



ISO/TC 197
TECHNOLOGIES DE L'HYDROGÈNE
HYDROGEN TECHNOLOGIES
Secretariat: Canada (SCC)



N 307 Annex 6

***Supporting documentation presented
at the 13th plenary meeting of ISO/TC 197
on 2 July 2004 in Yokohama, Japan***

Prepared by Randy Dey and Sylvie Gingras,
respectively Chairman and Secretary of ISO/TC 197



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Agenda item 6

Report of the Chairman (doc.N 293)



Report of the Chairman (N 293)

- Activities to increase awareness and visibility of ISO/TC 197 with tremendous support from the ISO Central Secretariat
 - Articles published in the ISO magazine, which is now called *ISO Focus*
 - Launching of the worldwide hydrogen industry survey (ISO web site)



Report of the Chairman (N 293)

- Further progress made with WP.29
 - Harmonized as far as possible UNECE draft regulations on hydrogen storage systems and ISO draft standards on fuel tanks
 - Recognition of ISO/TC 197 in the Road Map to develop Hydrogen/Fuel Cell GTR(s)
 - Decision made by WP.29 to rely more broadly on international standards by simply quoting the references and publication dates of standards rather than reproducing them extenso
- Strengthened relationship with ISO/TC 22 Road vehicles and ISO/TC 58 Gas cylinders (Coordination meeting on 14 January 2004).



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Agenda item 7

Report of the Secretariat (doc. N 282)



ISO/TC 197 Membership

- 15 participating countries

Argentina, Belgium, Canada, Egypt, France, Germany, Italy, Japan, the Netherlands, Norway, the Republic of Korea, the Russian Federation, Sweden, Switzerland, and the United States of America.

- 14 observer countries

Australia, Austria, China, the Czech Republic, Hungary, India, Jamaica, the Libyan Arab Jamahiriya, Serbia and Montenegro, Spain, Thailand, Turkey, Ukraine, and the United Kingdom



ISO/TC 197

Published International Standards

- **ISO 13984: 1999**

Liquid hydrogen – Land vehicle fuelling system interface

- **ISO 14687:1999/Cor. 2001**

Hydrogen fuel – Product specification



ISO/TC 197 Published International Standards

- **ISO/TR 15916:2004**

Basic considerations for the safety of hydrogen systems

- **ISO/PAS 15594¹**

Airport hydrogen fuelling facility

¹ The publication of this Publicly available specification (PAS) is imminent. It is currently being held by the ISO Central Secretariat until one of the reference documents being prepared by ISO/TC 220 *Cryogenic vessels* reaches the DIS stage.



ISO/TC 197 Active working groups

■ WG 1

- **Joint with ISO/TC 22**
- **Convener: D. Robert Hay**
- **ISO/DIS 13985 *Liquid hydrogen – Land vehicle fuel tanks***



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Active working groups

■ WG 5

- **Joint with ISO/TC 22**
- **Convener: Livio Gambone**
- **ISO/DIS 17268 *Gaseous hydrogen —
Land vehicle filling connectors***



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Active working groups

■ WG 6

- **Joint with ISO/TC 22 and ISO/TC 58/SC 3**
- **Convener: Craig Webster**
- **ISO/DIS 15869 *Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks (5 part standard)***



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Active working groups

■ WG 8

- Convener: Randy Dey
- **ISO/CD 22734** *Hydrogen generators using water electrolysis process*



ISO/TC 197 Active working groups

■ WG 9

- Convener: Mario Sandoval
- **ISO/CD 16110** *Hydrogen generators using fuel processing technologies*



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Active working groups

■ WG 10

- Convener: Ned Stetson
- **ISO/WD 16111** *Transportable gas storage devices – Hydrogen absorbed in reversible metal hydrides*



ISO/TC 197 Active working groups

■ WG 11

- Convener: Randy Dey
- **ISO/AWI 20012** *Gaseous hydrogen – Service stations*



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Active working groups

■ WG 12

- Convener: Yasuo Takagi
- **ISO/14687:1999/ AWI Amd. 1**
Hydrogen fuel — Product Specification



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Combined Agenda items 8 and 9.1

Management of the programme of work



Agenda item 8: Extract from the Directives Standards development tracks

1. Recommended timeframe: 36 months

2. Accelerated timeframe: 24 months

This timeframe may be agreed to if there is an urgent market need or if a suitable document is available that can be submitted directly to enquiry (DIS).

