

**Minutes of the Meeting of
ISO/TC 108, *Mechanical vibration, shock and condition monitoring*
St. Louis, MO, USA
2008 - 11 - 03 and 07**

1 Opening of the meeting

The Chairman opened the meeting at 9 00 and welcomed the delegates. He introduced Ali Herfat who gave a presentation on Emerson, which hosted the meeting.

2 Roll call of delegates

The delegates introduced themselves. Document N 996 includes those registered as of 2008-10-27. The TC 108 Plenary Meeting attendance list is given at the end of this document.

3 Adoption of the agenda

The Draft Agenda, document N 994r, was approved without changes. (The document handed out at the meeting was updated to include the N numbers of documents circulated prior to the meeting and the revised document has been placed on the Livelink server.)

4 Appointment of the drafting committee

A drafting committee was appointed to assist the Secretary, consisting of Mr. Tantawy and Mr. Gross.

5 Approval of the minutes

The Minutes of the 28th Plenary Meeting, held in Berlin, DE, document N 966 rev1, were approved without changes.

6 Report of the Chairman

Mr. Douglas began by discussing the need to market the work of the TC both to make people aware of the work that has been done and to attract new participants.

He updated the delegates on the status of two current issues involving disputes with IEC committees: one on-going issue between SC 3 and IEC/SC 47E and the other between SC 5 and IEC/TC 2. He explained that the first of these would be discussed in detail at the SC 3 meeting although the representative of the IEC SC who was supposed to attend this meeting did not attend. In the second case, the ISO/TMB has asked the IEC/SMB to agree to form a JWG and action is still pending.

Mr. Douglas discussed his plans for the Chairman's Advisory Group meeting which was expanded to include the chief delegate from each country. He explained the need to improve the organization of the TC to facilitate the work so that similar types of work are done in one unit (TC or SC) and not scattered throughout.

He asked the heads of delegations to work with their member bodies at home to bring in new experts from their countries to participate in the work of the TC both updating and maintaining the older standards and developing new ones. As an example he cited his suggestion that work should begin on a standard detailing the parameters to be specified for shock measurements as a companion to ISO 21289.

7 Report of the Secretariat (N 982 & N 983)**a) Review of the actions resulting from the Resolutions adopted at Berlin**

The Secretary reported that all the resolutions adopted in Berlin (N 965) have been acted upon.

b) Status of Work Programme

The status of each document is shown in document N 982.

c) Updates from the ISO/CS

The Secretary reviewed news from ISO (N 997r). This revised report included some changes suggested by Mr. Perrad (TC 108's ISO Technical Programme Manager) just prior to the meeting.

d) Other secretariat issues

No other issues were raised.

8 Review of Participation and Liaisons**a) Changes in participation**

It was noted that New Zealand moved from P to O membership.

b) Reports of the Liaison Officers

The reports submitted by liaison officers were acknowledged with no further comment.

The Secretary explained that in the ISO database each side of the liaison relationship is viewed separately. Some TCs or SCs wish to see TC 108's documents. In some cases, TC 108 has requested the documents of other TCs. In some cases, both committees wish to see each other's documents.

During this year, ISO/TC 110/SC 4 requested to see TC 108's documents and offered to share its documents with TC 108. However, since this does not relate to any existing work in TC 108, no one volunteered to serve as Liaison Officer and no liaison was requested.

Also, since the last meeting, ISO/TC 145, Graphical symbols, requested that the existing liaison with TC 108 be changed to a liaison with ISO/TC 145/SC 3, Terminology. Mr. Gross agreed to serve as Liaison officer. This was accepted and Resolution 2008/17 was approved unanimously.

The list of liaisons TC 108 has requested were reviewed and discussed. It was agreed to delete TC 108's access to the documents of following committees as they no longer relate to the TC 108 work programme:

- TC 20 Aircraft & space vehicles
- TC 22/SC 22 Motorcycles
- TC 39 Machine tools
- TC 145 Graphical symbols
- TC 149 Cycles
- TC 110 Industrial trucks
- TC 110/SC 4 Variable reach rough terrain trucks

Resolution 2008/18 was approved unanimously.

