



ISO/TC 197
Hydrogen technologies

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Minutes of the Vancouver meeting 2018

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Minutes of meeting.	
Date	2018-12-14
Reference	ISO/TC197 N 10xx

Title of / <i>Titre du</i> TC HYDROGEN TECHNOLOGIES <i>TECHNOLOGIES DE L'HYDROGÈNE</i>
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Secretariat / <i>Secrétariat</i> SCC/BNQ (see contact below)

Host / <i>Invitant</i> SCC and CSA Group

MEETING / RÉUNION 197 - 27 Meeting dates / <i>Dates de la réunion</i> December 6th & 7th, 2018
Place / Lieu: Vancouver Marriott Pinnacle Downtown Hotel 1128 West Hastings Street Vancouver, British Columbia, Canada Meeting room/Salle de conférence: Pinnacle III

Agenda item number	Comments and notes	Resolution Number & Results	N Doc number
1	Opening of the meeting		
1	Plenary meeting starts at 9:07 AM.		
1	Introductory safety remarks from Sara Marxen.		N 1052
1	Introduction by TC 197 Chair, Andrei Tchouvelev. Andrei welcomed everyone and thanked the CSA Group for hosting the meeting, and the event that evening. Jim Ferrero was thanked for his efforts as secretary of ISO TC 197, and the new TC 197 Secretary, Jonathan Lafontaine, was introduced. Secretarial support provided by Sara Marxen of CSA. Andrei clarifies that due to term limits for Chair, he is entering his last term on January 1, 2019.		
2	Roll call of delegates: Eleven P-member nations are represented: Canada (5), China (8), Czech Republic (1), France (4), Germany (3), Japan (13), Netherlands (2), Norway (1), South Korea (1), UK (2), USA (13), plus the convenor and secretary from Canada, and a representative of HySafe (also from Germany). All delegates were asked to sign the attendance sheet, N 1048 and N 1050. All delegates introduced themselves, beginning with official HOD.		N 1048 N 1050
3	Adoption of the agenda. Update Items are found under items 6, 7, 10.		
4	Appointment of the resolution drafting committee		
4	Jim Ferrero (Canada), Frédéric Solbés (France) and Karen Quackenbush (USA) were appointed to the resolution drafting committee for this meeting.	435: Unanimously approved.	
5	Review of the minutes of the plenary (2017) There are no supplemental comments on the minutes of the last meeting. Method of presentation is up to the convenor.	436: Unanimously approved.	N 1008

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5	Hervé Barthélémy (France) has indicated that the Liaison Doc from ECMA is missing as an N-Doc, Jonathan Lafontaine confirmed he has posted the document during the meeting.		N 1046
6.1	The performance reviews of the Chair, Secretary and TAB. Scores of last review are contrasted with historical reviews.		N 1053
6.1	<p>The survey responses from early 2018 (based on performance, and meetings, in 2017) were reviewed:</p> <p>The criticism of the Chair and Secretary for not ensuring that the minutes from previous plenary meetings are circulated promptly was understood and considered fair. It is hoped that this will not be an issue in future. There were a number of other fairly unhappy comments regarding the performance of the secretariat.</p> <p>A number of comments had been (again) received on the TAB, and Andrei went to some length to explain the role he sees the TAB playing, and how he sees the TAB benefiting ISO TC 197 in the background.</p> <p>There was no survey yet on performance in 2018, which has been much improved from the perspective of the secretary, albeit with some room for improvement. This survey will be circulated as a CIB at the start of 2019, including a survey on the 2018 Plenary Meeting and preceding Strategic Planning Meeting to close at the end of January 2019. A survey for the performance of the secretariat and TAB over 2019 will be issued prior to the next plenary meeting.</p>		
6.2	<p>Performance evaluations of 2017 Strategic Planning and Plenary Meeting</p> <p>In response to a comment expressing a desire to hold many WG meetings with the plenary, Andrei suggested that no more than two WGs meet in parallel during the meeting week, due to competition for experts. This week, there were two, and it seemed to work well.</p> <p>There are no additional comments</p>		N 1055
6.3	Report of Vice-Chair for Developing Countries		
	<p>Comments from Professor Mao relative to exposure of FCV and H2 Deployment in China.</p> <p>Dr. Mao gave a presentation on the status of hydrogen energy in China, and the desire to reduce CO2 emissions in the future – where it is believed that hydrogen will be very important in achieving this. Discussion of the production rates and deployment types, including buses and other vehicles. Objectives of deployment of fueling stations are also noted.</p> <p>Andrei noted that it is also important to track the deployment the technology in India and other developing markets. He also noted that as English is the accepted language of ISO presentations, translation to English in the future would be appreciated.</p>		N 1054
7.0	Progress review of technical programs, with reports by TPDs and WG Convenors		
7.1	Changes to ISO Directives		N 1056
	<p>A number of changes have recently been made to ISO Directives in order to achieve harmonization with IEC. A few highlights are as follows:</p> <p>Liaison category D is going away (at WG level). All existing liaison category D will become Liaison category C.</p> <p>If first DIS ballot is approved, no DIS 2 permitted. If DIS passes, we can use CIB (shorter</p>		

