

**Minutes of the Technical Advisory Board for Mechanical Environments of the
Confederation for European Environmental Engineering Societies
Held on 19th February 2004 at Leuven, Belgium**

Present at the Meeting of the Technical Advisory Board for Mechanical Environments (TABME) were;

Dr U. Braunmiller	GUS
Mr T Geise	PLOT
Mr M. Juntunen	KOTEL
Mr M Mergeay	BEST
Mr. D. Richards	SEE (Chairman)
Mr T. Trost	SEES
Dr K Zieghan	GUS

Matters Arising

Apologies were received from Mr Ad Van Dorp (PLOT), Mr M. Dumelin (SSEE) and Mr O Nevalainen (Kotel). A list of TABME members, including corresponding members, was circulated. As usual this list is attached to the minutes as Attachment No 1.

Systematisation of Measurement Methodologies

STANAG 4370. David reported that copies of the final draft of version 3 were commonly available (CD copies of this were circulated to the CEN EG10).

Mil Std 810F It was reported that change note 3 was available on the web. {Chairman's note; the requested web address for this is: http://assist.daps.dla.mil/eAccess/index.cfm?ident_number=35978 }. See also report from Karl on meeting with Skip Connon.

IEC TC104. Markku gave a report of the meeting of IEC TC 104 had occurred, in Japan, early November. He reported a shortage of experts at the meeting excepting from Japan. A discussion occurred on the IEC 60721 structure with regard methodology.

DIN 30787. The last meeting of this group had agreed that the compilation of data was not a standard but support to a standard. As such it was proposed to produce as an annex or paper. Ed had requested information from Thomas on ships. It was further reported that in support of 30788 / 30789 information from the former GDR had been reviewed. This included a lot of measurements made during sea transportation. This appeared to include very good climatic data but not so good vibration data.

CEN TC 261 SC5 WG14 – Test Methods & Test Schedules . Karl reported that an e-mail had been sent out asking for support of this committee which is looking at using the above DIN's as the basis for a CEN standard. Currently this was accepted as a new work item but so far insufficient countries had nominated an expert for it to go ahead, however, lobbying continues.

UN Orange Book. No further information since last meeting.

CWA for Defence Procurement. Karl confirmed that the CWA had set up several Expert Groups one of which was EG10 on environmental testing. Karl had been appointed chair of that group and its first full meeting had occurred. Indeed the meeting had occurred the previous afternoon in Brussels. Karl gave a brief overview of that meeting.

Report from Karl on Meeting with Skip Connon. Karl reported that since the last meeting he had visited Skip Connon at the US Aberdeen Proving Ground. He reported that the US Aberdeen Proving Ground was now a "for profit" organisation and around 70% of its work was for projects and 30% basic support to the US army. The US Aberdeen Proving Ground tested vehicles, APU's, pontoons and small water vehicles. Karl said that he had been shown a new rolling road / simulator similar to that we had previously seen at Fiat in Italy. This was not yet in-service but was close. It was been developed in conjunction with the University of Maryland. Skip

had indicated that new vibration measurements had been made for Mil Std 810 which are generally below existing values. The current values are generally driven by vehicles which are no longer in-service. Unfortunately, Karl reported that Skip may not in future be able to make ad-hoc measurements as the “for profit” organisation may prevent this. With regard Mil Std 810, Skip was the designated successor to Herb Egbert but currently had no budget. As a consequence it was intended in future to utilise NATO Stanags. Karl also reported that Skip was preparing a methodologies comparison paper. Karl reported that Skip has indicated to him a NASA handbook on dynamic environment criteria. {chairman’s note this document is included in the references for STANAG 4370 v 3, it relates to rockets and was prepared by Piersol et al, and is an updated version of a report produced some 20 years).

Overview At a previous meeting the group had generated an overview of European and International work currently underway relating to transportation stresses. That overview was included as an attachment in the minutes of the last meeting. This meeting reviewed and updated the chart. The updated version is include here as attachment No 2. [Chairman’s note: It is intended to review this chart on a regular basis.]

Technical Papers - Working Practices

Following previous discussions the Chairman had circulated a further draft paper for comment. Further discussion on this draft occurred at this meeting.

During previous discussions it became apparent that the paper needed an overview. It was agreed and the working practices would need an overview of the larger process. It was further suggested that this could follow the same process as that of a paper by Markku viz. Environmental Test Tailoring Management plan, Life Cycle, Environmental Conditions, Derivation of Test Specification. Markku undertook to prepare an overview for the paper.

The chairman undertook to prepare a modified version of the existing paper and circulate for additional input. However, the action for the group to review the exist draft remained.