9. Review of the results of the 2007 Systematic Reviews

The results of voting on five Systematic Reviews from 2007 were reviewed and comments referred to the WGs for discussion. As a result of this consideration the following decisions were reached (see Resolution 2008/21):

- a) ISO 7475:2002 *Mechanical vibration – Balancing machines – Enclosures and other protective measures for the measuring station*. **WG 31 is asked to submit a draft for simultaneous NP/CD ballot.**
- b) ISO 7626-2:1990 *Vibration and shock – Experimental determination of mechanical mobility – Part 2: Measurements using single-point translation excitation with an attached vibration exciter*. **Confirm.**
- c) ISO 16587:2004 *Mechanical vibration and shock – Performance parameters for condition monitoring of structures*. **Confirm.**
- d) ISO 18431-2 *Mechanical vibration and shock – Signal processing – Part 2: Time domain windows for Fourier Transform Analysis*. **Confirm.**
- e) ISO 20806:2004 *Mechanical vibration – Criteria and safeguards for the in-situ balancing of medium and large rotors*. **Confirm and request WG31 to submit text for a minor amendment to clarify the document.**

10. Review of the 2008 Systematic Reviews

The results of voting on three Systematic Reviews from 2008 were reviewed and comments referred to the WGs for discussion. As a result of this consideration the following decisions were reached (see Resolution 2008/21):

- a) ISO 2017-1:2005 *Mechanical vibration and shock – Resilient mounting systems – Part 1: Technical information to be exchanged for the application of isolation systems*. **Confirm.**
- b) ISO 18437-2:2005 *Mechanical vibration and shock – Characterization of the dynamic mechanical properties of visco-elastic materials – Part 2: Resonance method*. **Confirm with technical corrigendum to correct errors.**
- c) ISO 18437-3:2005 *Mechanical vibration and shock – Characterization of the dynamic mechanical properties of visco-elastic materials – Part 3: Cantilever shear beam method*. **Confirm with technical corrigendum to correct errors.**

11. Remaining 2008 Systematic Review scheduled

The Secretary noted that the Systematic Review of ISO 1940-1:2003 *Mechanical vibration – Balance quality requirements for rotors in a constant (rigid) state – Part 1: Specification and verification of balance tolerances*, is currently open for voting. She noted that WG31 has requested the registration of a PWI to revise this document (see Resolution 2008/11).

12. 2009 Systematic Reviews

The four documents scheduled for Systematic Review in 2009 were noted. No TC action is needed at this time.

- ISO 2953:1999 *Mechanical vibration – Balancing machines -- Description and evaluation*.
- ISO 3719:1994 *Mechanical vibration – Symbols for balancing machines and associated instrumentation*.
- ISO 7626-5:1994 *Vibration and shock – Experimental determination of mechanical mobility – Part 5: Measurements using impact excitation with an exciter which is not attached to the structure*.

- ISO 9688:1990 *Mechanical vibration and shock – Analytical methods of assessing shock resistance of mechanical systems – Information exchange between suppliers and users of analyses.*

13. Reports of the ISO/TC108 subcommittees

a) **SC 2 – Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles, and structures (Chair: A. Olsson, Sweden)**

Mr. Olsson commented on the excellent functioning of the SC which is well represented by many countries. He noted that the convenorships of the WGs are distributed among different countries and most WGs are strong. He did comment that WG 3, "Vibration of buildings" has had difficulty making progress for several reasons. For one, codes and standards related to buildings tend to be local by country and there is not a big demand for international work in this area. He also thought that the work on building vibration is not properly consolidated within a single SC, leading to fragmentation of the personnel to do the work.

The Secretariat's Report is given in doc. (N 998)

b) **SC 3 – Use and calibration of shock and vibration measuring instruments (Chair: T. Licht, Denmark)**

Mr. Licht reviewed the status of SC 3 which has two WGs. WG 6 on calibration has the majority of the work in the SC and is responsible for many existing standards and has several work items actively under development. WG 10 has two work items but has had difficulty making progress. The convenor has recently resigned. Mr. Licht will temporarily take over the convenorship until some decision can be reached as to how to proceed.

c) **SC 4 – Human exposure to mechanical vibration and shock (Chair: E. Christ, Germany)**

Neither the Chair nor the Secretary of SC 4 was present. The Secretariat's report (doc. N 999) was noted.

d) **SC 5 – Condition monitoring and diagnostics of machines (Chair: J. Mathew, Australia)**

Ms. Blaeser noted her written report (doc. N 1001) and announced that the next meeting of SC 5 will take place in Copenhagen in June 2009. Three parts of the ISO 18436 series (qualification and assessment of personnel) have recently been published.

e) **SC 6 – Vibration and shock generating systems (Chair: C. Peterson, USA)**

The cancellation of the planned SC 6 meeting was discussed. Neither the Chair nor Secretary was present. Mr. Olsson reported that he will explore the possibility of inviting SC 6 to meet in conjunction with IEC/TC 104 at their next meeting to allow the two groups to explore possible areas of cooperation.