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	timeframe) to get feedback to address comments. If DIS fails, a DIS 2 is allowed. FDIS is now mandatory again.		
7.2	<p>Components and Vehicular Applications (TPD, Craig Webster) Craig made introductory comments on the WGs under his purview.</p>		
	<p>WG 5 Livio Gambone There was a request to keep WG5 going, in order to develop the document to include H70HF nozzles/receptacles, where significant industrial activity is anticipated in the next year. The point by Spencer Quong was raised that traditionally SAE and ISO take turns in this document, and that there is a need to ensure that the two documents are harmonised. Livio will be involved in both activities, therefore no issue is anticipated. Additionally it was requested that this activity does not make any changes to the light duty nozzle and receptacle, and focuses solely on the H70HF nozzle. There is no intention to address connectors specifically for other types of vehicles (i.e. not land vehicles) at this time. Question from the US: Does there need to be a resolution due to change of scope? Response from Convenor is that the scope as written allows this evolution, so no change is required. Question from France: Possible sharing with CEN? Convenor noted information from WG5 is shared with CEN, and there are liaisons with Europe. In response to a comment concerning a lack of available resources at CEN to participate, Andrei noted the Vienna agreement permits members from CEN to participate. The best we can do is invite members from CEN. Jim Ferrero suggested there could be a request for participants and resolution to continue. Spencer Quong also noted there should be harmonization with SAE, which is extending their work to heavy duty applications. The Convenor confirms for WG 5, the light duty work is frozen, and continuation of work will focus on Heavy Duty applications. WG 5 can let SAE review light duty applications and comment. While fueling protocols and hardware are not yet set, WG 5 is open to protocols changing. Andrei agreed the work in WG 5 should continue, with the focus limited to H70/HF. Nick Hart asked if the work could be open to other types of vehicles beyond land vehicles. The decision was to keep the scope on land vehicles at this time. JL: Action Item: Publish a call for new members.</p>	437: Unanimously approved.	N 1062
	<p>WG 18 progress report. WG 18 pressure vessel, TPRD Two documents – fuel container, and thermally activated relief device. FDIS ballots have been held. Both passed vote and have been published. Desire to restart work on ISO 19881 to address technical comments received at FDIS, for instance incorporating Type 3 designs based on developments in the UN GTR#13. Similarly desire to restart work on ISO 19882 to address technical comments received at FDIS and other developments in the UN GTR#13. In discussion on the ISO mechanisms for tracking FDIS comments, Jonathan Lafontaine</p>	438 Unanimously approved.	N 1057