Presentation on IEC Report on Rail Vibration and Shock

David Richards gave a presentation on Rail shock and vibration environments identified for IEC 60721. The presentation is included as attachment No 3.

Topics for Future Consideration

The members of the TABME identified a number of potential future topics for future consideration;

- Basic techniques for data collection / analysis.

- FDS / MRS - Potential variations between different methods.

- Test tailoring – How do other people do it?

Any Other Business

A brief description of each of the TABME members was circulated after the last meeting. It was intended that this should go on the CEEES website. This was discussed and a number of changes proposed. The latest version is included as Attachment 4.

As an aside from discussions on other subjects Thomas Trost queried whether a discussion on Fatigue analysis software could be included in the agenda for the next meeting. The chairman agreed to include this.

Karl reminded the meeting about the 3rd Nuremburg conference scheduled for May 11th/ 12th 2005. Fliers for this and a call for papers are now available.

Tom Geise said that PLOT were looking again at the transportation database.

Karl reported that the packaging directive was under review. However, it will still require the reduction of packaging waste at source.

Karl reported that GUS had made deliberate attempts to encompass the environmental considerations of windpower. Some IEC standards are now available but do not include test severities for components. Wind turbines experience a significant mix of severe environments. Karl suggested this may be a useful future subject for TABME and CEEES.

Next Meeting

The date of the next meeting of the TABME is planned for 16th September 2004 in Sweden.

Attachments

- 1 Names and Addresses of DTAB Members
- 2 An Overview of European and International work
- 3 Presentation on Rail Shock & Vibration
- 4 TABME Membership (proposed for website)

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An Overview of European and International work

Group / Standard	Connection with CEEES Working Group	Other Connections
ISO – TC 108 wg 26 &27		Kjell Ahlin
ISO – TC 122	Thomas Trost	
ISO - Railway		
IEC TC 104	David Richards Aad Van Dorp Markus Dumelin Markku Juntunen	
CEN TC 261	Ulrich Braunmiller Thomas Trost	
CEN TC 320 Transportation Services		Soren Ostergaard
DIN 30787 NAVP 1.4	Ulrich Braunmiller Karl Zieghan	Ed Furrer
BSI	David Richards	
UN Orange Book		
Mil Std 810		Skip Connon
Nato Standard - AC310		David Richards
Nato Standard - AC301	Markus Dumelin	Peter van Harmelen David Richards
Nato Standard - ITOPS		
CEN Workshop Agreement Defence Procurement WS10	Karl Zieghan	
IEC Railways		Odd Sylwan

A Report on Rail Transportation for IEC TC 104 WG15

David Richards C Eng MSEE
Chairman of the
Confederation of European Environmental Engineering Societies
Mechanical Environments Technical Advisory Board



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CEES 2004/DPR/1

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Background

- Rail Transportation report part of series reviewing environmental and test severities for IEC 60721.
- Road & Air (jet) transport already complete in draft form.
- Format of report is integral part of data verification process (which is set out in annex of individual reports)
- Individual reports will eventually be combined to a single document



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Data Validation Process

- Approach needed as no data validated or verified in any classic sense
- Phase 1 - Data Source & Quality {undertaken on a single data item}
 - Largely visual appearance including annotation, availability of error assessment on measurements and analysis
- Phase 2 - Intra Data Source Comparison {undertaken on a data ensemble}
 - Is data set self consistent with regard measurements in different axes, locations, measurement conditions and trends generally
- Phase 3 Inter Data Source Comparison {undertaken across all data sources}
 - Are all data sets comparable. Are significant features consistent, are underlying severities consistent,



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Format of Reports

- Scope
- Data Source and Quality -
 - description of each main source and its content, are data understandable and is statistical accuracy information presented.
- Intra Data Source Comparison
 - Are each data set self consistent i.e. can trends be identified.
- Inter Data Source Comparison
 - How do data sources compare
- Environmental Description
- Comparison with IEC 60721
- Recommendations



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Data Encompassed in Rail Report

- **UK Rail Measurements** - does not meet criteria
- Association of American Rail Roads - Lengthwise Shocks
- Association of American Rail Roads - Intermodal Environment
- Association of American Rail Roads - Shock & Vibration in Boxcars
- Association of American Rail Roads - Shock & Vibration for Railroader Equipment
- Supplementary Data
 - G.E. Johnson; Foley; GAM EG 13; Miscellaneous Test data