14. Resolutions to reappoint the Chairs of ISO/TC 108/SC 3 and ISO/TC 108/SC 4

Based on Mr. Nielsen's nomination of Mr. Licht for another three-year term as Chair of SC 3 beginning on 2009-01-01, Resolution 2008/15 was approved unanimously.

Based on Mr. Hansen's nomination of Mr. Christ for another three-year term as Chair of SC 3 beginning on 2009-01-01, Resolution 2008/16 was approved unanimously.

Mr. Douglas thanked them both for their long service to their respective SCs and to the TC as well.

15. Reports of ISO/TC 108 working groups

a) WG 1 – Terminology (Convenor: M. Gross, UK)

Mr. Gross reported that the comments received on DIS 2041 were discussed and resolved. WG 1 recommends that the revised document be forwarded to ISO for circulation for voting as an FDIS before 2009-01-31. Resolution 2008/1 was approved unanimously.

b) WG 23 – Vibration and shock isolation (Convenor: T. Tantawy, France)

Mr. Tantawy reported that only he and Mr. Shiohata attended the meeting. At the Berlin meeting, WG 23 requested input from the member bodies but no comments were received. Mr. Tantawy suggested that TC 108 register a preliminary work item as Part 3 of ISO 2017 under the title "Technical information to be exchanged for application of vibration isolation of buildings". He noted that this vibration could be either man-made or natural (such as earthquakes). The secretary was asked to find out if ISO has an existing committee related to earthquake. A search of the ISO website did not reveal any TC or SC specifically focused on seismology although there are a number of standards in various TC/SCs that consider seismic events. There was extensive discussion on Resolution 2008/2 which was approved with Sweden opposed.

c) WG 24 – Condition assessment of structural systems from dynamic response measurements (Convenor: T. Tantawy, France)

Mr. Tantawy reported that the WG discussed the result of voting on the NP/CD 7626-1 (N 979). The NP part of the ballot was approved (10 yes, 5 abstain, 0 no). Although only one technical comment was submitted, the result of the vote on the CD was not clear. Five voted to circulate it as a DIS, 3 voted to circulate it as a CD (2nd CD), 1 voted to accept the draft as a WD for further development in the WG, 1 voted to advance for further development as a WD within the WG. In advance of the meeting, the Secretary had notified the members that this would be subject to a role call vote at the plenary.

The WG discussed the single comment and decided that it could not be accommodated within the current document. The WG recommended that the document be submitted without change for voting as a DIS. Resolution 2008/3 was discussed and approved by the following vote:

FRANCE - Yes
 GERMANY - Yes
 JAPAN - Yes
 SOUTH AFRICA - Yes
 SWEDEN - Abstain
 UK - Yes
 USA - Yes

Mr. Tantawy further reported that the WG reviewed the comments received as a result of the Systematic Review of ISO 7626-2:1990 *Vibration and shock – Experimental determination of mechanical mobility – Part 2: Measurements using single-point translation excitation with an attached vibration exciter* and recommends that they be held until a revision is undertaken at some future time. At this point they suggest that TC 108 confirm the document. (See resolution 2008/21.)

Mr. Tantawy reported that WG 24 recommended the establishment of two preliminary work items. The first was "Classification of environmental vibration conditions." He provided a written outline of the scope of the project which he had presented orally at the opening plenary as well:

In all operations concerned by vibrations all actors (construction, manufacturer, user) need to exchange information. This information is mainly the qualification

and quantification of ambient vibration in a site, vibration generated by a source or vibration limit for sensitive equipment.

To insure a correct exchange between actors, we need a classification of the environmental vibration condition. This classification can be done according to the variation of the main parameters which are amplitude, frequency and duration of vibration.

Mr. Olsson objected to this project as there is the potential for overlap or duplication with work in IEC/TC 104 (IEC 60721 Classification of environmental conditions). Although Mr. Tantawy stated that his proposal is not covered in the IEC document it was agreed to withdraw the proposed resolution on this topic. Mr. Olsson will work with Mr. Tantawy to determine if this is a potential duplication.