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	<p>indicated comments are always posted as N-Doc. This allows continuity when revision work is started.</p> <p>The term of the convenor is not yet expired, so no action is required there at this time. Jim Fererro suggested a call for additional members would be appropriate.</p> <p>JL: Action Item: Publish a call for new members.</p>		
	<p>WG 19 Shoge Watanabe</p> <p>WG19 activities had been put on hold whilst WG24 developed the ISO 19880-1, due to 4 negative votes at the DIS ballot.</p> <p>Now that ISO 19880-1 has reached the FDIS stage, it is proposed to allow the WG19 to continue to work to address the comments on ISO 19880-2, and prepare a document for a CIB within ISO TC 197. It is considered that no resolution is needed to restart the work. The ISO “clock” will start again when the CIB is issued. An in-person meeting to be in spring/summer 2019 has been proposed by the convenor. A teleconference to discuss the scope of the document (regarding the range of types of dispensers that can be imagined) has also been proposed to develop a better understanding prior to the in-person meeting.</p> <p>Glenn Scheffler noted that work on dispensers is urgently needed. Proposes that work begin as soon as practicable. The Convenor confirmed work would restart no later than Dec 2019, but hopeful that June discussions can be held informally. Teleconferences and web-based meetings are encouraged.</p> <p>JL: Action Item: Publish a call for new members.</p>		N 1058
	<p>WG 20:</p> <p>19880-3 Published in June 2018.</p> <p>Resolution to disband the WG.</p> <p>Jonathan Lafontaine will check with Andrew Dryden, Technical Director, with respect to preservation of comments after an FDIS. However, Jonathan confirms that comments collated are published as an N-Doc.</p>	439 Unanimously approved.	N 1059
	<p>WG 22:</p> <p>Hiro Tanimura was invited to say a few words regarding the technical challenges to the development of this document. Hiro has been involved in TC45 SC1 Hoses, and has participated since 2016 in WG 22. He described the major technical issues, and noted there was an informal meeting yesterday with Hervé to address the best way to reference ISO 16964 (standard for hoses to transfer from transport vehicle to buffer tanks) in our document.</p> <p>Karen Quackenbush noted the FDIS has a single clarification it is working to address, after which the FDIS will be sent to TC/197. ISO/TC 197 agrees to extend the work of WG 22 to focus on the technical comments which were put on hold, and to work on harmonization with the ISO 19880 family of documents. A formal call for additional members will take place in order to have this task started in 2019.</p> <p>JL: Action Item: Publish a call for new members.</p>	440: Unanimously approved.	N 1060
	<p>WG 23</p> <p>WG 23 is officially on hold until a CD is submitted.</p> <p>Efforts to harmonize format and flow with ISO 19880-3 (Valves) are underway.</p> <p>Pre-CD to be sent out in spring. CD to be sent to TC by end of May.</p>		N 1061

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	Once CD submitted, schedule to be reviewed.		
7.3	Built Environment and Safety (TPD, Jay Keller) Active WG: WG 24		
	WG24 WG 24 update presented by Jay Keller and Nick Hart. Jay announced WG 24 held its last formal meeting earlier this week. Jay and Andrei thanked the WG 24 leadership team, Glenn, Guy, and Nick. Nick Hart stated the document is now at FDIS stage – with circulation anticipated in early 2019. Future plans are to remove annexes and turn them into stand-alone docs through NWIPs. However this would not necessarily be through the existing WG 24. Parties discussed the appropriate timing for the disbanding of WG 24. More work to be done prior to disbanding in view of streamlining the draft. The Chair agreed the work of WG 24 ends on submission of the FDIS from TC/197 to ISO and asks convenor to organize teleconference to discuss remaining issues of configuration.	441 Unanimously approved.	N 1063
7.4	Production, Storage and Handling (TPD, Hervé Barthélémy) Active WGs: WG 15, WG 21, WG 25, WG 26		
	WG 15 DIS 19884 was approved. 11 voting members approved and 5 voting members disapproved. ISO 19884 is ready to submit. Launch of Ballot is imminent. The document passed DIS ballot in May 2018 (with numerous negative votes), and comments have been treated by the convenor, with no working group meeting held. Italy have apparently indicated that they feel the changes would enable them to vote positively, therefore the document has been submitted for FDIS ballot. Japan raised point that they expect to vote negatively, and are very concerned by the document. The US also has outstanding concerns with the document. Japan resists call for disbanding and discussion, suggesting that this disbanding may make it difficult to progress in the topic's discussions. It is not evident that there will any serious effort to address these concerns within the proposed ISO 19884 document as it has been sent for FDIS ballot. Hervé agrees to send more communications with the US to clarify areas which may be causing concerns. Some concerning text can be treated as guidance rather than mandatory. Hervé will arrange a teleconference to discuss. Technical changes cannot be made at this stage. Similar offer to Japan for their technical concern. An in-person meeting with presentations on the technical data is needed. However, as the ISO FDIS 19884 submitted, the WG15 is therefore to be disbanded, approved by Resolution 442 – unanimously approved.	442: 10 positive, 1 Negative vote (JP).	N 1065
	WG 21 update. KQ confirms one meeting was held this week. CD is planned but will require time. Although there will be regular teleconferences and up to two in-person meetings in 2019, a CD may not be available until 2020 – primarily due to the need for more active participation from a variety of compressor manufacturers and users. Now that WG 24 is wrapping up, we are optimistic that we can get the needed experts to make progress. The project is officially on hold until a CD		N 1066

