2009/10

JCSS Newsletter

Background and General Information

General activities of the JCSS

The main aim of the JCSS is to support the engineering associations of the Liaison Committee (CIB, ECCS, fib, IABSE and RILEM).

The tasks of the JCSS involve pre-normative work and development of guidelines, hereunder:

- The JCSS Probabilistic Model Code
- Assessment of existing structures
- Guidelines for Risk Assessment
- Targeted workshops and special sessions at conferences
- Defining and initiating joint research projects

Present organization

- President M.H. Faber
- Previous President T. Vrouwenvelder

Board members:

- IABSE N. P. Høj
- CIB G. Canisius
- fib L. Taerwe
- ECCS J.-B. Schleich
- RILEM P. Tanner

- JCSS Working Group 1 J.D. Sørensen
- JCSS Working Group 2 M.A. Maes

Membership of the JCSS

Currently there are 66 members in the JCSS covering most geographical parts of the world. Not all members are active and presently 24 participate as corresponding members.

New memberships are based on personal interest and commitment, recommendations and scientific/professional credentials. Usually new members are linked to specific, defined activities (e.g. a new section in the PMC). It is as a general rule expected that members participate at least at one of the two biannual meetings of the JCSS.

Examples of previous outreach activities

Conducted targeted workshops

- Structural Robustness, Stanford University, Stanford, USA, October 28, 2008.
- Risk Acceptance and Risk Communication, Stanford University, Stanford, USA, March 26-27, 2007.
- Robustness of Structures, BRE, Garston, Watford, UK, November 28-29, 2005.
- Life-Cycle Cost Analysis and Design of Civil Infrastructure Systems, EPFL Lausanne, Switzerland, March 24-26, 2003.
- Reliability Based Code Calibration, ETH Zurich, Switzerland, March 21-22, 2002.

Initiated joint research projects

- COST TU0601, Robustness of Structures, http://www.cost-tu0601.ethz.ch .
- International Forum on Engineering Decision Making: Fourth Forum, Hakone, Japan, May 13-15, 2009, http://www.ifed.ethz.ch .

News from the working parties

Working party 1: Probabilistic Model Code (PMC)

WP1 is continuously extending and updating the probabilistic model codes. In the Basis of Design of the PMC the section on Target Reliability has been updated and the section on Robustness is presently being revised. The section on robustness will be updated partly based on the results from the COST action TU0601 on Robustness of Structures.

New probabilistic model codes are currently being developed for:

- Fatigue
- Environmental attack
- Traffic loads
- Thermal loads
- Composite structures
- Masonry structures

Further, it is planned within the next 2-3 years to develop probabilistic model codes for:

- Glass structures
- Load/hazard modelling

Within the Cost Action TU0601, mentioned before, fact sheets for explosions and human error have been made that can be used as first draft for corresponding chapters of the model code.

For concrete the prefab industry have send new data. It turned out to correspond well with the present models in chapter 2.2 of the model code.

A short note was produced for a procedure to combine test results and FEM calculations in order to reduce the uncertainties.

In December a workshop was held on how to incorporate partial factors in nonlinear FEM calculations. Experts from the concrete, the steel, the soil, and reliability world discussed together. A summary of the workshop is available.

Working party 2: Risk Analysis and Risk Management

During the past two years WP2 has focused on preparing a brand new document on the principles and fundamentals of risk assessment of structural systems and engineering infrastructure. This document can be downloaded from the same link. This document contains several novelties, particularly with respect to system interpretation, consequence modelling, robustness, and holistic/sustainable decision making. WP2 has been very keen to provide support for this new guideline document by means of a set of background documents, which are also available on the JCSS website:

- Theoretical basis for decision making and risk analysis
- Uncertainties and Probability
- Acceptance Criteria
- LQI – the Life Quality Index
- Consequence Modelling
- Terminology

In addition, WP2 is currently developing a number of fully worked example applications (highway bridges, ship design/maintenance, rock-fall galleries and other examples). These should be available soon.
WP2 identified new needs and/or opportunities at its spring 2009 meetings in consultation with its liaising organizations. These will be fully defined and initiated at the Fall 2009 meeting of WP2 in Delft

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Recent activities

Meetings

- 47th Meeting of the JCSS working party, COWI, Copenhagen, Denmark, April 16-17, 2009 organized by Inger B. Kroon.

- 48th JCSS Meeting, Delft, The Netherlands, November 30, 2009 and

  JCSS Workshop on Semiprobabilistic FEM Calculations, Delft, The Netherlands December 1- 2, 2009 organized by Ton Vrouwenvelder.

Activities in planning

New focus areas

Best engineering practices

The recent works on the issues related to criteria for life safety, hereunder the LQI, have lead to a new understanding of the significance of the role of engineering best practices. The JCSS will investigate this issue further and aims to develop recommendations for the Liaison Committee on how to assess and improve best practices in the future.

Probabilistic modelling of natural hazards and natural hazards risk management

As a logical extension of the work of the JCSS in the past it is envisaged that the JCSS in the coming years will specifically address the issues related to the probabilistic modelling of the performance of the built environment in regard to natural hazards and the management of the related risks.

Interim structures and life safety

The engineering profession seems to have rather different perspectives for what concerns the assessment of target reliabilities for interim structures. The JCSS will direct efforts in the coming months to provide more clear principles to the Liaison Committee on how to ensure that interim structures are designed safe and reliable.

Workshops and other events

For the coming period the JCSS is sponsoring and planning the following workshops and events:

- International Forum on Engineering Decision Making: Fifth Forum, Stoos, Switzerland, December 7-11, 2010, www.ifed.ethz.ch .
- 11th International Conference on Applications of Statistics and Probability in Civil Engineering, ETH Zurich, Switzerland, August 1-4, 2011, www.icasp11.ethz.ch.

Next meetings and events of the JCSS

- 49th JCSS Meeting, TUM, Munich, Germany, April 12-13, 2010 organized by Daniel Straub.

  In connection with the IFIP WG7.5 working conference “Reliability and optimization of structural systems” April 7-10, 2010, http://www.era.bv.tum.de/IFIP/.

- 50th JCSS Meeting, Copenhagen, Denmark, October 6, 2010.

  In connection with a COST TU0601 (Robustness) workshop/meeting October 4-5, 2010.