

# International Nuclear Energy Research Initiative

**U.S. DEPARTMENT OF ENERGY  
INTERNATIONAL NUCLEAR ENERGY RESEARCH INITIATIVE  
DOE/Canada**

## ABSTRACT

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### ACR Hydrogen Production for Heavy Oil Recovery

**Principal Investigator (U.S.):** R. Anderson, Idaho  
National Engineering and Environmental Laboratory  
(INEEL)

**Project Number:** 2004-004-C

**Project Start Date:** June 2004

**Principal Investigator (Canada):** R. Sadhankar,  
Atomic Energy Canada Ltd. (AECL)

**Project End Date:** May 2007

**Collaborator:** Chalk River Laboratories (CRL)

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The oilsands in Northern Alberta are estimated to contain 300 billion barrels of recoverable petroleum. As recovered, this is a very heavy crude and requires large additions of hydrogen to produce a synthetic crude comparable to light oils. Production of this resource is quite energyintensive, with the energy currently coming from natural gas. Since this is a far smaller resource than the oilsands, new energy sources are needed. Nuclear-produced steam could supply heat for the Steam-Assisted Gravity-Drainage (SAGD) process currently favoured for new oilsands production. However, about one-third of the natural gas input currently is used to produce hydrogen and a nuclear source of hydrogen would also be desirable.

The project will analyze the engineering feasibility of using the Advanced CANDU Reactor as both a source of steam and of hydrogen for enhanced oil recovery, especially as needed by oil sands projects now under construction in and planned for the Athabasca region of Alberta. The main emphasis will be on assessment of methods to produce hydrogen.

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