

## Large-scale Tsunami Physical Simulator

### Background

Safety reviews of nuclear power stations in accordance with the new regulatory requirements are being carried out by Nuclear Regulation Authority (NRA), Japan. Furthermore, periodic safety reviews for NPSs are also required after NPSs recommence their operations. The NRA requires these periodic safety reviews to include probabilistic risk assessment (PRA) for NPSs, and this involves assessing risks against not only design basis tsunamis but also beyond-design basis tsunamis. In order to appropriately perform

the risk assessment against beyond-design basis tsunamis, systematization of the evaluation and verification methods for fragility of structures and instruments against tsunami in inundation areas are needed. To carry out verification tests for the fragility of structures and instruments in NPSs against giant tsunamis, CRIEPI has installed a Large-scale Tsunami Physical Simulator, a large flume in which various kinds of tsunami inundation flows are generated faithfully on large-scale.

### Outline

This facility is able to generate tsunami-inundation flow with a steep front, long-duration, high-speed and large-depth flow on a large scale. For example, the inundated tsunami with a depth of 5 meters observed at Kesennuma city on the 2011 Tohoku earthquake is reproduced on a 1/3-scale in the flume. This facility makes

verification experiments of fragility of the structures or instruments under site specific tsunami inundation flows possible. Using this facility, large-scale experiments for evaluations of tsunami hydrodynamic load, debris impact load, and damage mode of structures under tsunami-loading conditions.

### Specifications

Size (test section): 20 m length, 4 m width, 2.5 m height (with a 1 m deep scouring pit).  
 Maximum velocity: 7 m/s  
 Maximum flow volume: 10 ton/s  
 Volume of water tank: 650 ton  
 Maximum depth of water tank: 6.5m



### [Location and date of installation]

Abiko area / February, 2014

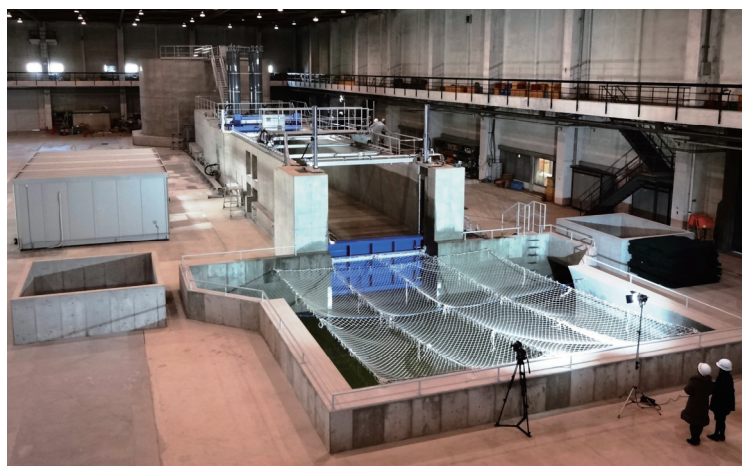


Photo 1: External view of the Large-scale Tsunami Physical Simulator