From conception to decommissioning phase
ASN’s regulatory experience

The main French research reactor are located in the south-east of France. The ASN division of Marseille is in charge of the control of 9 research reactors:
• 2 reactors in construction: the Jules Horowitz Reactor (JHR) and ITER,
• 7 reactors operated by the French CEA:
  - 5 reactors in operation for training or experimental programs (site of Cadarache),
  - PHENIX’s reactor preparing for dismantling and ASTRID’s (Advanced Sodium Technological Reactor for Industrial Demonstration) project which might take its place on the site of Marcoule.

The licensing process

Licensing process and construction control

• The start of a project: ASTRID.
ASN is taking part in technical meetings with the future reactor operators.
• The construction phase: ITER.
ASN regularly checks that the construction is conducted according to the technical requirements.

Control of operating research reactors

In Cadarache, the experimental facilities MASURCA, MINERVE and EOLE (critical mock-ups) and PHEBUS are in operation and are thus under the close scrutiny of the ASN division of Marseille. Each year, about 40 inspections are planned according to a graded approach. The ASN inspectors verify that the facility operator abides by the rules and regulations set by ASN or described in the facility safety report and general operating rules.

Inspection main fields: operation, radiation protection, nuclear materials confinement, fire protection, fissile materials handling and storage, lessons learned from others operators or facilities, management of subcontractors, feedback of operation experience…

Control of decommissioning

The sodium cooled reactor PHENIX, in Marcoule, stopped operation at the end of 2009. The plant operator has entered a “pre-dismantling and preparation” phase in which some equipment can be removed with specific authorizations granted by ASN. In the meantime, ASN inspections go on to check that the current reference safety rules (documented in the safety report and general operating rules) are still properly implemented pending dismantling. The dismantling decree is expected after 2012. It will be preceded by a review of a dismantling safety report, a new general operating and surveillance rules and a public enquiry.

Periodic safety reviews
According to the French law and regulations, the initial authorization decree doesn’t limit a nuclear plant life. Every 10 years, ASN performs a comprehensive safety review to decide under which conditions the installation may or not embark on another 10 years of operation. The actual state of the facility is confronted to the descriptions and demonstrations given by its safety reference files. The design data is reassessed to take into account current knowledge such as updated technical codes and standards.
So far, EOLE, MINERVE, CABRI, PHENIX have undergone a periodic safety review. In Cadarache, a major issue often enlightened by periodic safety reviews is seismic risk. This may lead to substantial reinforcement works, as for CABRI or, if not technically or economically feasible, to shutdown an ageing reactor. This procedure has been implemented in the case of ATPu installations (“plutonium technology workshop” facility).