Structural Engineering Special Seminar

Fukushima Daiichi Nuclear Accident: Why it Happened

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Abstract: The Great East Japan Earthquake occurred on 11 March 2011 in Japan. It was caused by a sudden release of energy at the interface where the Pacific tectonic plate forces its way under the North American tectonic plate. At the Fukushima Daiichi nuclear power plant, operated by the Tokyo Electric Power Company, the earthquake caused damage to the electric power supply lines to the site, and the tsunami caused substantial destruction of the operational and safety infrastructure on the site. The combined effect led to the loss of off-site and on-site electrical power. This resulted in the loss of the cooling function at the three operating reactor units as well as at the spent fuel pools. Despite the efforts of the operators at the Fukushima Daiichi nuclear power plant to maintain control, the reactor cores in Units 1–3 overheated, the nuclear fuel melted, and the three containment vessels were breached. Radionuclides were released from the plant to the atmosphere and were deposited on land and on the ocean. People within a radius of 20 km of the site and in other designated areas were evacuated, and those within a radius of 20–30 km were instructed to shelter before later being advised to voluntarily evacuate. The presentation is focused on the root cause: the external flooding of the plant, with emphasis on which were the original design basis, which were the Japanese regulations, which were the actions taken during the almost 40 years of operation, which assessments were conducted and, finally, the lessons learned to avoid such accidents in future.

Bio: Mr. Godoy is from Argentina, graduated with honors as civil engineer in Buenos Aires University, with forty-five years of experience in the nuclear area which has been his professional main field of activity. His areas of expertise are related to the structural design, the selection and evaluation of sites and the design and safety assessment of nuclear installations, particularly, in aspects related to external events.
His professional career was developed in private engineering and construction companies, independent consultancy and international organizations. In this regard, Mr. Godoy has been involved with the International Atomic Energy Agency, the IAEA, since 1988 as external expert and staff member for fourteen years. He was organizer and leader of over one hundred thirty IAEA safety review missions to countries in all parts of the world, in multidisciplinary expert teams. At IAEA, he was Acting Centre Head and founder of the International Seismic Safety Centre as a global focal point to enhance the safety of nuclear installations worldwide against earthquakes and other external events, until his retirement in 2010.

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1311 Yeh Student Center