



ISO/TC 43/SC 1/WG 45 "Description and measurement of environmental noise
(Revision of ISO 1996-series)"

Convenorship: DS

Convenor: Manvell Douglas Mr



ISO TC 43 SC 1 WG45 Virtual Meeting 12Jan_2023 Minutes

Document type	Related content	Document date	Expected action
General / Other		2023-01-23	

Description

Minutes updated after review by attendees. Includes action plan

ISO TC 43 / SC 1 / WG45 Virtual Meeting

12 Jan 2023 (#29) Minutes

When: Thursday 12th January 2023, 1400-1800 CET
Where: Zoom

Purpose

Now it is time to turn to the next set of activities including the PWI on the (minor) revision of ISO 1996-1. The timing of the WG45 meeting is intended to fit in very well with the completion of the ISO 1996-2 Systematic Review at the start of December, enabling us to know the result and next steps, and to send out these to the Working Group in good time for discussion. The meeting is also intended to progress the minor revision of ISO 1996-1 with the major revision at the May meeting in Canada as we will have more time. However, this is partly dependent on the status of getting a US project leader for a more in-depth revision of ISO 1996-1 (which is why this is on the agenda).

The timing of the meeting is based on a Doodle poll.

Draft Agenda (revised)

Time	Item	Subject	Document
14:00	1.	Introduction	
10 min	1.1	Welcome and roll call, practical information	
7½ min	1.2	Review of actions from the last minutes	N270, N285
2½ min	1.3	Approval of the agenda	Revised ver of N297 (N303?)
14:15	2.	Status of the US project leader for the ISO 1996-1 revision	
14:30	3.	Revision (minor) of ISO 1996-1 (preliminary work item)	
	3.1	Status since last time Convenor Comments Nov 2022	N270 N298
	3.2	Key comments discussion	N301, N302
	3.3	Review of proposed comment responses	N301, N302
	3.4	Recent developments in exposure-response	N272
	3.5	Next steps	
16:00-16:30		Break	
16:30	4.	ISO 1996-2 Systematic Review	
	4.1	Systematic Review results	N299
	4.2	SC1 Management decision/recommendation	ISO-TC 43-SC 1_N2920
	4.3	WG45 discussion and decisions	
	4.4	Next steps	
17:30	5.	Any Other Business	

	5.1	Brief status of ISO/PAS 1996-3 and ISO TS 20065	
	5.2	ISO 20065 Norsonic questions	N300
	5.3	Next meeting(s)	
	5.4	AOB	
17:55	6.	Next steps	
18:00	7.	Close of meeting	

Zoom links

Meeting ID: 921 2037 2260

Password: 257681

<https://iso.zoom.us/j/92120372260?pwd=Y2JWS0czV2g2TGJBaFhyRG8weHBQUT09>

Minutes

Introduction

Participation guidelines for virtual meetings ISO/TC 43/SC 1/N2517. Refer to code of conduct. Mute when possible, raise Zoom hand for discussion.

Welcome and roll call:

Present: Guillaume Dutilleux, Truls Gjestland, Robert Hellweg, Stephen E. Keith, Tomohiro Kobayashi, Douglas Manvell, James McIntyre, Makoto Morinaga, Toshiya Ohshima, Simon Shilton, Lars Sommer Søndergaard, Colin Tickell, Peter van Delden

Observers: Takatoshi Yokota, Ken Kaliski¹

Absent: Hiroyuki Imaizumi, Ichiro Yamada (apologies)

Review of Actions from Last Meeting

In N270 (April) and N285 (May/Jun):

What	Who	When	Status
N270			
Send draft minutes and related documents for review	Doug	22-Apr	Done
Review draft minutes	Meeting attendees	29-Apr	Done
Send final minutes and new documents to WG45	Doug	6-May	Done
Status on US project leader for ISO 1996-1	Doug and Stephen		Done
ISO 1996-1 updated standard and	Stephen		Done (N301,