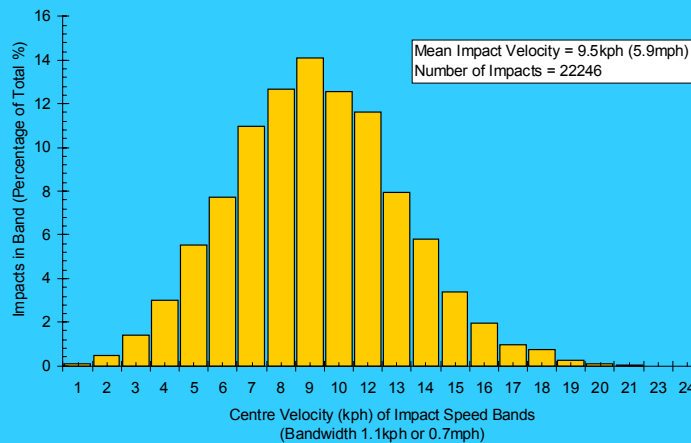


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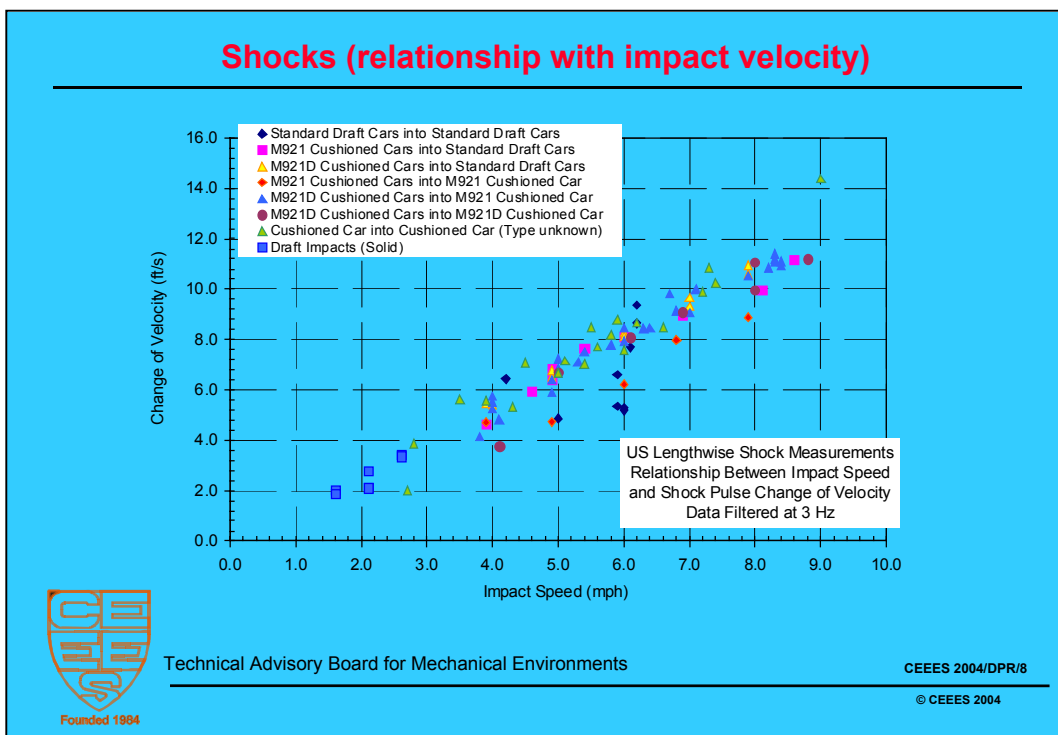
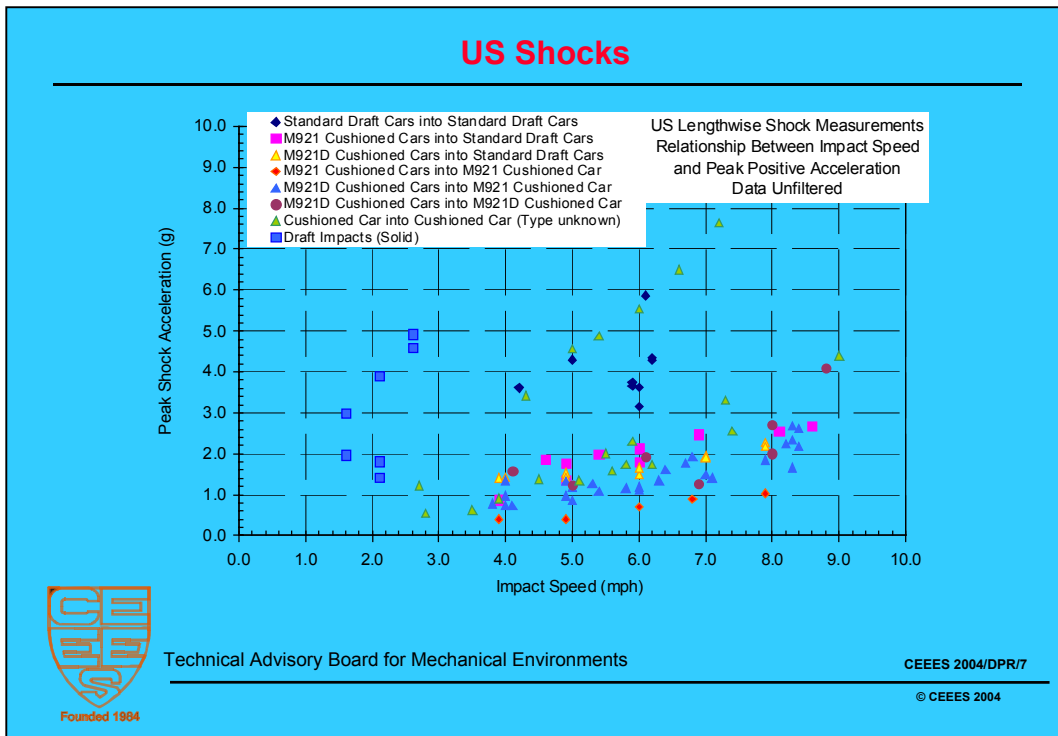
UK Shocks (out of date)

