



Small Scale Burst Test Facility

CNL's one of a kind Small Scale Burst Test Facility (SSBTF) is located at its Chalk River Laboratories. The SSBTF was created to examine the consequences of a spontaneous fuel channel rupture in a CANDU® reactor that would result in saturated water at 10 to 13 MPa being injected into the surrounding water. The rapid venting of coolant would send out pressure waves into the surrounding heavy water moderator, which could impact the integrity of neighbouring in-core structures. The small scale experiments conducted in the SSBTF provides dynamic data required to support computer code development and validation for this scenario that otherwise would not be obtainable.

The facility consists of a 1.24-m diameter thick walled vessel designed to mimic the stiffness of a CANDU calandria vessel and has the following control and measurement systems:

- 20 MPa Argon Pressurizing System
- Steam heating to heat calandria vessel water to 80°C
- Five separate heating control systems to heat the rupture channel (i.e., simulated fuel channel, assembly) and surge tanks to temperatures from 250°C to 330°C, and
- High-speed video and data acquisition, capable of logging data at up to 100 kHz

As the Small Scale Burst Test Facility examines the effect of submerged structures to sudden pressure pulses, it is amiable to working with many partners, including:

- The Government of Canada for the response of submerged vessels to explosive charges
- Industry for the sudden collapse behaviour of pipelines under pressure pulses
- The metal forming industry for the explosive hydroforming of sheet metal into complex shapes with very little residual stresses, and
- Universities studying the response of submerged components to pressure waves