¹ Since the meeting, Ken has been formally appointed to WG45

comments responses			N302)
Proposals for updated figures and text regarding specific and residual sound	Japan and Doug	In time for next ISO 1996-1 meeting	Japan done (sent in Sep) Doug pending (do for May meeting)
Investigate with their national networks regarding wind turbine noise and transportation noise CTL studies	WG45		Status? (for May)
Present US wind turbine noise CTL papers referred to in US-018	USA WG 45 members	future WG45 meeting	TBD (for May)
Prepare discussion of convenor's study on recent developments	WG45	In time for next ISO 1996-1 meeting	Status? (for May?)
Prepare discussion of "Representative Exposure–Annoyance Relationships Due to Transportation Noises in Japan" (sent to the Working Group after the meeting)	WG45	In time for next ISO 1996-1 meeting	Assumed done
Organise next meetings	Doug (and Stephen)	For 19 th May etc	Done
ISO 20065 uncertainty: forward findings for conclusion	Doug	For 19 th May meeting	Done
Propose text re changes from the ISO PAS 20065 in the Foreword	Doug	For 19 th May meeting	Done
Meeting preparation and documents timing guide	Doug	For 19 th May meeting	Pending
N285			
Meeting minutes review 1-8 Jun	WG45	1-8 Jun	Done
ISO TS 20065: Doug will finalise after the minutes review, then there will be a WG45 email review, finally Doug will handover to ISO	Doug / WG45	Mid Aug	Done
ISO TS 20065 revision: Doug to discuss with ISO regarding potential ways forward then present to WG45 for discussion and agreement on next steps	Doug		Underway
ISO 1996-1: Stephen and Doug to plan next meeting	Doug and Stephen		Done

New documents:

- N285: Minutes virtual meeting 31 May & 1 Jun
- ISO-TC43-SC1-WG45_N286_DTS 20065 comments with responses
- ISO-TC43-SC1-WG45_N287_DTS 20065 Australian comments with responses
- ISO-TC43-SC1-WG45_N288_CD of IEC TS 61400-11-2 Measurement of wind turbine noise characteristics in receptor position
- ISO-TC43-SC1-WG45_N289_DTS 20065 additional changes
- ISO-TC43-SC1-WG45_N290_Update of TS 20065 Foreword
- ISO-TC43-SC1-WG45_N291_TS 20065 Figure A.1
- ISO-TC43-SC1-WG45_N292_How to use macro file in TS 20065

- ISO-TC43-SC1-WG45_N293_ISO DTS 20065 pre-submission for publication final changes
- ISO-TC43-SC1-WG45_N294_README ISO TS 20065 2022 Sample program to determine audibility
- ISO-TC43-SC1-WG45_N295_Final README ISO TS 20065 2022 Sample program to determine audibility
- ISO-TC43-SC1-WG45_N296_Final Proofed Version of ISO 1996-3 july 2022
- ISO-TC 43-SC 1-WG 45_N297_ISO TC 43 SC 1 WG45 Virtual Meeting 12Jan_2023 Draft Agenda
- ISO-TC 43-SC 1-WG 45_N298_ISO 1996-1 revision Convenor Comments Nov 2022
- ISO-TC 43-SC 1-WG 45_N299_SR 2022 ISO 1996-2 - RoV incl comments
- ISO-TC 43-SC 1-WG 45_N300_ISO 20065 questions Norsonic mails 2022Q4
- ISO-TC 43-SC 1-WG 45_N301_ISO 1996-1 cmts and proposed observations Dec 2022
- ISO-TC 43-SC 1-WG 45_N302_Updated ISO 1996-1-2016 track changes Dec 2022

Not yet published:

- N303?: *Draft minutes Jan meeting*
- N304?: *Final Proofed Version of ISO TS 20065 2022*
- ...

Approval of the revised agenda N303?: OK

Status of the US project leader for the ISO 1996-1 revision

Bob: ANSI have been asked to ensure Ken is a member of ISO TC43/SC1/WG45. Then he can formally be appointed as project leader. After that, we can discuss when to transition the revision from a Preliminary Work Item to a Work Item.

Revision (minor) of ISO 1996-1 (preliminary work item)

Status since last time (N270)

New documents N301 and N302.

Convenor Comments Nov 2022 (N298)

The meeting agreed on the following:

- Clause 4 Table 1: Subscript change to Subscript: OK
- Clause 3.3: Call it K, and add “, or the community reaction”
- Clause 4 Table 1 and (21/58) Clause 6.5: Use Lday, Levening, Lnight
- Kct vs K: retain K, also for Annex E and F
- Kct vs K in Table A.1 and regarding Fig A.1 Clause 3.3: Set up a discussion in the May meeting

Stephen will ensure that these are used to update N302.

Key comments and Review of proposed comment responses

N301, N302

Stephen ran through the comment responses document. Decisions made are:

- Comment 004: defer to May once the convenors proposal is available
- Project leader items: defer to May, including discussions on potential changes due to recent studies

In addition, the updated comments from Japan regarding the figures are to be discussed at the next meeting.

