

Brussels, 17th November 2015

## **The Federal Agency for Nuclear Control approves safe restart of Doel 3 and Tihange 2**

On 17th November, the Federal Agency for Nuclear Control (AFCN) announced its decision that it is totally safe to restart the nuclear power plants Doel 3 and Tihange 2. Electrabel has taken note of this decision.

As you will remember, Electrabel shut down the two power plants on its own initiative on 26 March 2014 while implementing the monitoring program drawn up for both vessels. Shutting down a nuclear power plant as a precautionary measure is a general principle of nuclear safety. In case of questioning, nuclear power stations are shut down until the situation encountered has been properly understood and fully clarified.

On 17 July, after nearly 18 months' investigation, Electrabel submitted the first version of its final reports (safety cases) to the AFCN. Definitive versions of these reports were submitted on 28 October, and they very meticulously set out the findings of the substantiated research carried out by a multidisciplinary team comprising dozens of internal and external experts, both in Belgium and abroad.

The conclusions reached after inspections, tens of thousands of hours of investigative work and more than 1,500 material tests are as follows:

- The flaws detected in the reactor vessels are hydrogen flakes that were produced during the forging process. In other words, they have been there from the outset.
- The hydrogen flakes are quasi-laminar, lying parallel to the interior wall of the reactor vessel. As a result, they are marginally subjected to mechanical stresses and have no negative impact on the reactor vessel's structural integrity.
- The qualification of the ultrasonic inspection method showed that the method is perfectly capable of detecting, locating and sizing each hydrogen flakes.
- The supplementary inspection in 2014 pinpointed all the hydrogen flakes and showed that they have remained stable and are therefore not evolving. The analysis with an increased sensitivity enabled several smaller flakes to be reported. As a conservativeness principle, several small flaws were grouped together and considered as a single larger flaw.
- Hydrogen flakes present in the reactor vessel's irradiated material have no impact on the evolution of the fracture toughness of surrounding material.
- The structural integrity of the reactor vessel remains guaranteed under any circumstances, both during normal operation and in the event of an incident.

All calculations and analyses were based on highly conservative hypotheses. Electrabel can thus

confirm that the conclusions presented above bear witness to the vessel's structural integrity, with very wide safety margins. As a result, Electrabel is convinced that it is totally safe to restart Doel 3 and Tihange 2 .

Following the decision reached by the AFCN, Electrabel has begun preparation work to start up the two plants again. This work will take around 4 weeks and will be very closely monitored by the supervisory authorities.

It has also been decided that after the next fuel cycle the reactor vessels of Doel 3 and Tihange 2 will undergo a follow-up inspection using the qualified ultrasonic method.

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