

## **BOARD REPORT**

**Committee Name:** Earthquakes

**Submitted by:** Lelio Mejia (Chair), Jack Montgomery (Vice Chair), Zara Plasencia (YP Vice Chair)

**Report Date:** March 4, 2021

### **Committee Mission/Purpose**

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The Earthquakes Committee continues to actively work on its objectives of a) promoting the seismic safety of dams and the development of knowledge on seismic analysis and design of dams, and b) supporting the ICOLD Committee on Seismic Aspects of Dam Design. The Committee collects information on earthquake instrumentation, recorded data and performance of dams during earthquakes; evaluates and develops guides for modern methods of design of dams and reservoirs to withstand earthquakes and identifies needs for new knowledge and research on designing and analyzing dams. It keeps the general membership informed of the committee's work through timely publication of reports and white papers, articles in the Newsletter, and planning and implementation of periodic workshops. The Committee also collaborates with and/or assists other committees in developing and promoting education and training activities.

### **2020 Goals/Accomplishments**

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The Committee met remotely twice during 2020. The first meeting was held on May 28 and the second on November 16. The committee added 10 new members in 2020 and its roster currently stands at 53. The membership includes representatives of private, government, and academic entities from the United States and Canada. The Committee worked on several initiatives intended to develop and disseminate knowledge on dam seismic design.

A key accomplishment was to finalize the draft of the USSD guidelines for "Analysis of seismic deformations of embankment dams". This effort was led by a subcommittee consisting of Sam Abbaszadeh, Richard Armstrong, Michael Beaty, Jack Montgomery and Lelio Mejia (Chairperson). The draft document was submitted for review by the full Committee and is currently in review by the Board-approved Peer Review Committee (PRC).

Other key accomplishments included: 1) Planning of a virtual seminar with Professor Jason DeJong of UC Davis on deformation of granular materials during seismic loading. This effort was led by Jack Montgomery and is important for engineers working on earth dams and the meeting was successfully held in January 2021 with over 60 attendees. 2) Jack Montgomery and Zara Plasencia participated in the planning of the 2020 conference and several committee members assisted with reviewing abstracts and papers. The committee planned to hold two sessions of oral presentations and one of interactive presentations. 3) Planning of a full-day workshop for the 2021 USSD Annual Conference, titled "Earthquake Shaking and Ground Failure Hazards for Dams, including Automated Real-time Inspection Prioritization". This effort was led by Zara Plasencia and will include speakers from FERC, USGS, USACE, and USBR.

Other white paper initiatives currently in progress include: 1) updating the guidelines for the selection of earthquake ground motion parameters of dams (which were last updated by the Committee in 1999), and 2) developing guidelines for the seismic design and evaluation of structures appurtenant to dams.

### **2021 Goals**

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The Committee will aim to complete the PRC review of the guidelines on analysis of seismic deformations of embankment dams, and hopes to have the guidelines published by USSD by the third quarter of 2021. It will also continue to work on the two standing white paper initiatives mentioned above, and strive to complete one of those in 2021.

The Committee will be hosting the workshop on Earthquake Shaking and Ground Failure Hazards for Dams, and sessions on earthquake aspects of dams during the 2021 USSD Annual Conference. In addition, we will be holding a meeting shortly after the USSD Annual Conference, and a second meeting later in the year.

Planning for a benchmark workshop on numerical analysis of seismic deformations of embankment dams is in the early stages. The idea will be discussed and refined during the upcoming meeting of the Committee, and may involve collaboration with the ICOLD committees on numerical analysis and seismic design. In addition, the Committee will continue to support the ICOLD seismic committee and plan to participate in the 2021 ICOLD Congress in Marseilles, France.

### What do you need to accomplish your 2021 goals?

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The Committee will need active participation from its membership and support from the USSD Board and Executive Office to achieve its 2021 goals. Support will be needed for the timely resolution of PRC comments and publication of the seismic deformation analysis guidelines, and for coordination of efforts to plan and implement future workshops, in particular a possible joint workshop with ICOLD Committees A and B.