Recent developments in exposure-response

At our April meeting Makoto Morinaga introduced "IJERPH 2021 Japan transport noise exposure annoyance" (N272 Representative Exposure–Annoyance Relationships Due to Transportation Noises in Japan). This paper seems like a practical example for a brief presentation/discussion to highlight criteria for inclusion in ISO1996-1, and the need for some data to be adjusted (or treated separately). WG members have been asked to prepare and have had time for a discussion of this at this meeting.

In addition, Truls Gjestlund has published recent papers, is familiar with most (if not all) of the studies relevant to the CTL curves in ISO1996-1, and was asked to inform the WG45 of new developments, including presenting the following:

- An alternate approach to regulatory analyses of the findings of a 20-airport social survey, Sanford Fidell, Vincent Mestre, Truls Gjestlund and Barbara Tabachnick, The Journal of the Acoustical Society of America 152, 3681 (2022); <https://doi.org/10.1121/10.0016591>
- Effect of alternate definitions of "high" annoyance on exposure-response functions, Truls Gjestlund and Makoto Morinaga, The Journal of the Acoustical Society of America 151, 2856 (2022); <https://doi.org/10.1121/10.0010354>

In the comments in N267 there was a comment to update the curves:

- ◆ US 016 ... The U.S. Federal Aviation Administration recently released the Neighborhood Environmental Survey, showing a large increase in annoyance to aircraft noise relative to previous studies ... Consider incorporating this information

But as also suggested in US016, there also seemed to be concern that the CTL relationships could change with new research:

- ◆ US 002 ... The Annexes are "informative" and the references are dated. Thus, it is not clear if one should be expected to rely on this version of the Annexes to assess annoyance and the 95% prediction interval
- ◆ US 015 ... Delete the <CTL> annexes from the standard and develop a technical report or other document ...The collection of information... is also likely subject to substantially more change as additional research or policies (e.g. WHO 2018) are published

Truls research gives clear insight into these issues. The working group may not be familiar with this research and a brief introduction was given to help us examine and interpret relevant papers to enable us to get consensus on a final decision.

In Truls opinion there is no need to update the CTL information in ISO 1996. New data confirms that the old Miedema & Vos curves and hence the CTL version of these, are still valid. It is correct that FAA recently presented an analysis of the NES-study in the US indicating that annoyance had increased "a lot" since last update. This is commented on in his last paper (Fidell et al). It is shown that the difference between the

“new FAA” curve and the current ISO curve is caused by the way the survey was conducted. The NES study was carried out as a postal survey as opposed to the normal telephone interviews. FAA (Miller et al.) themselves did a comparison with a telephone interview in the same areas, and found that the postal method yield higher prevalence of annoyance than telephone. The difference was equal to a shift in the noise exposure of about 5 dB. Secondly FAA used a verbal response scale and used the two upper response categories to define “highly annoyed”. Miedema & Vos and the ISO curve use another definition of highly annoyed. In the paper by Gjestland and Morinaga it is shown that the average difference between a verbal and a numerical response is equal to a 6 dB shift in the exposure. So if the new FAA curve is adjusted by $5 + 6 = 11$ dB to compensate for these differences, the CTL value for the 20-airport study by FAA is $LCT = 71.2$ which is very near the current ISO curve with $LCT = 73.3$.

Morinaga-san also presented his paper briefly. Rail curves are based on not vibration-isolated trains. If the FAA and WHO curves are included in the new ISO 1996-1 in addition to Annex E and Annex F exposure-response relationships, Japan would like to see the Japanese curves added.

Truls informed us that the WHO curves are based on a selection of surveys which may include a bias compared to other studies. There are several articles on this subject which Truls can find.

Truls is in process of submitting a new paper for publication soon, and is willing to send a draft to WG45. Truls agreed to send an information package to WG45, including suggestions of a few key papers to read, including them where possible so that they are available to WG45.

ICBEN (<https://icben2023.com/>) in June will likely provide additional conclusions and recommendations. In addition, the following conferences may provide additional input:

- Wind Turbine Noise conference in June:
<https://www.windturbine-noise.eu/content/conferences/10-wind-turbine-noise-2023/>
- Forum Acusticum 2023 in Turin in September: <https://www.faa2023.org/>
- Internoise 2023 in Tokyo in August: <https://internoise2023.org/>

It would be very interesting to determine if most or all regional differences can be quantified using CTL.

It was suggested that any dose-response curves presented should include the background of how they were collated to ease use and comparison with other curves.

