CEA and AREVA sign an agreement to collaborate on the design of the Advanced Sodium Technological Reactor for Industrial Demonstration (ASTRID)

Paris, November 9, 2010

AREVA and CEA have signed an agreement on initial design studies for a prototype of the fourth-generation sodium-cooled fast reactor known as ASTRID. This will allow the French government to decide in 2017 whether to go ahead with the construction of this demonstration facility(1).

The agreement follows the Act of June 28, 2006 on sustainable management of nuclear waste and material, the Program for Future Investment and the CEA's agreement with the French government signed on September 9, 2010(2) that gives the CEA responsibility for the prototype design. This is the first industrial partnership set up around this project.

This cooperative effort will bring together the CEA's R&D teams and AREVA's unique skills and experience in the design of nuclear reactors. AREVA will be responsible for designing the nuclear steam supply system, the nuclear auxiliaries and the instrumentation and control system.

For its part, the CEA will lead the overall project and will design the reactor core and fuel. Partnerships for other essential engineering work packages, such as civil engineering and the turbine, are currently being finalized.

The joint effort by AREVA and the CEA will involve more than 250 persons by the end of 2010, and exceed 350 by the end of 2012.

The goal is to build a reactor for demonstrating innovative design choices so that the fast neutron reactors (FNR) can meet the criteria for the fourth generation:

- enhanced recycling of nuclear material,
- robust safety demonstration that gives ASTRID the same safety level as the EPR,
- high level of availability and reliability for operators,
- compliance with the requirements for anti-proliferation measures.

Operating with a sodium-cooled fast neutron core, ASTRID is expected to produce approximately 600 MWe of electricity. Before construction of a first-off commercial unit, a demonstration facility is needed to test innovations with respect to previous FNRs.

The FNR greatly improves the amount of energy derived from depleted or reprocessed natural uranium, enables plutonium to be used and recycled several times and can recycle minor actinides if needed. Such reactors are currently being built or are on the drawing board in India, Russia, China and Japan. In scenarios for the 21st century, they could begin commercial operation toward the middle of the century and complement light water reactors such as AREVA's EPR™ for enhanced flexibility in managing nuclear waste.

(1) There are three principal milestones in the schedule of design studies for the ASTRID prototype: completion of the first phase of the preliminary design in 2012 (AVP1), completion of the second phase in 2014 (AVP2) and the detailed design phase.

(2) Agreement of September 9, 2010 between the French government and the French Alternative Energies and Atomic Energy Commission (CEA) pertaining to the Program for Future Investment ("ASTRID" effort) published in the *Journal Officiel de la République Française* (September 11, 2010). This agreement provides €652 million for the ASTRID program until completion of the detailed design phase in 2017.

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