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	is submitted to ISO/TC 197. Once the CD is submitted, there will be 24 months to publication of an International Standard. No resolution is required.		
	WG 25 Hervé presented a brief update on WG 25. ISO 16111 has been approved and published in 2018. The separate TR (ISO TR 16113) that had been proposed has suffered from a lack of expert interest, and therefore has not progressed past the N document in WG25. The convenor has requested the NWI for this document to therefore be withdrawn due to lack of interest. Resolution to disband WG 25 includes special acknowledgement of the work by Dominic Perreux.	443: Unanimously approved.	N 1065
	WG 26 WG 26 addressed all DIS comments and submitted the FDIS in November 2018. To tidy up the document title, Nick Hart requested removal of word “process” in the document title - approved by Resolution 444. WG 26 will be disbanded upon submission of the FDIS to ISO. Resolution 445.	444 : Unanimously approved. 445: Unanimously approved.	N 1064
7.5	Stationary and Fuel Cell Applications (TPD, Hidenori Tomioka). Active WGs: WG 27, WG 28, TC 158/JWG 7 (Hydrogen analytical methods)		N 1067
	WG 27: WG 27 has a document nearly ready for FDIS. Yasuo Takagi presented the update and timeline. In 2022, WG 27 plans to start ISO 14687 revision with a NWIP. In the meantime, WG 27 completed its work. Nick Hart asked about hydrogen quality specifications for the application in 100% combustion applications like domestic appliances. Andrei confirmed that TC 197 is the appropriate place for hydrogen quality specifications for domestic applications. Hidenori suggested that if someone wants to look at what used to be Part 1 (domestic appliances, non PEM FC apps), a new WG composition is needed, as the current composition is primarily experts in fuel cells and PEM FC grade hydrogen. Guy de Réals suggests having a discussion with Natural Gas (NG) folks to begin to address hydrogen in NG pipelines. Andrei inquired about coordination with European stakeholders. The Convenor responded there are discussion with European stakeholders but it is evident that further revisions are required. Resolutions to extend by 3 years until Dec 2021 the WG and 2 convenors carried.	446: 10 For, 0 opposed, 1 Abstention – France. 447: 10 For, 0 opposed, 1 Abstention – France.	
	WG28 WG 28 has a document nearly ready to be registered as FDIS (ISO FDIS 19880-8). Methodology for quality control, a prescriptive methodology and a risk-informed assessment method. WG 28 expects to modify the document based on a new version of ISO 14687. They hope to start right away. Guy de Réals voiced support for 19880-8. Two resolutions were approved: 448 to agree to continue work, 449 to extend the mandate of Hidenori Tomioka for 3 years, until 31 December 2021.	448: Unanimously approved. 449: Unanimously approved.	

