

Three Chinese reactors approach commissioning

24 July 2017

Three new nuclear power reactors in China have passed significant pre-operational tests and inspections. Sanmen 1 passed a comprehensive safety check ahead of fuel loading, while a containment integrity test was completed at Haiyang 2. Meanwhile, cold function tests were completed at Yangjiang 5.



Testing under way of the containment of Haiyang 2 (Image: SNPTC)

China National Nuclear Corporation announced on 21 July that the AP1000 reactor at unit 1 of the Sanmen nuclear power plant in China's Zhejiang province had completed a comprehensive nuclear safety check. This, it said, is the "most critical inspection" before fuel loading.

A team of inspectors from the Ministry of Environmental Protection's National Nuclear Safety Administration concluded that the quality assurance work of the construction and pre-loading phase of the unit meets basic safety requirements.

Hot testing of Sanmen 1 - aimed at simulating the temperatures and pressures which the reactor's systems will be subjected to during normal operation - was completed on 30 June.

Four AP1000 units are under construction in China - two each at Sanmen and Haiyang - and are all scheduled to start commercial operation in 2018. Sanmen will be the first.

Haiyang 2 containment tests

Tests on the containment vessel at another AP1000 unit under construction in China - unit 2 of the Haiyang plant in Shandong province - have also been completed.

State Nuclear Power Technology Company (SNPTC) said the two-part tests to confirm that the containment vessel meets design and construction quality requirements began on 14 July. The first part - the structural integrity test - involved the vessel being pressurized and monitored to confirm that its design and construction meet all applicable industry codes and standards at 110% of design pressure.

The vessel was then pressurised to design pressure and the integrated leak rate test was performed to demonstrate its ability to prevent the release of radioactive materials in the event of an emergency.

Such tests were completed at Haiyang 1 - also an AP1000 - in December 2015.

Yangjiang 5 completes cold testing

Meanwhile, cold hydrostatic testing was completed on 21 July at unit 5 of the Yangjiang nuclear power plant in China's Guangdong province, China General Nuclear has announced.

Cold hydrostatic testing involves filling the reactor's primary circuit with water, which is circulated at high pressure by the reactor coolant pumps to verify that the welds, joints, pipes and components of the reactor coolant system and associated high-pressure systems meet regulatory standards. The coolant pumps will help to maintain the reactor's internal temperature at a safe level during operations. The tests are an important step in the commissioning of new units.

First concrete for Yangjiang unit 5 - the first ACPR1000 reactor to be built - was poured in September 2013. It is scheduled to begin operating in 2018. Unit 5 marks the first application of a digital control system designed in China.

Six units are planned for the Yangjiang site. The first four units are CPR-1000s, with units 5 and 6 being ACPR-1000s. Unit 1 entered commercial operation in March 2015, with units 2, 3 and 4 following in June 2015, January 2016 and March 2017, respectively. All six reactors at Yangjiang should be in operation by 2019.

*Researched and written
by World Nuclear News*

ISSN 2040-5766