Next steps

Truls to identify and make available a few key papers to read by WG45 in good time ahead of the May meeting (a few days time 😊)

WG to contact Truls on questions on the above ahead of the meeting

Stephen/Ken to lead a debate at the May meeting to conclude on potential changes to ISO 1996-1

Potentially add information about response studies, eg reference(s) to ISO 15666 plus additional guidance/specification eg in the information annexes (Stephen/Ken to lead discussion in May)

We need to present/explain the WHO European results. In addition, we need to discuss whether Japanese and other regional curves are to be included (Stephen/Ken to lead discussion in May)

WG45: identify their own and other known national/regional curves and assess whether the differences can be quantified using CTL?

ICBEN report to WG45: Truls

Wind Turbine Noise conference report: Lars

The above are copied to the action plan.

ISO 1996-2 Systematic Review

Systematic Review results N299

ISO1996-2 Systematic Review resulted in 5 votes for revision, and 33 comments from JP, DK, NO, DE, SA.

SC1 Management decision/recommendation is documented in ISO-TC 43-SC 1_N2920: "No final decision is taken. The result of the systematic review has been forwarded to ISO/TC 43/SC 1/WG 45 to discuss the result and comments to give a recommendation about the further procedure. The final vote on a recommendation on how to proceed will be decided at the next plenary meeting in May 2023."

If we wish a revision or an amendment, we need to decide whether it is a Work Item or a Preliminary Work Item. A Work Item has a fixed maximum duration of 36 months. A Preliminary Work Item does not. We would need to define whether the scope is unchanged, whether WG45 will deal with it, and under which project leader (I have volunteered). Once the plenary meeting decides on a revision, a call for experts will be sent out (we already have 5 named experts). A revision or amendment would also result in the standard being confirmed until this is developed.

The convenor's recommendation is a revision as a Preliminary Work Item in order for us to discuss the scope and changes before, once in agreement, proposing a Work Item with a proposed Working Draft for voting on, and better enabling us to complete more substantial work within the time frame allocated and without risk of cancellation.

We agreed not to run through the comments individually here but asked JP, DK and NO, representatives present to summarize them and highlight any specific ones of major interest:

- DK: Many possible improvements
- JP: changes due to ISO 1996-3 and 20065, alignment with Part 1 changes, also uncertainty needs simplification
- NO: new standards Annex A and secondary windscreens

WG45 discussion and decisions

We agreed to recommend a revision as a Preliminary Work Item within WG45 and with the convenor as project leader.

Next steps

The convenor will report back to SC1 Management

Any Other Business

Brief status of ISO/PAS 1996-3 and ISO TS 20065

ISO PAS 1996-3:2022 was published in July and an error found in equation 2 (which did not show up in the proofing copy!). An update was published in September.

ISO TS 20065:2022 was published in Dec 😊. There are some small editorial changes during publication. Like with the ISO PAS 1996-3, I will send the final proofed version to the Working Group for information only (no commercial use).

ISO 20065 Norsonic questions (N300)

Following questions received (*my notes in italics*):

1. The formulas 10 and 11 in Clause 5.3.4 for calculating the edge steepness of the tone is different from DIN45681. Is it supposed to be this way?
NB there are no obvious differences between the formulas in the equations 9 to 14 of ISO PAS 20065: 2016 and ISO DTS 20065:2022 (March).
2. In 5.3.4, is LT_{max} supposed to be the frequency bin under investigation, or the bin with the maximum value among the bins that are to assigned to this tone?
NB LT_{max} is defined in 3.19 as the maximum value among the bins assigned to this tone
3. In Clause 5.3.8 step 3, you can find the following 3 paragraphs among others:
“If a number of tones are present in a critical band, then their tone levels, $LT_{m,n}$ (run index n across all tones in the critical band; H is the number) are summed in terms of energy.”
“The tone frequency, f_{Tm} , is the frequency of the most pronounced tone, i.e. the tone with the greatest audibility, $\Delta L_{m,n}$.”
“The mean narrow-band level of the masking noise is that mean narrow-band level that was calculated in the iterative procedure in 5.3.2 [see Formula (6)] from the lines about the tone with this tone frequency.”

These three paragraphs together have me a bit confused. The tone with the greatest audibility within the critical band does not necessarily need to be the tone under investigation itself. In the case that a more prominent tone exist within the same band, look at the second paragraph I quoted above. This will now be the tone frequency even if it is not the tone under investigation. And then the next paragraph says “...from the lines about the tone with this tone frequency.” Hence, are you then using the mean narrow-band level around the most prominent tone instead of the tone under investigation in this example?

Guillaume and Tomohiro will look into this and draft a response in ca 1 months time. I volunteer will help review it.