Finally, Mr. Tantawy reported that WG 24 requests the registration of a PWI for a new project entitled "Parameters to be specified for shock measurements". This is the project Mr. Douglas has suggested several times over the past few years, a companion to ISO 21289:2008 *Mechanical vibration and shock -- Parameters to be specified for the acquisition of vibration data*. It was clarified that although this document will be a companion to ISO 21289 it will not be Part 2 but a separate document. After some discussion, Resolution 2008/4 was approved with Sweden opposed.

d) WG 26 – Signal processing methods for analysis of mechanical vibration and shock (Convenor: D. J. Evans, USA)

Mr. Evans reported that WG 26 discussed the errors that have been identified in ISO 18431-1 and the WG recommends that a technical corrigendum be issued. By 2009-01-31, Mr. Gaumond will submit the corrections to the Secretariat for a final WG review before they are submitted to the ISO/CS. Resolution 2008/5 was approved unanimously.

Mr. Evans also reported that the WG reviewed the planned content of Part 3 and decided to include part of what was originally envisioned as Part 5 in the current document. Nevertheless, it was decided to maintain the both PWI 18431-3 and PWI 18431-5 on the work programme until Part 3 progresses. (See Resolution 2008/20.)

e) WG 28 – Vibration Materials (Convenor: W. Madigosky, USA)

Mr. Madigosky was not able to attend the meeting and Mr. Kim convened WG 28 in his place.

Mr. Kim reported that WG 28 is ready to submit PWI 18437-1 *Mechanical vibration and shock - Characterization of dynamic mechanical properties of visco-elastic materials - Part 1: Principles and guidelines* for a new work item proposal ballot. Resolution 2008/6 was approved unanimously.

The WG requested that Mr. Kim serve as project leader for the development of PWI 18437-5 *Mechanical vibration and shock - Characterization of dynamic mechanical properties of visco-elastic materials - Part 5: Determination of Poisson's ratio using numerical modelling*. Resolution 2008/7 was approved unanimously.

Mr. Kim reported that WG 28 is also ready to submit PWI 18437-5 for a new work item proposal ballot. Resolution 2008/8 was approved unanimously.

Finally, Mr. Kim reported that the WG discussed the results of the Systematic Review ballots on ISO 18437-2 (Resonance method) and ISO 18437-3 (Cantilever shear beam method). It was decided that revisions were not necessary at this time so editorial comments were set aside for future discussion. However, technical errors were identified in figures in both parts requiring the issuance of Technical Corrigenda. The WG requests to review the draft corrigenda prior to their publication. (See resolution 2008/21.)

f) WG 29 – Measurement of vibration power flow from machines into connected support structures (Convenor: V. Popkov, Russian Federation)

Mr. Popkov was not present. Although he has repeatedly offered to hold WG meetings in St. Petersburg which he would be able to attend, no WG members have been able to travel to St. Petersburg for the proposed meetings. These documents have been under development for several years moving at one time through the CD stage only to be delayed. In Canada, the TC set the projects back to Stage 0 to allow additional time to resolve the technical and editorial issues. When they were re-submitted for NP voting in 2008 only four countries agreed to participate actively (see result of voting N 977 and N 978). Subsequent to the circulation of N 977 and N 978, AFNOR indicated its wish to participate in these projects and nominate an expert.

Resolution 2008/9 was unanimously approved, amending N 977 and N 978 by adding Dr. Goran Pavic (University of Lyon) as the French expert on these two projects.

In an e-mail to the Secretariat, Mr. Popkov suggested that Mr. Kim take over as convenor of the WG while he (Mr. Popkov) would remain as a WG member. Supported by the WG members, Mr. Kim agreed to this proposal and Resolution 2008/10 was approved unanimously.

g) WG 31 – Balancing (Convenor: R. Herbert)

Mr. Herbert was not present and WG 31 did not meet in conjunction with the meeting of the TC. The Minutes and Resolutions of the WG 31 meeting held in June 2008 in Orlando, FL, were circulated to the national member bodies in advance of this meeting to facilitate the adoption of the resolutions requested by WG 31.

Resolution 2008/11, establishing a PWI to revise or amend ISO 1940-1:2003, either as a minor amendment or revision, was approved unanimously.

