/TC 220 Cryogenic vessels

The update on the activities of ISO/TC 220, circulated as ISO/TC 197 doc. **N 531** on 5 December 2011, was discussed under this item of the agenda. France pointed out that they would be pleased to act as liaison officers if need be.

12.1.6 IEC/TC 31 Equipment for explosive atmospheres

An update on the activities of IEC/TC 31 was provided under this item of the agenda. The Chair indicated that IEC/TC 31 would like that hydrogen experts participate in the revision of IEC 60079-10-1 *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres*. The Chair asked if there were any volunteers to join this work.

The Chair also indicated that the leadership of ISO/TC 197 and the leadership of IEC/TC 31 had agreed to monitor the work of ISO 26142 *Hydrogen detection apparatus — Stationary applications* and IEC 60079-29-1 *Gas Detectors – Performance requirements of detectors for flammable gases* since the two standards were aimed at different markets. The Chair indicated that it might be appropriate to review ISO 26142 once the next edition of IEC 60079-29-1 gets to a mature technical stage in case there are changes in requirements or tests that might impact on ISO 26142.

The USA indicated that there had been significant amount of work on this topic in their country and asked what was the difference between the two standards. The Secretary explained that ISO 26142 was specific to the detection of hydrogen in stationary applications and could include more than one set points that would trigger safety actions when specific hydrogen concentrations were measured (e.g. increase in ventilation up to shut down of hydrogen system). The Secretary indicated that the scope of IEC 60079-29-1 covered all flammable gases as well as stationary, portable and hand held applications. The United Kingdom noted that the participation of IEC/TC 31 in the work of ISO/TC 197 WG 13 had facilitated the understanding of the differences between the two standards.

12.1.7 IEC/TC 105 Fuel cell technologies

The update on the activities of IEC/TC 105, circulated as ISO/TC 197 doc. **N 530** on 5 December 2011, was discussed under this item of the agenda. The Chair indicated that there was synergy between the two technical committees and that it was important to work closely with them. He reported that there were currently no outstanding issues between the two technical committees.

The French member body indicated that there was a close collaboration between the two mirror groups in France.

12.2 Establishment of new liaisons and cancellation of liaisons

The list of existing liaisons was reviewed under this item of the agenda (ISO/TC 197 doc. **N 524**, Clause 4). Ms. Karen Hall pointed out that the National Hydrogen Association (NHA) no longer existed and had been replaced by the Fuel Cell and Hydrogen Energy Association (FCHEA). She asked the Secretariat to let her know if a new application for liaison would be required.

Argentina suggested that a liaison with ISO/TC 58/SC 4 *Gas cylinders — Operational requirements be established as it might be useful for ISO/TC 197 WG 15 Gaseous Hydrogen — Cylinders and tubes for stationary storage*. It was agreed to review this suggestion with the convener of ISO/TC 197 WG 15.

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13 Other business

At the request of the Chair, Mr. Antonio Ruiz provided an update on the work of the World Forum for Harmonization of Vehicle Regulations (WP.29) on Global Technical Regulations (GTR) for hydrogen and fuel cell vehicles (HFCV).

Mr. Ruiz reported that the intent of the GTR was to come up with international regulation requirements on gaseous hydrogen vehicles. Vehicles that run on liquid hydrogen would be considered in Phase 2 of the GTR development.

He indicated that this work was done under the auspice of GRSP, the group of WP.29 that is responsible for passive safety. He reported that a special task force meeting had been held in November 2011 to address some of the remaining issues. As a result, an initial burst pressure ratio of 3,3 had been included for composite tanks with glass fibre until more data is available. The localized fire test had been increased to a 11-minute duration to include a safety factor. He also reported that Japan wanted to address components such as the thermal pressure relief valve and that the matter was still pending and would be resolved in January 2012.

He informed the attendees that the final presentation of the text of the GTR would be presented to GRSP in May 2012 and to WP.29 in July 2012. The final vote on the document was scheduled for the November 2012 meeting of WP.29.

Argentina asked if the GTR referred to the component standards being worked on by ISO/TC 22/SC 25. The response was that the GTR group of regulators were developing the technical requirements using as much as possible of whatever they had access to.

Mr. Dey thanked Antonio Ruiz for this update. He said that he was pleased to see that the GTR was moving forward. He added that ISO/TC 197 would try to harmonize where possible to avoid conflicts between ISO/TC 197 WG 6 and the GTR.

14 Requirements concerning a subsequent meeting

The Chair informed the delegates that the location and time of the 2012 plenary meeting had not been decided yet, but that it would be held in Europe sometime late in the year. Regarding the 2013 plenary meeting, the Chair indicated that Brazil might be interested.

Before breaking for the drafting of the resolution, the Chair on behalf of the members thanked China for hosting the meeting. These comments were reflected in the following resolution:

ISO/TC 197 thanked our hosts, the Standardization Administration of China (SAC) as well as the China National Institute of Standardization (CNIS) and in particular, Mr. Geng Wang, for generously providing meeting space for the ISO/TC 197 plenary and working group meetings and for their excellent hospitality.

(resolution 347)

15 Approval of resolutions

After the meeting resumed, the draft resolutions were distributed to the P-members. The draft resolutions were reviewed and the attendees expressed their agreement.

ISO/TC 197 approved all the resolutions taken during this 20th plenary meeting (nos. 342 to 347).

(resolution 348)

16 Closure of the meeting

The Chair indicated that he was pleased with the outcome of the plenary meeting and thanked the attendees for their contribution.