3. Enlarged timeframe: 48 months

In exceptional cases, an enlarged timeframe may be agreed if appropriate justification is given (e. g. in the case of terminology or innovative test methods).



Agenda item 8: Extract from the Directives
Establishment of target dates

- **All NWIP submitted to ISO/CS for registration shall be assigned to one of the development tracks and target dates fixed accordingly.**
- **This applies to ALL projects intended to become International Standards**
- **This does not applies to alternative publications: TS, PAS, TR.**

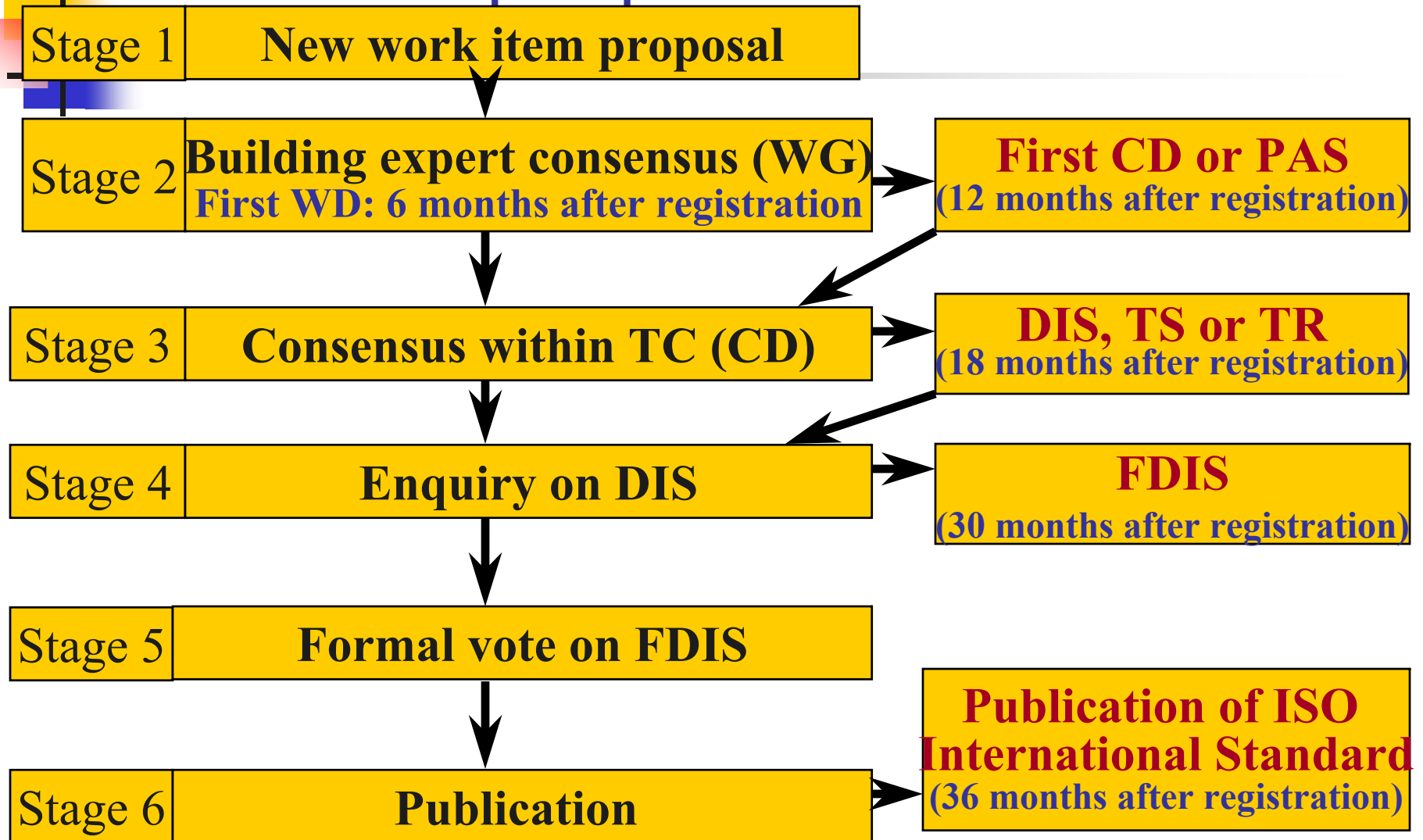


**Agenda item 8: Extract from the Directives
Automatic cancellation rules**

- **projects which have not moved for the last two years will be automatically cancelled**
- **projects which have not reached the publication stage after five years will be automatically cancelled**