Resolution 2008/12, establishing a PWI to revise ISO 7475:2002 and authorizing the initiation of an NP/CD ballot, was approved unanimously.

Resolution 2008/13, authorizing the initiation of an NP ballot to revise ISO 1940-2:1997, was approved unanimously.

Resolution 2008/14, confirming ISO 20806:2004 and requesting the convenor to submit the layout for a minor amendment to improve the clarity of the document, was approved unanimously.

h) JWG 2 – Joint working group ISO/TC 43/ SC 1/WG 31 - ISO/TC 108/ JWG 2 on the measurement of the vibro-tactile acoustical transfer properties of resilient elements (Convenor: J. Verheij, Netherlands)

Mr. Nielsen, Secretary of ISO/TC 43/SC 1 reported that this JWG has completed its tasks and requested to be disbanded. TC 43/SC 1 adopted the following resolution in Borås, Sweden (doc. N1748):

Resolution 22 – JWG 31

ISO/TC 43/SC 1 disbands JWG 31 “Measurement of the acoustical transfer properties of resilient elements” subject to approval by ISO/TC 108 “Mechanical vibration, shock and condition monitoring”.

After discussion about the process for future maintenance of the five standards developed in this JWG and how to ensure that both committees would be involved in the systematic reviews, it was agreed that TC 108 should approve the TC 43/SC 1 resolution, as requested. Resolution 2008/19 was approved unanimously.

16. Review of Preliminary Work Items (PWI) on the work programme

The preliminary work items on the TC 108 work programme were reviewed and discussed in detail as part of the WG reports. Resolution 2008/20 was unanimously approved to maintain the following work items at stage 0:

- PWI 10814 *Mechanical vibration - Susceptibility and sensitivity of machines to unbalance.*
- PWI 11342 *Mechanical vibration - Methods and criteria for the mechanical balancing of flexible rotors.*
- PWI 18312-1 *Measurement of vibration power flow from machines into connected support structures – Part 1: Direct method.*
- PWI 18312-2 *Measurement of vibration power flow from machines into connected support structures – Part 2: Indirect method.*
- PWI 18431-3 *Mechanical vibration and shock - Signal Processing - Part 3: Bilinear methods for joint time-frequency analysis*
- PWI 18431-5 *Mechanical vibration and shock - Signal Processing - Part 5: Methods for time-scale analysis.*
- PWI 18437-1 *Mechanical vibration and shock - Characterization of dynamic mechanical properties of visco-elastic materials - Part 1: Principles and guidelines*
- PWI 18437-5 *Mechanical vibration and shock - Characterization of dynamic mechanical properties of visco-elastic materials - Part 5: Determination of Poisson's ratio using numerical modelling*
- PWI 1940-2 *Mechanical vibration - Balance quality requirements of rigid rotors - Part 2: Balance errors*

17. Discussion of proposals for future work

Several proposals for new work were discussed in conjunction with the WG reports. No additional proposals were brought forward.

18. Work items on which no progress is being made

All work items were discussed as part of the WG reports.

19. Working groups to be disbanded

Aside from disbanding the JWG as discussed in item 15 h) above, no WGs were disbanded.

20. Plans for the next meeting

There was a very preliminary discussion of the possibility of scheduling a two-week meeting of the TC and all the SCs in approximately 18 months time. Mr. Diakonoff agreed to explore the possibility of holding such a meeting at AFNOR. The SC secretaries will be consulted to determine a suitable schedule. The secretary will make a formal announcement when and if the plans are finalized.

21. Any other business

a) Mr. Douglas reported the results of the Chairman's Advisory Group meeting (see doc. N 1005). In summary, that group authorized the Chairman to explore the creation of two new subcommittees on "Dynamics of machines and rotor dynamics" and "Dynamics of structures and vehicles" and the option of reallocation of some of the existing working groups within new SCs. There was additional discussion on these topics at the closing plenary and Mr. Olsson reported a summary of his telephone discussion with Mr. Hansen, subsequent to the Chairman's Advisory Group meeting. Mr. Olsson pointed out that although these new SCs were discussed, there is no member body requesting to take on the secretariats. He also stated that the creation of the SC on "Dynamics of machines and rotor dynamics" would damage SC 2 which is currently very strong. After discussion, Resolution 2008/22 was approved with Sweden opposed.

b) Mr. Douglas reported that SC 3 had adopted the following resolution in regard to the conflict with IEC/SC 47E:

TC 108/SC 3 recognizes the IEC SMB decision 132/13:

“SMB Decision 132/13 - Semiconductor Accelerometers - SMB/3740/DC

The SMB invites TMB to concur with the following proposal to IEC SC 47E and ISO/TC 108/SC 3:

to divide the existing draft IEC 60747-14-4 into two parts, Part A and Part B.

