Special Section on Resilience of Engineering Systems

Our modern life has grown to depend on many and nearly ubiquitous large complex engineering systems, such as tunnels, gas/oil pipelines, geotechnical infrastructures, etc. All of these are the backbones of our modern society, therefore, complex real-world systems should not only be reliable, but also have high resilient capacity. Resilience is generally recognised as the ability of a critical infrastructure to recover from a disruptive event, and there is no doubt that we are experiencing a "resilience renaissance", with attempts to embed system resilience almost everywhere for the well being of our community. Therefore, analysing and modelling the resilience of complex systems and networks has recently received significant interest from academia and industry. It has been recognised that such comprehensive development requires innovative theories, approaches and technologies for resilient design and risk reduction for complex systems and networks. Such developments will facilitate further robust economic growth through resilient and efficient high-performance engineering systems. Additionally, developments should target resilient and cost-effective solutions to eliminate or reduce these vulnerabilities by making our complex systems and networks resilient at a minimum level of risk proneness. The goal is not to preserve existing systems, but to preserve and even enhance functions of critical high-technology systems, where failure consequences can be particularly severe. While qualitative assessment approaches are useful to understand how bad things are, quantitative assessment measures provide numerical estimation of system performance, time and cost that are more meaningful to stakeholders.

This Special Section of the *ASCE-ASME Journal of Risk and Uncertainty in Engineering System: Part B* is dedicated to resilience of engineering systems. It consists of six papers providing snapshots of selected recent developments in the field. The Special Section covers theories and approaches that address resilience of engineering systems from different angles. Included are developments for assessing the seismic resilience of power grid systems, for evaluating the magnitude and spatial extend of disruptions across interdependent national infrastructure networks, for assessing the implication of track location by example of the Joplin Tornado, for resilience decision-making for complex systems, for analysing reliability strategies of phased mission systems, and for modelling uncertain and dynamic interdependencies of infrastructure systems.

The Guest Editors wish to thank all the authors of this special section for contributing high quality papers. We would like to thank the referees who have critically evaluated the papers within the short stipulated time. Moreover, we sincerely thank the Editor-in-Chief's inspiring leadership. Finally, we hope that the readership of the *ASCE-ASME Journal of Risk and Uncertainty in Engineering System: Part B* will enjoy this Special Section, and that it will help to advance our understanding of resilience of engineering systems.

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