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# **The Technical Advisory Board for Mechanical Environments.**

**David Richards CEng HonFSEE**

**[dave.richards@environmental.org](mailto:dave.richards@environmental.org) .uk**



# History

- **The Technical Advisory Board for Mechanical Environments was previously known as the Transportation Stresses Working Group (TSWG).**
- **Originally chaired by Brian Hibbert**
- **Meeting minutes since 1993 are included on the website.**
- **Membership of the group is described on the website**
- **Contact information for each member is attached to each set of minutes**



# Aims and Objectives

- **The aim of the TABME is to advance methodologies and technologies for quantifying, describing and simulating mechanical environmental conditions experienced by equipment during its life cycle.**
- **The TABME acts as a forum for European collaboration and interaction for the generation of national and international standards related to mechanical environmental testing, establishing the environmental severities as well as the derivation of test severities from actual environmental conditions.**



# Aims and Objectives

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- In addition to the above the TABME has acted as a co-ordinator for European round robin exercises undertaken with the aim of improving the techniques and methodologies used within Europe to quantify mechanical severities.
- For the same reasons the TABME has championed novel methodologies.



# Two Round Robin Exercises

- The first round robin exercises arose from a survey initiated in 1989.
- A round robin exercise was suggested as one method by which the range of methodologies in use could be determined.
- The main aim of the first round robin exercise was to identify the range of methods used for the assessment of road transportation dynamic data.
- The exercise was also intended to quantify any variations arising from the use of different methodologies.
- Results of the exercise are on the website



# The Second Round Robin Exercise

- The second round robin exercise was intended to address a specific aspect identified in the first exercise.
- That is to identify and quantify shocks from within the background vibration.
- The proposed aims and objectives of the second exercise were;
  - To evaluate the methods in current use
  - To quantify the variations arising from the use of different methodologies.
  - To generate progressively more difficult test cases against which experience and skill can be improved.



# Source Reduction by European Testing Schedules (SRETS)

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- The aim of the EC funded SRETS project was to gather data from a number of sources and packed products being transported.
- The collected data formed the basis for setting up state-of-the-art in Europe for test methods and test schedules of packages and products.
- The final report from the SRETS work is included on the website.



# SRETS

## ■ The intent of the project were:

- To examine the correlation between damages and products, and to classify the products by means of sensitiveness.
- To make a database with measured data
- To define mechanic-dynamic transporting tests and to verify these tests
- To assemble the results in a test schedule
- To make suggestions for transportation standards



# Transportation Severities

- The TAB has acted as a focus for interchanges for several projects intent on producing information on transportation severities.
- Resulting documentation includes;
  - Working papers for IEC TC 104 WG15
    - Shock and vibration from road transportation
    - Shock and vibration from rail transportation
    - Shock and vibration from fixed wing jet aircraft transportation
  - DIN 30786 / 7



# Championing Novel Methodologies

- Over the years the CEEES TABME has acted as a forum for dissemination of techniques and applications associated with MRS & FDS.
- These are vibration analysis tools Maximum Response Spectra (MRS) and Fatigue Damage Spectra (FDS) originally developed within the French Atomic Energy Authority.
- Two papers are included on the website;
- The first paper uses MRS and FDS to compare the damage effects of different test severities for transportation.
- The second paper sets out an exercise involving the acquisition of automotive vibration data and the conversion of this, using MRS and FDS, into a test severity for automotive applications.



# CEN Workshop 10 Expert Group 8

- The European Commission mandated the European Standardisation Organisation CEN to screen and to compare the existing national and international standards related to defence procurement and to give recommendations for preferred application in future.
- As a first activity, European national Ministries for Defence compiled a database of widely adopted standards in use.
- Eight expert groups were tasked to undertake the actual comparison work
- The Environmental EG was made up extensively of CEEES people
- The Final report of CEN WS 10 Expert Group 8 is included on the website



# Future Activities

- **Completion of methodologies paper on deriving test severities from measured data.**
- **Proposal for updates to IEC 60068 test rigs advisory document**
- **Future discussion topics;**
  - Basic techniques for data collection / analysis
  - Test tailoring “how do other people do it”
  - Lean and or virtual testing
  - Life estimation & extension
  - FDS / MRS potential variations between methods