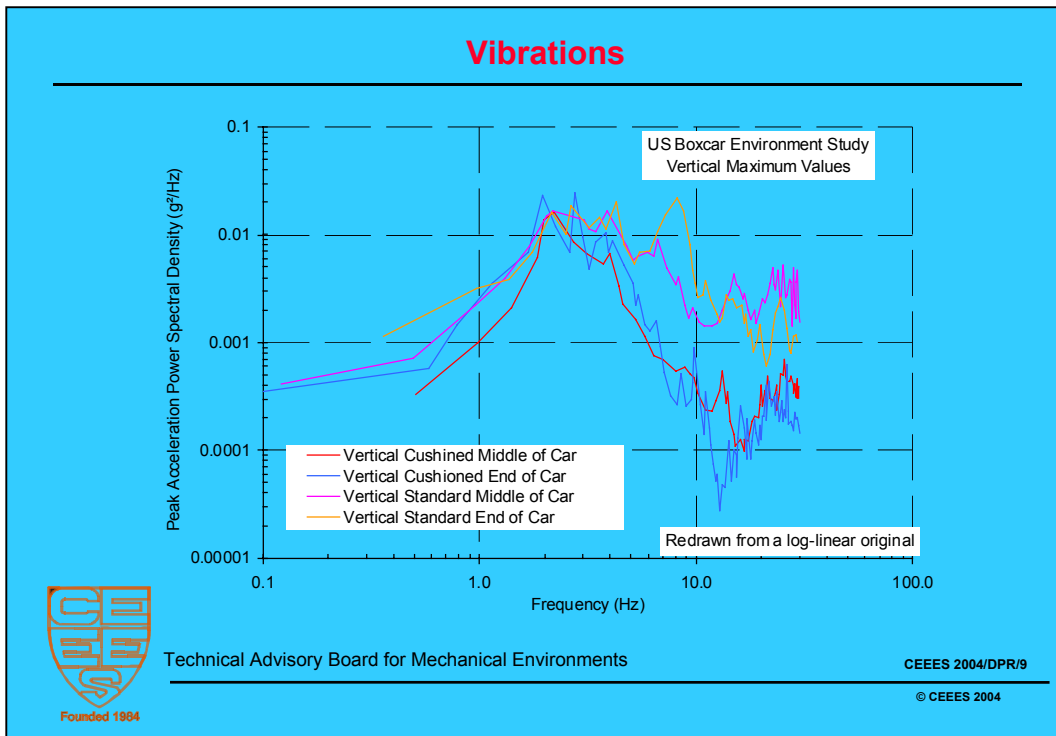


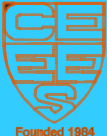
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- ### Recommendations
- **Data available from five primary sources and three secondary but need to encompass encompass both shock and vibration.**
 - **Validation process indicates good data (for each application) only from three sources (considered minimum)**
 - **Vibration does not seem a problem (no real surprise)**
 - **Current shock categories in IEC 60721**
 - 2M1 - Trains with soft suspension
 - 2M2 - Trains with soft suspension - basically hydraulic
 - 2M3 - Trains with hard suspension
 - **Categories don't seem to align with reality, do rail operational conditions use shunting, what is speed of shunting, is process been driven by US only?**
- 
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