France

Flamanville 3 EPR: ASN has no objection to the initiation of a new test programme (asn) On 12 December 2015, ASN issued a position statement concerning the approach used to demonstrate the mechanical properties of the Flamanville 3 EPR reactor pressure vessel (RPV) closure head and bottom head proposed by Areva. Subject to its observations and requests being taken into consideration, ASN considers that the approach proposed by Areva is acceptable in principle and has no objection to the initiation of the new programme of tests being planned.

On 7 April 2015, ASN published an information notice concerning an anomaly in the composition of the steel in the centre of the Flamanville 3 EPR RPV closure head and bottom head. This anomaly is linked to the presence of a high carbon concentration which results in mechanical properties that are not as good as expected.

Areva sent ASN a file presenting the procedure it envisions using to demonstrate the sufficiency of the material used in the manufacture of the vessel closure head and bottom head for the future Flamanville EPR reactor. This demonstration will in particular be based on the future results of a new programme of mechanical and chemical tests.

After joint examination of this file with IRSN, ASN convened the Advisory Committee for nuclear pressure equipment (GP ESPN) on 30 September 2015. The GP ESPN submitted its opinion and its recommendation to ASN. On this basis, ASN issued a position statement on the procedure adopted by Areva, with a certain number of observations and additional requests.

The results of the new test programme will be crucial to ASN's decision on the suitability for service of the Flamanville 3 RPV closure head and bottom head. This test programme will take several months.

USA

NRC completes acceptance review of AP1000 seismic option (west) Westinghouse Electric Company LLC announced that the U.S. Nuclear Regulatory Commission (NRC) has completed an acceptance review of the company’s Specialized Seismic Option developed for offering with AP1000® nuclear power plants. This step will allow the NRC to begin the in-depth review required prior to issuing the formal Safety Evaluation report.

“The NRC’s acceptance review of the Specialized Seismic Option is an important step forward with our plans to bring AP1000 plants to more locations across the globe,” said Jeff Benjamin, Westinghouse senior vice president, New Plants and Major Projects. “This option will allow people living in areas with higher seismic activity to benefit from the carbon-free energy produced from our safe and reliable technology.”

Westinghouse developed the Specialized Seismic Option for use in locations with seismic levels similar to those typical of certain portions of the western United States and other global markets, and submitted the license application to the NRC in September.

Westinghouse and Toshiba Corporation are working collaboratively on a limited number of customized materials and/or reinforcements that will allow new units to be built in areas that have a higher seismic condition. This Specialized Seismic Option will provide the same advanced safety features, modular design and simplified systems as the standard, NRC-certified AP1000 plant technology.
addition, we can clean the surface of the plasma vessel with helium plasmas.”

The first plasma in the machine had a duration of one-tenth of a second and achieved a temperature of around one million degrees. “We’re very satisfied”, concludes Dr. Hans-Stephan Bosch, whose division is responsible for the operation of the Wendelstein 7-X, at the end of the first day of experimentation. “Everything went according to plan.” The next task will be to extend the duration of the plasma discharges and to investigate the best method of producing and heating helium plasmas using microwaves. After a break for New Year, confinement studies will continue in January, which will prepare the way for producing the first plasma from hydrogen.

Background
The objective of fusion research is to develop a power source that is similarly to the sun. As the fusion fire only ignites at temperatures of more than 100 million °C, the fuel – a thin hydrogen plasma – must not come into contact with cold vessel walls. Confined by magnetic fields, it floats virtually free from contact within the interior of a vacuum chamber. For the magnetic cage, two different designs have prevailed – the tokamak and the stellarator. Both types of system are being investigated at the IPP. In Garching, the Tokamak ASDEX Upgrade is in operation and, as of today, the Wendelstein 7-X stellarator is operating in Greifswald.

At present, only a tokamak is thought to be capable of producing an energy-supplying plasma and this is the international test reactor ITER, which is currently being constructed in Cadarache in the frame of a world-wide collaboration. Wendelstein 7-X, the world’s largest stellarator-type fusion device, will not produce energy. Nevertheless, it should demonstrate that stellarators are also suitable as a power plant. Wendelstein 7-X is to put the quality of the plasma equilibrium and confinement on a par with that of a tokamak for the very first time. And with discharges lasting 30 minutes, the stellarator should demonstrate its fundamental advantage – the ability to operate continuously. In contrast, tokamaks can only operate in pulses without auxiliary equipment.

JRC: Nuclear decommissioning: a growing sector in need of resources and innovation (JRC) Cease of operation and dismantling of a nuclear installation, known as nuclear decommissioning, is a growing industrial activity worldwide.

The EU is currently a world leader in this field, but in order to keep this leading position, it needs to make additional efforts to further enhance its extensive know-how and attract more young people to studies and training in nuclear related disciplines, according to a joint report by the JRC and the University of Birmingham.

A complete decommissioning, starting from the end of operation of a reactor until its final release from regulatory control, is a long-term process that can easily exceed 10 to 20 years. This explains why only a few major nuclear installations have been fully decommissioned so far in Europe, while a third of the over 200 nuclear reactors are already in permanent shut down.

Although many of the techniques used in decommissioning have reached maturity, there are still areas requiring R&D. Particular attention is needed to make the current techniques more efficient (less time-consuming, less waste producing) and safer (less radiation exposure risks, fewer occupational hazards, more ergonomically sound).

A survey shows that various education and training programmes exist but they will probably need to expand to meet a future increased demand. This evolution highlights the need for cooperation between universities and for better coordination among all parties involved in decommissioning, such as industry, safety authorities and associated technical support organisations, waste management and decommissioning agencies and research centres.

AREVA awarded decontamination contract for Krümmel NPP (AREVA) AREVA NP has been selected by the utility Vattenfall Europe Nuclear Energy to decontaminate the primary loop of the Krümmel nuclear power plant, located in Geesthacht near Hamburg, Germany. This decontamination will reduce the radiation level in the reactor pressure vessel, auxiliary systems and piping. The project will start by the end of this year and the decontamination will be implemented in the first half of 2016.

The decontamination will be carried out thanks to the combination of two AREVA NP techniques: the CORD UV® and the AMDA®. This operation is based on the progressive injection of chemical products into the reactor’s primary circuit. Once the process is completed, the chemical substances used are decomposed into carbon dioxide and water, leaving behind no additional waste.

“This decontamination technology has been used reliably in over 30 nuclear facilities worldwide, including boiling and pressurized water reactors. This new contract confirms customers’ confidence in our decontamination technology for all types of nuclear power plants,” said Michael Cerruti, Sales Executive Vice-President of AREVA Reactors & Services Business Group.

AREVA Inc. signs contract with NuScale to manufacture SMR fuel assemblies (AREVA) AREVA Inc. has signed a contract to manufacture fuel assemblies for NuScale’s small modular reactor (SMR). Under this agreement, AREVA will supply the initial cores for the reactors as well as subsequent reloads.

AREVA’s HTPTM fuel assemblies have been designed for use in the SMR advanced pressurized water reactor currently under development. Mechanical and thermal hydraulic testing of these new fuel assemblies are underway as part of NuScale’s 50 MWe SMR design certification application, which is planned for submission to the NRC in 2016.

ENVINET: Service app for MIRA (envinet) As ENVINET’s latest gamma dose rate monitoring system, MIRA now offers even more innovative options that were hitherto not available on the market.