**Agenda item 8: Extract from the Directives
Standards development process**





Agenda item 8: Extract from the Directives Complete set of ISO deliverables

- **International Standard**
 - International consensus
 - Requires approval by a 2/3 majority of P-members
 - Not more that 25 % of the total number of votes cast are negative
- **ISO/TS Technical Specification**
 - Consensus with the TC
 - Requires approval by a 2/3 majority of P-members
- **ISO/PAS Publicly Available Specification**
 - Consensus within the WG
 - Requires approval by a simple majority of P-members
- **ISO/TR Technical Report**
 - Requires approval by a simple majority of P-members and ISO Central Secretariat



Agenda item 8: Extract from the Directives
PAS and TS

- Intermediate normative documents published prior to the development of a full International Standard
- Competing PAS/TS offering different technical solutions are possible provided that they do not conflict with existing International Standards.



Agenda item 8: Extract from the Directives **Technical reports**

- Informative document collecting data of a different kind from that which is normally published as an International Standard
- This may include, for example, data obtained from a survey carried out among the national bodies, data on work in other international organizations or data on the "state of the art" in relation to standards of national bodies on a particular subject.



Agenda item 8: Extract from the Directives **Amendments**

- The steps for revision or amendment are the same as those for preparation of a new standard, and include the establishment of target dates for the completion of the relevant stages.
- An international standard can be amended or revised as required (no limits).
- After the publication of 2 separate documents in the form of technical corrigenda or amendments, the development of a third such document will result in publication of a new edition of the International Standard.



Agenda item 8: Extract from the Directives
5 year review of International standards

- Every International Standard shall be subject to systematic review in order to determine whether it should be:
 - confirmed (retention without any change)
 - revised/amended (retention with changes)
 - withdrawn.
- Ballot period is 6 months.



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Agenda item 9.3

New work item proposals and
creation of working groups



Agenda item 9.3: Extract from the Directives
Acceptance criteria for new work item proposals

- **A commitment by at least 5 P-members approving the project to participate actively in the development of the project (nomination of experts to the working group)**
- **Approval by a simple majority of the P-members of the technical committee voting**
- **The Standard Value Assessment Tool (SVAT) score for the evaluation of the market relevance is greater than 15**



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Combined Agenda items 10.1 and 10.2

ISO/TC 197 Business plan and membership



Agenda item 10.1

Ad hoc group – H2 Components

- Objective: Look into existing standards for the purpose of determining if they are suitable for hydrogen use. The group will develop:
 - a list of existing standards that are recognized as suitable for hydrogen use
 - a list of items for which no existing standards are suitable for hydrogen use
 - a process on how we move forward with the development of hydrogen component standards.
- Final report with results will be presented to the committee at the next ISO/TC 197 plenary meeting.
- Members:



Agenda item 10.2

ISO/TC 197 Membership

- **15 participating countries**

Argentina, Belgium, Canada, Egypt, France, Germany, Italy, Japan, the Netherlands, Norway, the Republic of Korea, the Russian Federation, Sweden, Switzerland, and the United States of America.

- **14 observer countries**

Australia, Austria, China, the Czech Republic, Hungary, India, Jamaica, the Libyan Arab Jamahiriya, Serbia and Montenegro, Spain, Thailand, Turkey, Ukraine, and the United Kingdom



Agenda item 10.2

Ad hoc group - Membership

- Objective: Build a strategy on how to attract/upgrade new members in ISO/TC 197 and implement the strategy as much as possible over the next 18 months.
- Interim reports will be forwarded to the ISO/TC 197 chairman every six months.
- Final report with results will be presented to the committee at the next ISO/TC 197 plenary meeting.
- Members:



