

Marcoule : dismantling the G1, G2 and G3 reactors

The clean-up and later the dismantling operations of the G1, G2 and G3 reactors started in 1969 for G1 and 1986 for G2 and G3, i.e. a few years after they were decommissioned.

The initial dismantling phase involved removing all the external systems, notably the cooling system, and ensuring the containment of the reactor units. This phase has been completed in the 1980s for G1 and in 1996 for G2 and G3.

The second phase, aimed at completely dismantling the three reactors, will restart in 2020, once the following has occurred :

- Significant decrease of the residual cobalt-60 radioactivity that results from activation of metal structures inside the reactor units. Because cobalt-60 has a short half-life (5.2 years), dismantling operations have been postponed until it decays naturally, to reduce the doses received by workers. This will also make it possible to send the metal waste to the surface disposal facility in the department of Aube.
- Opening of the future national disposal facility for irradiated graphite waste. The law issued 28th June 2006, concerning radioactive waste management, provides for such a facility, currently set to be commissioned in 2019.

Once the programme is completed in 2035, the total cost of dismantling the reactors will have reached around 500 million euros.

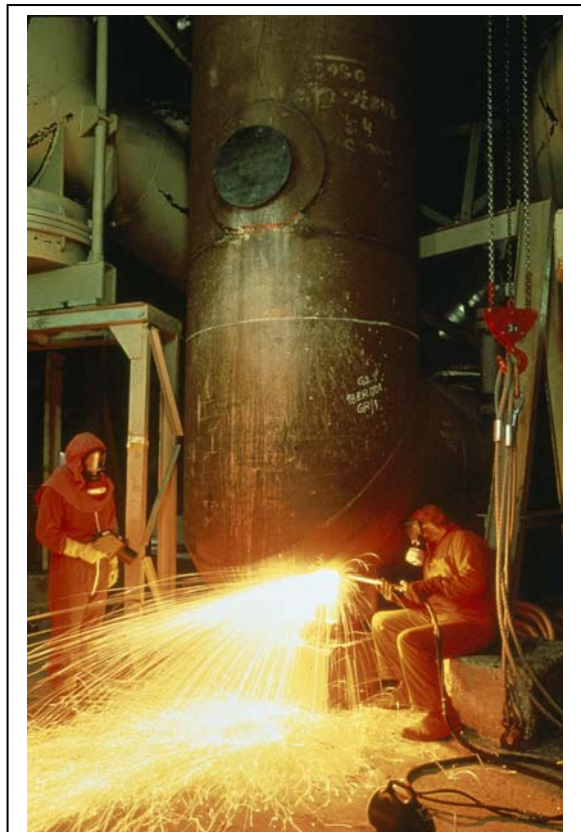
Work completed at G1, G2 and G3

After the reactors were shut down, the fuel was unloaded and sent to the UP1 reprocessing plant. The dismantling operations continued until 1996 in successive phases to reach the target level.

The first phase made it possible to validate the *in situ* decontamination processes and the mechanical and thermal cutting of the pipes, particularly the large-diameter lines of the CO₂ cooling system.

All the auxiliaries, filters, coolers and air lines were then disassembled and cut apart, as were all the systems downstream of the reactors. The lines of these systems were cut as close as possible to the reactor units.

Containment of structures inside the reactors is currently ensured by metal plugs which block all the openings of the concreted structures.



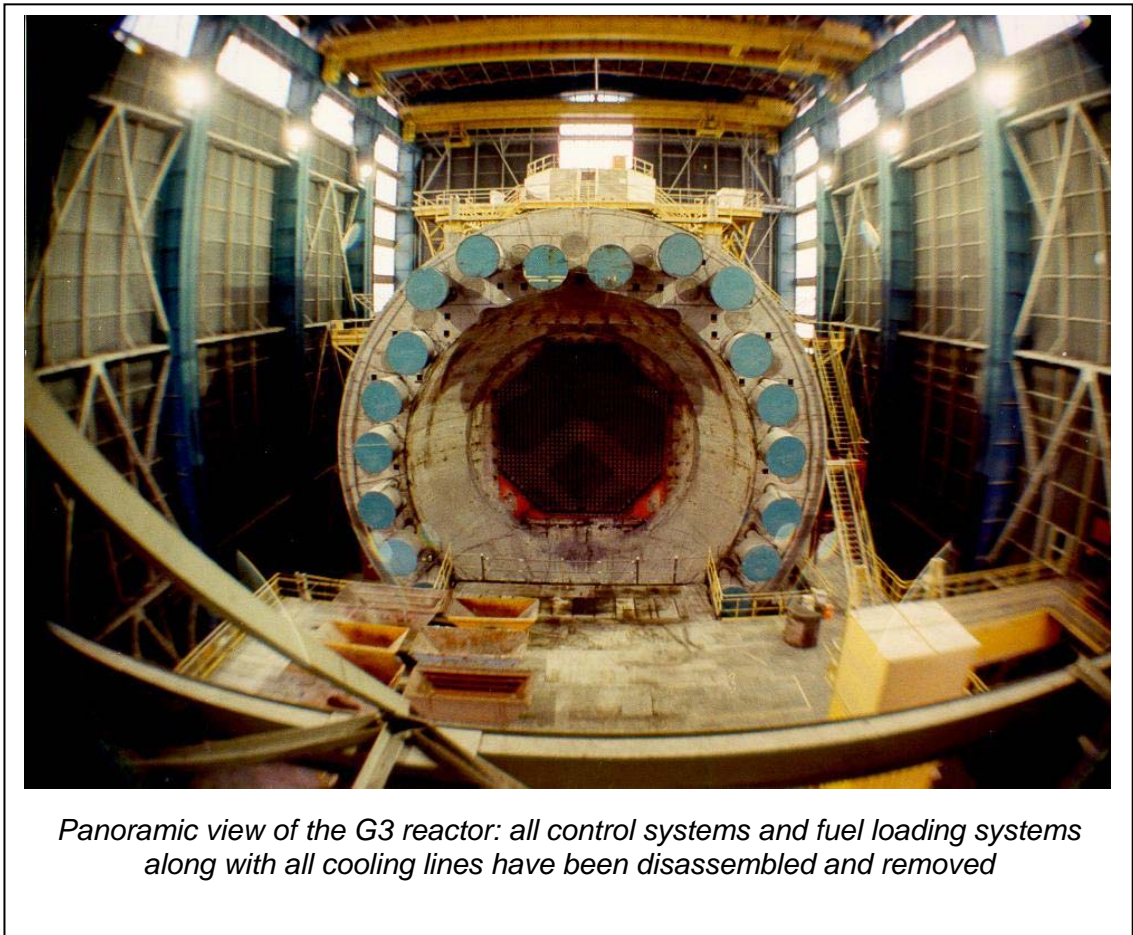
Cutting contaminated systems apart

Between 1991 and 1996, 4 000 tonnes of metal waste from dismantling the CO₂ lines have been melted. The ingots were sent to the Morvilliers very low-level surface disposal facility in Aube.



The G1, G2 and G3 reactors are currently monitored to guarantee facility safety until the dismantling operations restart. Particular attention is paid to the following :

- residual tension in the pre-stressing cables ;
- hygrometry of air inside the sheaths of the cables ;
- state of the pre-stressed concrete ;
- leaktight barrier of the reactor units ;
- good working order of handling and lifting equipment.



Panoramic view of the G3 reactor: all control systems and fuel loading systems along with all cooling lines have been disassembled and removed