- Annexes A, B, and C, fall in Part A which will be immediately circulated as FDIS with IEC logo.
- Annexes D, E, F, G and H, fall into Part B, with the discussion restarting at the CD stage by a joint ISO/IEC WG, the resulting document to be issued with a ISO and IEC double logo.”

In response to that decision, SC 3 concurs with the IEC proposal to continue with the development of IEC 60747-14-4 part A with the following proviso: SC 3/WG 6 review the proposed standard prior to FDIS circulation. This review will only cover areas within the scope of SC 3. This proviso should ensure coherence between ISO and IEC regarding jurisdictional aspects of this issue. SC 3/WG 6 has appointed Messrs. Torben R Licht and David J Evans to act as points of contact for this review. SC 3 requests that Messrs. Licht and Evans receive the final official draft of part A of this document prior to processing by the IEC/CO to carry out their review. In addition, SC 3 stipulates that part B be deleted. All calibration methods described in the document consistent with the ISO 5347 and 16063 series should be substituted with normative references to these standards in part A. All calibration methods not consistent with ISO 5347 and ISO 16063 should be submitted as NWIPs for consideration in SC 3 except for methods unique to semiconductor accelerometers. For those methods SC 3 invites IEC/SC 47E to send participants to the next meeting of SC 3/WG 6 for the purpose of establishing a joint ISO-IEC Working Group involved in vibration and shock transducer calibration standards that are unique to semiconductor accelerometers.

After brief discussion, Resolution 2008/23 was unanimously adopted, requesting Mr. Douglas to convey this decision to the ISO/TMB and IEC/SC 47E.

c) Mr. Douglas advised the delegates that Mr. Hans von Martens has retired and this will be his last ISO meeting. Resolution 2008/24 acknowledging the extensive contributions made by Mr. von Martens over the years was unanimously approved.

d) Mr. Douglas thanked Emerson, the meeting host, and the Emerson staff members who worked very hard to arrange and support the meeting. Resolution 2008/25 was unanimously approved.

22. Approval of resolutions

The resolutions are given in N 1004 (corr). Except as noted, all resolutions were adopted unanimously.

23. Adjournment

There being no further business to discuss, the meeting was adjourned at 16 00 on 2008-11-07.

Respectfully submitted,

Susan Blaeser
Secretary, ISO/TC 108

Delegate Surname	First Name	Chief Delegate to TC 108	Country	Opening Plenary 2008-11-03	Closing Plenary 2008- 11-07
Douglas	Bruce E.		USA Chair TC 108	X	X
Blaeser	Susan		Secretary, TC 108	X	X
Licht	Torben		DENMARK Chair, SC 3	X	X
Nielsen	Leif		DENMARK Secretary, SC 3	X	X
Diakonoff	Pierre		FRANCE	X	X
Tantawy	Talaat	X	FRANCE	X	X
Bruns	Thomas	X	GERMANY	X	X
Damker	Thomas		GERMANY	X	X
Petzsche	Thomas		GERMANY		X
von Martens	Hans-Jürgen		GERMANY	X	X
Shiohata	Koki	X	JAPAN	X	X
Ono	Kyosuke		JAPAN	X	X
Usuda	Takashi		JAPAN	X	X
Yamamoto	Hiroshi		JAPAN	X	X
Usuda	Takashi		JAPAN	X	X
Kim	Kwang-Joon	X	KOREA	X	
Veldman	C. S.		SOUTH AFRICA	X	X
Olsson	Alf	X	SWEDEN Chair SC 2	X	X
Gross	Michael	X	UK	X	X
Evans	David J.	X	USA	X	X
Gaumond	Charles F.		USA	X	
Herfat	Ali T.		USA	X	X
Mezache	Macinissa		USA		X

P-members not represented at this meeting: Australia (SA), Austria (ON), Canada (SCC), China (SAC), Czech Republic (CNI), Egypt (EOS), Hungary (MSZT), Italy (UNI), Norway (SN), Russian Federation (GOST R), Slovakia (SUTN), Switzerland (SNV).