

Earthquake and Hurricane Risk Evaluations

Caribbean

Client
Marubeni

Completion Date
2007



Marubeni, one of Japan's largest trading conglomerates, purchased a group of electrical generating and distribution facilities in the Caribbean. The facilities purchased in 2007 are on four islands — Trinidad, Jamaica, Curaçao and Grand Bahama — that are exposed to significant risk of hurricanes, earthquakes, storm surge or all three.

Over a two-month period, the Thornton Tomasetti team visited 11 power plants, examined part of nearly 12,000 miles (19,000 kilometers) of transmission lines, and assessed substations, hydroelectric facilities, warehouses and offices. They interviewed dozens of employees who knew what past storms had damaged, and what retrofits were installed. For each property, the objective was to determine the vulnerability and potential losses from earthquakes, hurricane winds and storm surge.

One of the most challenging aspects of the work was fine-tuning the loss modeling software to account for the added data input from the engineering field studies and more appropriately account for likely risks. The probable maximum loss the team computed was found by the client to be within the insured limits for the modeled 250-year and 500-year events (those with, respectively, a 0.4 percent and 0.2 percent chance of happening in any year on average).