Radiation and Nuclear Safety Authority

Reference: Request for a statement by STUK, reg. no. 3/M42211/2014, 8 August 2014

APPLICATION BY TEOLLISUUDEN VOIMA OYJ TO SUPPLEMENT THE GOVERNMENT'S DECISION-IN-PRINCIPLE OF 6 MAY 2010 CONCERNING THE CONSTRUCTION OF THE OLKILUOTO 4 NUCLEAR POWER PLANT UNIT; THE RADIATION AND NUCLEAR SAFETY AUTHORITY’S PRELIMINARY SAFETY ASSESSMENT CONCERNING THE APPLICATION

On 20 May 2014, Teollisuuden Voima Oyj (TVO) submitted to the Government an application to supplement the Decision-in-Principle concerning the construction of the Olkiluoto 4 nuclear power plant unit, whereby it requests a decision from the Government that would set a new deadline for the submission of the application for a construction licence and confirm that the project is still in line with the overall good of society after the change of deadline.

In its request for a statement (3/M42211/2014, 8 August 2014), the Radiation and Nuclear Safety Authority has requested the Advisory Commission on Nuclear Safety to provide a statement on the basis of the draft statement drawn up by the Radiation and Nuclear Safety Authority (draft 6, 8 August 2014) and its appendix (draft 21, 8 August 2014), and to pay special attention to the following issues:

- Whether the regulations, requirements and objectives used as the basis for STUK’s statement are up to date with regard to the issuing of a Decision-in-Principle;
- whether safety, security arrangements, emergency arrangements and nuclear safeguards have been taken into consideration to a sufficient level of detail and by applying sufficient expertise, and
- whether the results of the assessment are acceptable.

Furthermore, the Radiation and Nuclear Safety Authority requests that the Commission provide a statement concerning the setting of a new deadline for the application of a construction licence, and also present in its statement all the aspects concerning the supplementary application that it feels the Authority should consider in the statement that it submits to the Ministry.

The preliminary safety assessment that the Radiation and Nuclear Safety Authority submitted to the Ministry on 29 May 2009 was based on the legislation that was in force at the time (Nuclear Energy Act and Nuclear Energy Decree), the Government Decree on the Safety of Nuclear Power Plants, the Government Decree on Emergency Response Arrangements at Nuclear Power Plants, and the Government Decree on the Safety of Disposal of Nuclear Waste, and the YVL Guides that were in force at the time.

Since the safety assessment in 2009, the legislation has been developed further, taking experience from the Fukushima nuclear accident, for example, into consideration. In the new preliminary safety assessment, the Radiation and Nuclear Safety Authority has considered the new Government Decrees on the...
Safety of Nuclear Power Plants (717/2013) and on Emergency Response Arrangements at Nuclear Power Plants (716/2013), and the Government Decree on Security in the Use of Nuclear Energy (734/2008) that was updated in May 2012. The Government Decree on the Safety of Nuclear Power Plants remains unchanged as concerns the handling of fuel and radioactive waste. The Government Decree on the Safety of Disposal of Nuclear Waste (736/2008) also remains unchanged. STUK's entirely new set of YVL Guides was also adopted in 2013.

The Advisory Commission on Nuclear Safety finds that the Radiation and Nuclear Safety Authority has used the correct and up-to-date requirements, regulations and objectives for its preliminary safety assessment.

STUK's update of the preliminary safety assessment reviews the viewpoints and conclusions presented in the preliminary safety assessment of 2009 systematically and discussing each key topic.

As concerns the assessment of the plant alternatives, STUK's statement presents changes that have occurred since the previous safety assessment. TVO has submitted to STUK a set of documents wherein TVO describes the suggestions for improving the safety features developed for the different plant concepts by 2013; these improvements have been designed to take into account the new safety requirements and to correct any deficiencies in the safety characteristics of the plant concepts that were listed in the preliminary safety assessment of 2009. STUK's update of the preliminary safety assessment presents the changed requirements especially in terms of severe accidents.

The requirements in the Government Decree on the Safety of Nuclear Power Plants concerning preparation for rare external events and disruptions in electricity supply have been specified further. STUK repeats the conclusion of the earlier safety assessment that the plant alternatives presented do not, as such, necessarily fulfil the Finnish safety requirements. The Commission agrees with this conclusion. The fulfilment of the requirements, along with any eventual plant modifications, will be evaluated in detail during the construction licence phase.

As concerns the maintenance and development of the expertise and management system required from TVO and the plant supplier, STUK finds it important that TVO's development of competence and procedures is continuous in order to ensure sufficient resources and expertise. TVO should utilise the extension proposed for the application of the construction licence to specify and maintain its plans, and to develop the management system. The Commission agrees with these conclusions presented by STUK.

As concerns the selection of site for the plant, STUK's statement highlights several different viewpoints related to 1) zoning at the site location, 2) natural conditions at the site location (including extreme weather conditions and sea water level limits), and 3) industry in the surroundings of the plant, transport routes, and electrical grid connections. The Commission agrees with STUK's general conclusion that sufficient site analyses have been completed for the OL4 plant unit, and that no significant changes have occurred in them that would affect the conclusions of the preliminary safety assessment that STUK presented in
2009.

As concerns the planning of emergency arrangements, STUK discusses the need to consider a simultaneous emergency of all nuclear facilities in the site area, and the possibility that such an event has an extended duration. Regarding road connections, STUK highlights, among other things, the potential need to supplement the road connections to the Olkiluoto plant area in order to reliably implement emergency arrangements even under exceptional natural conditions or traffic conditions. As regards this part, STUK states that it will provide a more general comment on the construction of a road connection when it issues a decision to enforce Guide YVL A.2 in 2015.

As concerns security arrangements and emergency arrangements, the Commission shares STUK's opinion that nothing has arisen that would affect the conclusions in STUK's preliminary safety assessment from 2009; and TVO is considered to have the prerequisites to implement the licensee's security arrangements and emergency arrangements for the new nuclear power plant unit described in the Decision-in-Principle and the other nuclear facilities related to its operation.

As concerns nuclear fuel management, nuclear safeguards, nuclear waste management and nuclear liability obligations of the new nuclear power plant unit, the Commission shares STUK's view that no factors have arisen that would affect the conclusions presented in the Radiation and Nuclear Safety Authority's preliminary safety assessment from 2009.

Furthermore, concerning the setting of a new deadline for the submission of a construction licence application for the Olkiluoto 4 nuclear power plant unit, the Commission shares STUK's conclusion that no issues have arisen in relation to the safety of the project that would prevent the setting of a new deadline. The additional time can be spent producing the documentation to be submitted with the construction licence application and ensuring its compliance to the new Finnish requirements.

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