Next meetings

May 4th (0900-1200 and 1300-1600) and 5th, (1800-2100) in Montreal Canada. Virtual participation is possible. Physical attendance is recommended as it provides attendees with better insight and networking. Timing is still tentative primarily due to room availability and will be finalized prior to setting up the meeting. Meeting will be set up in Zoom and the ISO portal by the convenor.

Holding a meeting in connection with Internoise 2023 in Chiba Japan? We could discuss both PWIs (1996-1 and, if approved, 1996-2). A few people will attend in person. It was discussed if it would be interesting to hold a meeting eg on the Thu am the day after Internoise. Would a suitable meeting room with virtual meeting functionality be available close to the conference venue? A decision on this is to be made at the May meeting.

Later meeting(s)? TBD. Eg Forum Acusticum?

Any Other Business

ISO/DIS 9613-2 is published for voting & (editorial) comments by mid February

IEC Wind Turbines CD comment handling is completed. It will be sent later this year as draft Technical Specification for commenting and voting. It now refers to ISO TS 20065. However, an issue regarding a change where tonal and impulsive adjustments are added together was raised (Part 1). I will forward this for discussion in WG45, eg in May. Bob will ask the previous convenor Paul Schomer. We should also ask Ichiro.

In addition, advice regarding windscreens is suggested (Part 2).

Actions from This Meeting

What	Who	When
Proposal for updated figures and text regarding specific and residual sound	Doug	March
Investigate with their national networks regarding wind turbine noise and transportation noise CTL studies	WG45	March
Present US wind turbine noise CTL papers referred to in US-018	USA WG 45 members	March
Prepare discussion of convenor's study on recent developments	WG45	March
Prepare for discussion of Exposure–Annoyance Relationships	WG45	April
Meeting preparation and documents timing guide	Doug	April
Jan meeting minutes review	WG45	20 Jan
Jan meeting minutes send out	Doug	27 Jan
ISO TS 20065 revision: Doug to discuss with ISO regarding potential ways forward then present to WG45 for discussion and agreement on next steps	Doug	March
Discuss when to transition the ISO 1996-1 revision from a Preliminary Work Item to a Work Item	Doug (Stephen and Ken)	Feb-Mar
Set up a discussion around the N298 input concerning Kct vs K in Table A.1 and regarding Fig A.1 Clause 3.3	Stephen (and Ken)	In May meeting
Ensure that the agreed changes resulting from N298 are implemented	Stephen (and Ken)	Up to or in connection

		with the May meeting
Ensure discussion of deferred comments (004 and US comments, etc) and the updated comments from Japan regarding the figures	Stephen (and Ken)	In May meeting
Truls to identify and make available a few key papers to read by WG45 in good time ahead of the May meeting	Truls	January
WG to contact Truls on questions on the papers	WG45	Feb-Apr
Discuss and conclude on potential changes to ISO 1996-1, and potentially adding information about response studies, reference(s) to ISO 15666 plus additional guidance/ specification, how we present/explain the WHO European results, and whether Japanese and other regional curves are to be included	Stephen (and Ken)	In May meeting
Identify their own and other known national/regional curves and assess whether the differences can be quantified using CTL?	WG45	Feb-Mar
ICBEN report to WG45	Truls	In May meeting
Wind Turbine Noise conference report to WG45	Lars	Jun-July
Report back to SC1 Management on recommendation to revise ISO 1996-2 as a Preliminary Work Item	Doug	Jan-Feb
Upload ISO TS 20065:2022 final proofed version to WG45 documents	Doug	Jan-Feb
Draft responses to Norsonic questions on ISO 20065 to enable convenor to respond	Guillaume and Tomohiro	Feb
Organise May meetings in Montreal (virtual)	Doug (Stephen and Ken)	Jan-Apr
Potential meeting in or near Chiba in Japan, eg on Thursday 24th August: Is there a suitable meeting room with virtual meeting functionality available?	Japanese WG45 members	Before the May meeting
Potential August meeting in Japan? Other aspects	Doug (Stephen and Ken)	Before the May meeting
Potential August meeting in Japan? Decision on whether to hold this	WG45	In May meeting
IEC Wind Turbines issue regarding managing adjustments: background and documents	Doug	Jan
Historical review of change in managing adjustments in Part 1 between 2003 and 2016 editions: Bob to ask Paul Schomer, Doug to ask Ichiro Yamada	Bob and Doug	Feb-Mar

Meeting Closed at 1730 CET

Yours sincerely,

Douglas Manvell

Convenor of ISO TC 43 / SC 1 / WG45