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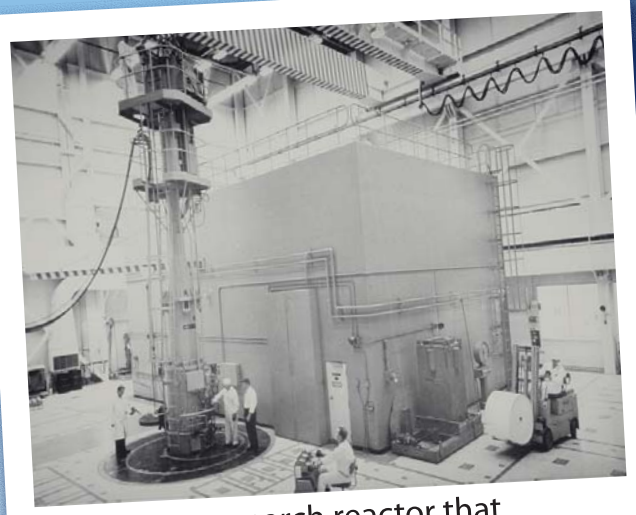
# WR-1 In Situ Decommissioning:



WR-1 was a research reactor that contributed to the development of Canada's fleet of power reactors.

## What is it?

Whiteshell Reactor 1, known commonly as WR-1, was placed in service in 1965 to scientifically demonstrate the concept of an organic oil-cooled reactor as a potential alternative to the more commonly known water-cooled system.

While WR-1 did not lead to commercialization of the design, WR-1's contribution to nuclear research was extensive, including providing a facility for engineering tests on alternative fuels, fuel channels, and reactor coolants.

WR-1 reached a maximum of 60 megawatt thermal (MWt), which is significantly less than reactors that generate electricity which operate at values greater than 1,500 MWt. The safe shutdown of WR-1 was done in a planned and controlled manner. Shutdown in 1985 and all fuel removed thereafter, WR-1 has been safely maintained in a state of "storage with surveillance."

The Government of Canada is taking action to decommission nuclear sites across the country. To tackle WR-1, Canadian Nuclear Laboratories (CNL) is proposing in situ decommissioning as the preferred option for WR-1 decommissioning. This option results in a permanent, passive disposal on site by encasing all below surface structures and systems in place with concrete grouts. The structure will then be capped with concrete and covered with an engineered barrier.

Rendering Disection of WR-1

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# WR-1 In Situ Decommissioning:

## Why?

- The WR-1 facility has not operated since 1985, is no longer in use and is considered a nuclear legacy liability.
- The Government of Canada is committed to the responsible management of Canada's nuclear legacy liabilities. Decommissioning WR-1 will help towards achieving this commitment.
- The facility has already been partially decommissioned and put into "storage with surveillance." Now, the time is right to complete its decommissioning.

Grouted and Capped

End Stage

## Understanding In Situ Decommissioning:

In situ decommissioning:

- Encapsulates the waste in concrete below ground.
- Is a sustainable solution to isolate and contain the reactor vessel, systems and components from the environment.
- Is effective because it has robust engineered safety features providing multiple defenses to inhibit, reduce and delay the migration of contaminants ensuring any releases to the environment are below regulatory limits.
- Ensures minimal risk to the public and the environment, including the prevention of unintentional human contact in the future.
- Disposes of the waste now, ensuring future generations will not have to manage the waste.
- This approach has been successfully implemented at many nuclear facilities world wide.

## What are the benefits of this technique?

- It's timely and responsible. It closes the facility now, ensuring future generations will not have to manage the liability. Monitoring and institutional controls will continue.
- It's science-based. In situ technology is based on sound scientific and engineering principles.
- It's been done before. This method has been demonstrated as successful at other sites – at least a dozen nuclear facilities worldwide have implemented this technology.
- It significantly reduces injury risk to workers performing the work as less intrusive cutting and handling is needed.

## What is the timeline?

- **MAY 2016** – EA launched for the WR-1 decommissioning project.
- **JUNE 2016** – the public comment period on the Project Description ended
- **FALL 2017** – CNL submits the draft EIS for WR-1 to the CNSC
- **OCT 2017** – October 6, 2017 – December 20, 2017 – public comment period.
- **DEC 2017** – Responding to public, Indigenous and regulator feedback. Additional studies and further technical evaluations conducted
- **JAN 2018** – Continued public and Indigenous engagement
- **OCT 2019** – *Anticipated submission of EIS for WR-1
- **SPRING 2020** – *Anticipated timing for CNSC's EA public hearing
- **2021**

*Target Date

## Solicit information and feedback/How do I get involved?

CNL engages with local communities and Indigenous groups to provide opportunities to participate in the Environmental Assessment process.

## How to participate in the EA process:

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@CNL_LNC
Email: wlcommunications@cnl.ca
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1-800-364-6989

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