

Damage Investigation of the 2004 Sumatra Earthquake and the Indian Ocean Tsunami

On 26 December 2004, a great earthquake with magnitude of 9.5 occurred off the northern Sumatra Island of the Republic of Indonesia. The tsunami with an estimated height of over 30 m impacted all Indian Ocean countries. More than 200,000 people were killed or missing by the effect of the tsunami.

Several of the UJNR Panel on Wind and Seismic Effects' member agencies sent teams or joined reconnaissance teams to assess the damages to the affected area including the Kingdom of Thailand, Sri Lanka, Sumatra Island Indonesia, and the Republic of Maldives. The Japanese Government Investigation Team headed by Mr. Tatsuo HAMAGUCHI, former Director-General of the National Institute of Land, Infrastructure, and Management (NILIM) investigated the affected areas of Thailand and Sri Lanka to:

- support the recovery of these countries,
- evaluate the mid- and long-term recovery and reconstruction assistance required by the Government of Japan, and
- perform post disaster investigations leading to improved earthquake design and construction practices.

Thirty-three members from the Japanese Government agencies participated in the investigations. Also, the UJNR member agencies performed investigation in cooperation with universities including the Japan Society of Civil Engineers (JSCE) to the Sumatra Island, Sri Lanka and Maldives. The damage investigation reports soon will be published.



Destruction of Houses by Tsunami (Sumatra)



Drift of Power Generation Ship by Tsunami (Sumatra)

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WTC Report on Towers Collapse

On 23 June 2005 the National Institute of Standards and Technology (NIST) published, *Final Report of the National Construction Safety Team on the Collapse of the World Trade Center Towers (Draft)* NIST NCSTAR. The report is available at NIST's web site <http://wtc.nist.gov>. The report describes NIST's reconstruction of the World Trade Center (WTC) towers collapse; references 43 companion reports; shares NIST's 30 recommendations for actions; and provides specificity about the fire and structural analyses employed and their findings. This report was open for six-weeks of public comments that closed on 4 August 2005. A WTC Conference is scheduled during 13-15 September 2005 to discuss NIST's comments and agree on the final report's recommendations. The report requests those organizations that develop building and fire safety codes, standards and practices—and the state and local agencies that adopt them—to make specific changes to improve the safety of tall buildings, their occupants, and first responders. The recommendations, contained within 43 draft reports (totaling some 10,000 pages) address:

- a. specific improvements to building standards, codes and practices;
- b. changes to, or the establishment of, evacuation and emergency response procedures; and
- c. research and other appropriate actions needed to help prevent future building failures.

The recommendations are classified into eight groups:

1. Increased Structural Integrity
2. Enhanced Fire Resistance of Structures
3. New Methods for Fire Resistance Design of Structures
4. Active Fire Protection
5. Improved Building Evacuation
6. Improved Emergency Response
7. Improved Procedures and Practices
8. Education and Training

NIST's investigation of the WTC towers fires and collapses was conducted under the National Construction Safety Team (NCST) Act. The act gives NIST the responsibility for conducting fact-finding investigations of building-related failures that result in substantial loss of life. NIST has no regulatory authority under the NCST Act.

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