Agenda item 10.1

**ISO/TC 197 business plan –
Identification of input from the P members**

- Recent or expected technological changes and major innovations related to the industry sector, products or materials
- Total international and national trade in the sector (in US\$) over the last 3 years
- Estimated number of companies (national and world-wide) operating in the sector over the past three years
- Estimated employment (national and world-wide) in the sector over the last 3 years



Agenda item 10.1

ISO/TC 197 business plan – Identification of input from the P members

- Expected number of gaseous and liquid hydrogen filling stations to be constructed by 2010
- Expected number of hydrogen fuelled cars and buses by 2010
- Expected number of commercial and residential installations where hydrogen is used as an energy carrier and fuel by 2010
- Statistics provided in **section 2.2** of the business plan



Agenda item 10.1

First phase of the revision of the business plan

- **15 September 2004:** Extended deadline for comments
- **30 September 2004:** Provide the TMB with a status report instead of our revised business plan.
- **15 November 2004:** Circulation of the compilation of comments and new draft (version no. 7)
- **15 December 2004:** Circulation of the final revision (version no. 8) with a new compilation of comments
- **15 February 2005:** Submission of the final version (version no. 9) to the TMB



Agenda item 10.1

Second phase of the business plan

- Incorporate the results of the Hydrogen industry survey
- Establish the priorities of the TC
- Target date: 2005 ISO/TC 197 plenary meeting.



Agenda item 10.1

Third phase of the business plan

- The two ad hoc groups on membership and components will be major contributors to the business plan.
- The results of their work will be incorporated in the third revision of the business plan
- Target date: September 2006



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Agenda item 11

Confirmation of the permanent editing committee



Responsibilities of the permanent editing committee

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



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Agenda item 12.1

Existing liaisons



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ISO/TC 11

Boilers and pressure vessels

Ref. ISO/TC 197 doc. N 288



ISO/TC 11 WG 10 update

- WG10 has continued its work with the purpose of having ISO/WI 16528 “Boilers and Pressure Vessels” circulated for approval as a DIS.
- New approach used: Boilers and pressure vessels will be deemed as complying with the requirements of ISO 16528 if they fulfill all the requirements of one of the standards included in the normative references of ISO16528.



ISO/TC 11 Conditions for the inclusion of a standard as a normative reference N 307 Annex 6

- ISO/TC11 confirms that the referenced standard has wide acceptance and authoritative status in the country or region of the standard's origin and it is publicly available.
- The Standard Issuing Body agrees to the referenced standard being included.
- The Standard Issuing Body agrees to advise ISO/TC11 of any new edition and any amendments or revisions to the referenced standard



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ISO/TC 22

Road vehicles



Joint work with **ISO/TC 22 *Road vehicles***

- **ISO/DIS 13985** Liquid hydrogen – Land vehicle fuel tanks
- **ISO/DIS 15869** Gaseous hydrogen and hydrogen blends — Land vehicle fuel tanks (5 part standard)
- **ISO/DIS 17268** Gaseous hydrogen — Land vehicle filling connectors
- **ISO/TC 197 document N 292:** New work item proposal on *Fuel cell road vehicles — Safety specifications — Part 2: Protection against hydrogen hazards for vehicles fuelled with compressed hydrogen*



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ISO/TC 58/SC3

Gas cylinder design

Ref. ISO/TC 197 doc. N 291



Joint work with ISO/TC58/SC3 *Gas cylinder design*

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- **ISO/DIS 15869** Gaseous hydrogen and hydrogen blends —Land vehicle fuel tanks (5 part standard)
- DIS comments are to be dispositioned in a joint working group meeting.



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ISO/TC 220

Cryogenic vessels

Ref. ISO/TC 197 doc. N 290



ISO/TC 220 standards cited as normative references by ISO/TC 197

- **ISO/PAS15594 Airport hydrogen fuelling facility**
 - **ISO/CD 20421-1*** Cryogenic vessels — Large transportable vacuum insulated vessels — Part 1: Design, fabrication, inspection and testing
- **ISO/DIS 13985 Liquid hydrogen — Land vehicle fuel tanks.**
 - **ISO 21010:2004** Cryogenic vessels — Gas/material compatibility
 - **ISO/CD 21011*** Cryogenic vessels — Valves
 - **ISO/CD 21013*** Cryogenic vessels – Pressure relief devices (3 part standard)