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	JL: Action Item: Publish a call for new members.		
	ISO TC 158 # JWG 7 report: Hidenori Tomioka, on behalf of Martine Carré ISO/TC 158/JWG 7 has resolved all DIS comments. ISO FDIS 21087 has been sent to WG members for review. To be sent in January and published July 2019.		
8	Documents Published: <ul style="list-style-type: none"> • ISO 19880-3:2018 Gaseous hydrogen – Fuelling stations – Part 3: Valves, developed by WG 20 with Shogo Watanabe, from Japan as convenor and Yuko Yasutake as secretary. • ISO 16111:2018 Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride, developed by WG 25 with Dominique Perreux from France as convenor. • ISO 19882:2018 Gaseous hydrogen -- Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers, developed by WG 18 with Livio Gambone from Canada as convenor. • ISO 19881:2018 Gaseous hydrogen – Land vehicle fuel containers, developed by WG 5 with Livio Gambone from Canada as convenor. 		
9	Systematic Reviews and Documents more than six years old: None to discuss.		
10	NWIP and PWI Andrei led a discussion on the pertinence of these mechanisms to bring pre-normative research into the standardization requirements. NWIP requires 8 week CIB, whereas PWI has no obligations.		N 1070
	PWI: Safe Use of LH2 in Non-Industrial Settings, Dr. Thomas Jordan, KIT, PRESLHY). Exposes various experimental situations; and no working group attached. Discussion on Project leader, convenor, working group – which are not necessary at PWI stage. Germany proposes to wait until the end of the experiments before proposing a work item. Possibly revise ISO/TR 15916:2015 Basic Considerations for the Safety of Hydrogen System, based on outcome of PRESLHY and other projects. Andrei endorses the proposal to add this as a PWI to allow ISO TC 197 to contribute to interpretation and experimental considerations. Thomas Jordan indicates all results will be publicly available on RADAR. Dr. Choi discusses a clarification for “Non-Industrial Settings”. Additionally Thomas advised that the next International Conference on Hydrogen Safety (ICHS) will be in Adelaide, Australia in September 2019 (the last meeting was held in Hamburg, in September 2017). Resolution to initiate this PWI was approved.	450: Unanimously approved.	N 1069
	Evelien Korbee: PWI on Hydrogen in Energy Systems - Vocabulary, by Evelien Korbee, NEN (for Nick Hart, ITM Power) serving as Project Leader, with CEN-CLC/JTC 6 (reverse Vienna Agreement) on terms and definitions, conditional on CIB approval of non-CEN members of TC 197.	451: 9 Positive, 1 – Negative (DIN)	N 1068
	Formal Announcement of Thanks to Dr. Mao.		

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	ISO/TC 197 thanks Prof Mao for his service as TC 197 Vice-President representing developing countries. Dr. Tchouvelev presented him with a plaque.		
	Fri Dec 7th 2018. Meeting opens at 9 h.		
11	Liaisons and reports of liaisons		
11.1	<p>Existing Liaisons (ex. ISO/TC 22 SC 37, TC 22/SC 41, TC 58/SC 2, TC 58/ SC 3, TC 158, TC 220, IEC TC 105, CEN/TC 268, CEN-CLC/TC6, etc.)</p> <p>Reports were provided at the meeting for the following liaisons: IEC/TC 105: New officer for IEC 105 liaison.</p> <p>JL must identify this to Central Secretariat</p> <p>Hidenori Tomiok presented on IEC/TC 105. Of most interest to TC 197: WG13 is working on the use of fuel cell modules in a reverse mode (i.e. as an electrolyser).</p> <p>Hervé presented on a number of TCs, using the liaison reports already received:</p> <ul style="list-style-type: none"> • ISO TC 58/SC 2: Concern of cross-over with the dispenser hose document resolved; • ISO TC 58/SC 3: Nothing mentioned of note, see N 1044; • (ISO TC 58 had also submitted a liaison report, see N 1043); • ISO TC 220: Nothing mentioned of note, see N 1045; • CEN TC 268: WG5 of most interest, due to the mirroring of work in WG24, WG27 and WG28 (EN 17124 and EN 17127 to be revised to bring them up to date with changes in the ISO TC 197 documents), also CEN TC 268 responsible for development of ISO 17268 under Vienna Agreement with ISO TC 197 lead, see N 1042. Additionally mentioned that there is relevance to CEN TC 268 should further documents be developed on the use of LH2, as CEN TC 268 covers operation of cryogenic vessels as well as design. <p>There was a noted TYPO and Jonathan repost N 1051 to replace N 1042.</p> <ul style="list-style-type: none"> • ECMA liaison report – however, most documents of interest to ECMA within ISO TC 197 are now either published or at FDIS stage, see N 1046. <p>Hiroshi Tanimura presented on ISO/TC 45/SC 1 for applications using rubber: SC1 covers hoses.</p> <p>Evelien Korbee, NEN, presented on CEN/CLC TC 6, hydrogen in energy systems, continuing from the discussion on the Thursday afternoon New work item proposals section. WG2 of TC 6, of which Guy de Réals is co-convenor, is working on Guarantees of Origin for hydrogen (following on from a series of projects called CertifHy), with a proposal from the AIB to develop this in co-ordination with that of the revision of the EN 16325 standard on Guarantees of Origin for electricity. Once CEN/CLC TC 6 is at the point of a pNWIP, it is anticipated that a CIB for a PWI with a project lead in ISO TC 197 will be launched. The possibility for a body of work on multi-fuel stations within CEN/CLC was also raised, and ISO TC 197 will be kept updated.</p>		<p>N 1071</p> <p>N 1044 N 1043 N 1045</p> <p>N 1051</p> <p>N 1046</p>
11.2	<p>Proposals for new liaisons and/or cancelling existing liaisons</p> <p>None, although Nick Hart if there might be an interest in exploring appropriate liaisons for work on multi-fuel stations. Andrei confirmed interest in this topic.</p>		
12	Business Plan for TC 197		
12.1	<p>Mini-Round Table</p> <p>“Electrolyser Performance in Electricity Grid Services” (FCH 2 JU Qualygrids, Evelien</p>		N1072

