New Build Field Report

AREVA

CUSTOMER UPDATE ON NEW BUILD PROJECTS & ACTIVITIES 30 NOVEMBER 2010

EPR™ Licensing Status

UK

I&C: AREVA responds satisfactorily to British regulator

The British Nuclear Regulator (HSE) has stated in a joint letter addressed to AREVA and EDF that both companies have "addressed satisfactorily" its concerns regarding the EPR™ reactor's digital Instrumentation and Control (I&C) system. The letter was issued as part of the Generic Design Assessment (GDA*).

While the assessment of the EPR™ continues, there no longer are any showstoppers for the reactor to successfully complete the GDA process.

As part of the constant dialog between operators, constructors and British safety authorities, AREVA will continue to provide high-quality and timely input, so that the HSE's timetable to complete a meaningful assessment of the EPR™ by June 2011 will be met.

The EPR™ reactor is currently the most powerful reactor in the world and meets the highest safety standards. It is being built in Finland, France and China and the certification process is underway in the U.S and UK.

Philippe Knoche, Senior Executive Vice-President for AREVA's Reactors and Services Business Group, said: "We welcome the HSE's decision to close the only main issue relating to the EPR™ reactor. Thanks to the high-quality work of the teams, we have reached another milestone for this new-generation I&C system after its architecture was validated in Finland this spring. This is also clear recognition of the quality of the EPR™ design."

(*): The Generic Design Assessment (GDA) is a process to evaluate the design of reactors being considered for construction in the UK.

OL3 Project Status

Finland

General view Olkiluoto 3, Finland

The group confirms the schedule announced in June of this year. Construction will officially end in late 2012 when the first fuel is loaded, after which a series of power escalation tests will be carried out by the operator in preparation for connection to the grid in 2013.

Work is progressing on schedule. The main civil engineering work has been completed and the pipes are in the process of being installed. The reactor vessel, installed in June 2010, was recently joined by the pressurizer. Installation of the four steam generators has also begun.

First Steam Generator installed

On November 17, The first Steam Generator (SG) was installed in the OL3 Reactor Building. The installation sequence involving 40 people is now ramping up, strongly pushing forward the completion of the operations in the Reactor Building. The sequence occured during three days:

- November 15: The 1st SG was released from its storage and lifted from ground to 19.5m into the Fuel Building, reached through the Reactor Building hatch by the end of the day.
- November 16: The SG is connected to both temporary lifting devices, with its front part lying down on a heavy platform installed across the Reactor Building pool.
- November 17: The SG is finally tilted and lifted down into its bunker, final location in the Reactor Building.

The handling of this heavy component – 25m long, 5.2m diameter, +550T weight – manufactured by AREVA Saint Marcel Plant, required a lot of precautions and expertise.

The EPR™ primary circuit is made of four Steam Generators that are the interface between the primary water heated by nuclear fuel and the secondary water providing steam to the turbine generator. The heat transfer is ensured by 6000 U-tubes equaling 8000m²!

The first Steam Generator was sucessfully installed on November 17 in the Reactor Building.

Pressurizer installed

Following the introduction of the surge line spools, the pressurizer was lifted from ground to 19.5m, first introduced through the equipment hatch into the Reactor Building and then lifted into its final location (bunker) in the Reactor Building on November 8. Connected through a surge line to the hot leg (loop 3), the pressurizer maintains the primary circuit's pressure inside stated limits. The handling of this large component (+14m long, 3m diam., +160T) manufactured by AREVA Saint Marcel, required specific equipments provided by subcontractors and more than 40 people who participated in this important step's success, part of the Primary circuit installation.

Click here to watch the Pressurizer installation video

The pressurizer is more than 14m long and weighs more than 160 tons.

Inner containment pre-stressing

Inner containment pre-stressing activities

The Reactor Building's inner containment is a shell composed of a steel liner and pre-stressed concrete. The pre-stressing work was launched simultaneously with the construction of the dome. Following the tensioning steps, the displacements and deformations of the inner containment are carefully measured and compared to the designed values set up by AREVA. The pre-stressing work was successfully finalized on October 29. The next step is the completion of the Reactor Building's outer containment.

Installation of Station Black Out (SBO) system

→ The two SBO Diesel Generators sets were introduced into the Diesel Building on October 28 and November 2.

Introduction of the two SBO Diesel Generators into the Diesel Building

The SBO diesel generators are part of the Station Black Out system, and are designed to provide the emergency loads power supply in the event of a complete Power Supply sources loss, including all 4 Emergency Diesel Generators (EDG). The safety loads are those required to safely shut down the reactor. Each Diesel Generator unit weighs approx. 26T and is more than 7m long, 2m wide and 2.6m high. These milestones mark:

- The completion of all the main equipments introduction in the Diesel Building
- The start of the piping
- The start of electrical and instrumentation connection activities.

FA3 Project Status

France

General view of Flamanville 3, France

The reactor vessel-to-cavity sealing at SDMS

Delivery of the reactor vessel-to-cavity seal ring

The reactor vessel-to-cavity seal ring and its dedicated installation tool were delivered on September 14 in Cherbourg where they will be stored in EDF's storage area.
This component ensures the watertightness and compensates the heat expansion between the reactor pressure vessel and the liner of the pool of the reactor building.
Manufactured by SDMS in St Romans in the Alps, the stainless steel ring is 7m in diameter, 4mm thick and weighs 550kg.
A 160T crane was necessary to unload the truck. The ring will be installed after the reactor pressure vessel.

Tests of the multistud tensioning machine

The tests of the multistud tensioning machine ended successfully on October 7 in Düsseldorf, Germany.
Manufactured by Siempelkamp, the machine is used to close (and open) the reactor pressure vessel.

The machine has two robots with two screwing machines each, that allow it to screw the studs four by four. The closing (respectively opening) of the reactor pressure vessel has to be done in less than three hours.

The multistud tensioning machine on its stand before the lifting test.

TSN 1&2 Project Status

China

EPR™ projects units 1 & 2 under construction in Taishan, China

I&C Test Platform in Beijing

After three months of effort and preparation, the I&C platform in Beijing is now ready to test the I&C equipments.

The I&C platform in Beijing was set up in August. It will perform I&C equipment tests for the EPR™ Taishan Project. Moreover, the safety local control cabinets, including more than 100 cabinets of TXS (Teleperm XS) will be assembled here by AREVA subcontractor, CETC (China TechEnergy Co. LTD). There are currently 15 people from AREVA working on the platform.

EPR™ reactor unit 2 construction site in Taishan, China

Watch, listen to and read the complete Field Report on Operations Performance Fuel Reliability
www.areva.com/fieldreport

Project Profiles

Name	Olkiluoto 3 (OL3) Finland	Flamanville 3 (FA3) France	Taishan 1 & 2 (TSN 1&2) China
Customer	Teollisuuden Voima Oyj (TVO)	Electricite de France (EDF)	China Guangdong Nuclear Power Holding Corp. Ltd. (CGNPC), represented by the Taishan Nuclear Power Company (TSNPC)
Scope of work	1 EPR™ unit (AREVA - Siemens Consortium)	1 EPR™ NSSS (AREVA)	Design & procurement for 2 EPR™ units (AREVA)
Net electric output	1,600 MWe	1,630 MWe	1,660 MWe per unit
First concrete	October 2005	December 2007	End 2009
Nuclear Operations (Starting after reactor fuel loading)	End 2012	Project Lead EDF - "*The target for beginning marketable output is now set at 2014*" - EDF Press Release, July 30, 2010	Unit 1 - 2013

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