ISO/TC 220 standards cited as normative references by ISO/TC 197

- **ISO/DIS 13985 Liquid hydrogen — Land vehicle fuel tanks.**
 - **ISO/FDIS 21028-1 Cryogenic vessels — Toughness requirements for materials at cryogenic temperature — Part 1: Temperature below -80 °C**
 - **ISO/DIS 21029-1 Cryogenic vessels — Transportable vacuum insulated vessels of no more 1000 l volume – Part 1: Design, fabrication, inspection and testing**
 - **ISO/DIS 23208 Cryogenic vessels — Cleanliness for cryogenic service**



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IEC/TC 105

Fuel cell technologies



IEC/TC 105 Work programme

- **IEC/DTS 62282-1 Fuel cell technologies - Part 1: Terminology**
- **IEC/FDIS 62282-2 Fuel cell technologies - Part 2: Fuel cell modules**
- **IEC/PWI 62282-3-1 Fuel cell technologies - Part 3-1: Stationary fuel cell power plants - Safety**
- **IEC/CDV 62282-3-2 Fuel cell technologies - Part 3-2 : Stationary fuel cell power plants - Test methods for the performance**
- **IEC/ANW 62282-3-3 Fuel cell technologies - Part 3-3: Stationary fuel cell power plants - Installation**



IEC/TC 105 Work programme

- **IEC/ANW 62282-4 Fuel cell technologies - Part 4:
Fuel cell system for propulsion and auxiliary power
units (APU)**
- **IEC/CD 62282-5 Fuel cell technologies - Part 5:
Portable fuel cell appliances - Safety and
performance requirements**
- **IEC/ANW 62282-6 Fuel cell technologies - Part 6:
Micro Fuel Cell Power Systems - Safety**
- **PNW 105-70 Micro Fuel Cell Power Systems -
Performance**
- **PNW 105-72 Micro Fuel Cell Power System
Interchangeability**



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Agenda item 12.2

Establishment of new liaisons



Existing liaisons

- **ISO/TC 11 Boilers and pressure vessels**
- **ISO/TC 20 *Aircraft and space vehicles***
- **ISO/TC20/SC14 *Space systems and operations***
- **ISO/TC 22 *Road vehicles***
- **ISO/TC 22/SC 21 *Electric road vehicles***
- **ISO/TC 22/SC 25 *Road vehicles using natural gas***
- **ISO/TC 58 *Gas cylinders***
- **ISO/TC 58/SC 3 *Gas cylinder design***
- **ISO/TC 70 *Internal combustion engines***



Existing liaisons

- **ISO/TC 192** *Gas turbines*
- **ISO/TC 193** *Natural gas*
- **ISO/TC 203** *Technical energy systems*
- **ISO/TC 207** *Environmental management*
- **ISO/TC 220** *Cryogenic vessels*
- **IEC/TC 105** *Fuel cell technologies*
- **EHA** *European Hydrogen Association (Cat. A)*
- **NHA** *National Hydrogen Association (Cat. D)*



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Agenda item 12.3

Cooperation with other organizations



World Forum for Harmonization of Vehicle Regulations (WP.29)

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- **The two draft UNECE regulations on onboard storage systems are being developed**
 - Liquid hydrogen: formal document - TRANS/WP.29/GRPE/2004/3 and Add. 1
 - Gaseous hydrogen: formal document - TRANS/WP.29/GRPE/2003/14 and Add. 1
- **Scope of the regulations**
 - The scope of these regulations is limited to the components used for the storage and delivery of hydrogen to the fuel cell system or internal combustion engine and their installation onboard the vehicle.
- The UNECE draft regulations are harmonized as far as possible with the ISO draft standards on fuel tanks



World Forum for Harmonization of Vehicle Regulations (WP.29)

- The Informal Group on Hydrogen and Fuel Cell Vehicles is currently developing a road map to develop GTR(s) on hydrogen and fuel cells vehicles
(informal doc. No. GRPE-48-17-Rev.1).
- ISO/TC 197 is recognized in this Road Map.
- Two options for the development of the GTR are under consideration by WP.29 (to be decided upon in November 2004).



World Forum for Harmonization of Vehicle Regulations (WP.29)

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- Decision made by WP.29 to rely more broadly on international standards by simply quoting the references and publication dates of standards rather than reproducing them extenso.