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	<p>Korbee, NEN, Nick Hart, ITM Power, discussion) Evelien Korbee, NEN, presented on the FCH 2 JU project: Qvalygrids, looking at the requirements for electrolyzers for grid services. Findings so far from the initial parts of the project are available on the project website: http://www.qvalygrids.eu/. Additionally Nick Hart, ITM Power, gave an indication of the type of performance testing that has been required by customers for recent power-to-gas applications in Germany. ITM have not identified any need to prepare standardised performance tests to date, but await the findings of Qvalygrids, and any requests from customers that may lead to recommended standardised tests. Guy de Réals commented on electrolyzers as electricity consumers rather than hydrogen production. Nick Hart noted customers drive requirements for development. Andrei noted ISO 22734 is a document that addresses testing protocols but questions use of this document. Evelien described planned discussions in standardization protocols – emphasis on visibility and contact. Nick requested comments on the best areas of development within ISO TC 197 or outside of it. Andrei responded that he considers that the best fit is within ISO world but this requires discussion. Evelien emphasized that it could fit in several forums, but reiterates importance of discussion. Andrei commented on the convergence to the international level. Andrei noted further exchanges are needed, and expressed preference for having NH and EK liaisons for these projects. He also proposes monitoring within the next year, with a PWI possibly sooner rather than later.</p>		N 1073
12.2	<p>Marketplace/Members Updates on H2 Programs and experience (max. 10 min./presentation)</p>		
	<p>Antonio Ruiz presented on behalf of Nikola Motors. Heavy Duty FCEV & HD Fueling Standardization Needs. Nikola Motors indicates interest in submitting an NWIP next spring and emphasizes urgent needs. There was discussion over why there is considered an urgent need, and quite what the urgent need is for. Positions were explained where some felt that it should be considered to address the higher level requirements to ensure interoperability, rather than the specific detail of particular routes to how to meet these more general requirements for fuelling protocols. Andrei discourages the creation of a NWIP for this now. He also discourages formation of a PWI. He expressed based on comments he has heard, he would not want to move ahead with a PWI or NWIP at this time. Further collaboration with other key players, such as Shell, should be consulted. Nikola perhaps should not be in convenorship of an eventual WG on this. Nick Hart noted the Convenor of a WG need not necessarily be the technical expert – but have the ability to bring the right people together. Andrei disagrees. There may be an uphill battle due to history. Glenn noted the US TAG will be iterating the PWIP, as would Germany as a named country, and coordination would presumably take place. Andrei requests that the opinions of the many stakeholders involved be considered. There must be convergence with SAE, GTR, etc. Until Andrei is comfortable that we have convergence of opinions between ISO, SAE, and then as a result, the GTR, he is reluctant to proceed on this front. Antonio reiterated that the presentation represents an intent, and will be addressing the alignment issues in the US. The goal is harmonization of the standards. There is already, and will continue to</p>		N 1074

