



RD-14M Experimental Facility

The RD-14M Facility, located at CNL's Whiteshell Laboratories, was established in 1984 and has been extensively modified over this time period. The experiments performed there, which are essential for licensing of new and existing CANDU® reactors, simulate the behaviour of the entire primary heat transport system of a reactor and is the key facility needed in the safety analysis for the licensing of these types of reactors.

The RD-14M Facility is flexible; it can be set up to simulate a CANDU 6® reactor, the Enhanced CANDU 6 (EC6®), the Darlington reactor, and the ACR-1000® reactor. It has full-elevation, scaled emergency-core cooling systems for each of these reactor designs. It can operate at typical CANDU primary system pressures of up to 11 MPa and temperatures up to 310°C, and can also operate at ACR-1000 conditions, 12.5 MPa and 319°C. The facility is designed to produce similar fluid mass flux, transit time, pressure, and enthalpy distributions in the primary system as those in a typical CANDU reactor, under both forced and natural circulation conditions.

The RD-14M Facility technical staff have extensive experience in facility operation, including skills in designing and executing experiments and undertaking complex data analysis. Staff are also able to perform pre-test simulations using CNL's thermalhydraulics analysis code Canadian Algorithm for Thermalhydraulic Networking Analysis (CATHENA), and can undertake scaling analysis in support of test programs.

CNL has many complementary research facilities that can be used in conjunction with the RD-14M Facility. Of note is the Thermalhydraulics Laboratory located at the Chalk River Laboratories, which can simulate specific CANDU reactor components, full-size channels, headers, and moderator cooling systems. The RD-14M Facility would welcome partnerships with industry in support of the continued licensing of existing CANDU plants, the development and licensing of new CANDU designs, as well as, universities looking to study advanced reactor concepts or enhancing nuclear reactor safety.

