

## THERMOCOUPLE COLUMN REPLACEMENT

A solution to recover safe Incore Instrumentation System

### Challenge

Accidental operation may lead to distortion of a thermocouple column. Replacement is thus necessary. In some cases, piping distortion can make TC replacement impossible and can lead to safety related issues.

### Solution

Framatome has developed a solution to safely and rapidly replace the complete assembly (including thermocouple piping). The operation can also be limited to TC piping replacement, according to the need.

### Technical Features

A specific scenario is developed for each operation, depending on the number and position of TC columns to be replaced.

The operation consists in :

- Install a platform and biological shielding if necessary
- Perform televisual inspection of the TC conduits
- Remove and re-install necessary drive shafts and guide tube
- Extract and withdraw TC
- Disconnect/reconnect TC pipings
- Replace TC column
- Perform functional test of the column
- Perform electrical test of the TC and the new column
- Perform final televisual examination of the conduits and upper support plate

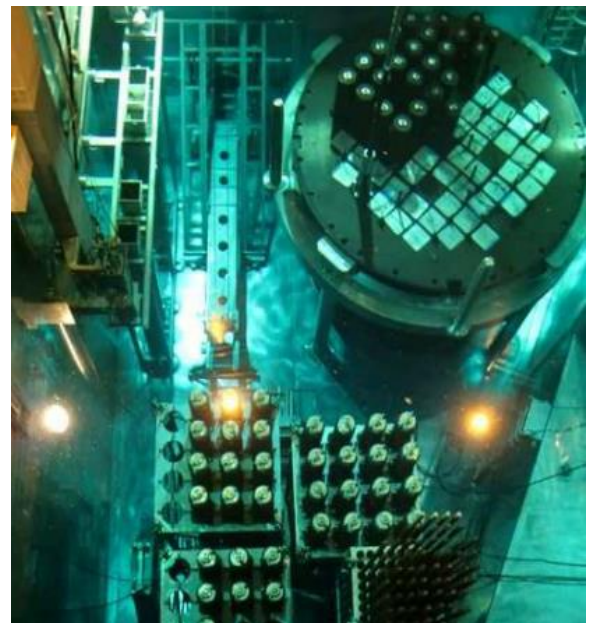
Dose is limited thanks to the use of a biological shield as necessary and a continuous and accurate follow up during site works.

### Customer benefits

- Customized scenario according to customer's need in order to optimize dosimetry and schedule
- Limited dose: optimized scenario, biological shields, radiological follow up
- Incore expertise



Working platform and biological shield



Working area for column replacement

### Experience

On-site operations successfully performed on French NPP.

Full TC system replacement (column+piping) at Qinshan during RPVH replacement.

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is our everyday commitment**

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