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	<p>be, close coordination with SAE. Andrei says he wants the project to be successful, and simply reiterated the close collaboration with SAE will be a key consideration at such time as a NWIP is submitted.</p> <p>There was a lively discussion on emphasis for such a new effort: Not exclusive for light duty stations.</p> <p>The need to create High Flow requirements and interoperability. 2601-2 and -3; but that there is no urgent need for fueling protocols.</p> <p>Experts appreciate the opportunity to have hardware requirements. Questions how to agree on protocols and rules.</p> <p>Emphasis on balance between speed and flexibility.</p> <p>Hidenori Tomioka asked whether this would be a good time to create an ISO standard for light-duty fueling protocols. It was noted that while nozzles are a priority, fueling protocols are where there are issues.</p> <p>Nick indicates that he doesn't see why the convenor needs technical expertise.</p> <p>Andrei disagrees- technical expertise is needed due to specificity of the topic.</p> <p>Glenn Scheffler noted any draft NWIP would be provided to US TAG, will be reviewed by US TAG and will coordinate with other countries.</p> <p>Antonio suggested his intention is to proceed and find best ways to align with SAE which meets in February with the goal to arrive to agreed-upon standards.</p> <p>Andrei highlighted the importance of association with SAE, GTR considers SAE 1st and ISO 2nd. There is a desire to address protocols and addresses issues.</p> <p>There is a question on separating light duty and heavy duty protocols.</p> <p>Andrei replied there is no clear answer. It's all about controlling the bad guy.</p> <p>Encourages any NWIP to be 99% sure it will pass before being submitted.</p> <p>Nick suggested the work at SAE and ISO can be done in parallel.</p> <p>Andrei would support a NWIP on fueling protocols that has SAE support. Perhaps identifying the guiding principles first – everyone working together so we are successful.</p> <p>Andrei noted that NWIP must go through a TAB review and must have recognized experts review proposals and convenors.</p>		
12.2	<p>Status report on activities in Japan by Ikeda-san focusing on Japan production and usage. The update focused on light duty FC vehicles. It was noted that there has been a slowdown in the rate of FCEVs entering the market in Japan due to a significant increase in the rate of vehicles entering the market in California.</p>		N 1075
12.2	<p>Status report on activities in Norway by Per S. Heggem. See Norwegian Hydrogen Guide 2018. www.hydrogen.no. Norway activities presented were across a much wider of transportation applications, with a much greater tie in to renewables anticipated. A question / statement was made about the need for interoperability in these applications. It was also very notable to see that nearly 50% of new vehicles were either BEVs or plug-in hybrids. Norway production possibility and usage potential in cruise ships. Nick Hart asked whether interoperability of Marine vs road vehicles can be addressed in ISO. Andrei suggested it should be discussed within ISO operations.</p>		N 1076
13	<p>Permanent Editing Committee TC 197 confirmed the following members to its' Permanent Editing Committee: Karen Quackenbush (USA)</p>	452: Unanimously approved.	

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	Jim Ferrero (Canada) Jonathan Lafontaine (TC 197 Secretary)		
14	Future ISO/TC 197 Meetings (possible locations and approximate dates)		
	<p>TC 197 Meeting in 2019: Frédéric Solbés (France) indicated that the exact location in France (between Paris and Grenoble) is still to be determined – it had been anticipated that this would be the 2nd-6th, but at the request of the US tag, this was moved back a week due to the date of Thanksgiving. Confirmation is needed that these dates would not create an issue, however tentatively, the dates proposed are:</p> <ul style="list-style-type: none"> • Working group meetings on 9th & 10th December • Strategic planning meeting on 11th December • Plenary meeting on 12th & 13th December. <p>TC 197 Meeting in 2020: KATS is positive due to policies implemented in Korea. Will send out a formal invitation by email later this year to confirm 7th to 11th of December. Dr. Choi indicates weather concerns, but TC 197 members compare the weather to Vancouver and indicate that it is not an obstacle. Andrei noted the ease of travel for a meeting based in Seoul. A Strategic Planning Meeting will be arranged on the Wednesday. Resolution taken to accept France as the next meeting host country. Resolution will be taken next December, if appropriate, to accept Korea as 2020 host country.</p>	455: Unanimously approved.	
15	Other Business.		
	ISO/TC 197 thanks Prof MAO for his service as ISO/TC 197 Vice-Chair representing developing countries.	453: Unanimously approved.	
	ISO TC197 resolves to set a Twinning arrangement between SCC Canada and SAC China to enable a new Vice Chair. While Andrei Tchouvelev continues his term as Chair, TC197 proposes Zheng Jinyang to serve as the vice chair until December 31, 2021, under an updated Twinning agreement, once the arrangement is approved by the Technical Management Board.	454: Unanimously approved.	
	Final note of appreciation to thank our hosts, CSA Group in Canada for the working groups, the Strategic Planning Meeting, the plenary and the tour, also to Jim Ferrero.		
16	Approval of resolutions. Resolutions were read prior to being voted on.		N 1047 (To be updated)
	Meeting closure 13:30		