



Office for
Nuclear Regulation

Sizewell C: Questions from the Government of Austria

Response to the Secretary of State

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Introduction

This document sets out the Office for Nuclear Regulation's (ONR) response to the request for further information or updates relating to the Sizewell C (SZC) development consent order (DCO) application, from the Secretary of State for Business, Energy & Industrial Strategy ("the Secretary of State") dated 18 March 2022: [EN010012-008877-Sizewell C - Secretary of State Information Request.pdf \(planninginspectorate.gov.uk\)](#).

The Secretary of State's letter notes that the Government of Austria had provided a submission on 17 September 2020 in accordance with the ESPOO Convention, concerning possible transboundary effects from Sizewell C [EN010012-003106-EN010012 Regulation 32 - Consultation response from Austria.pdf \(planninginspectorate.gov.uk\)](#).

The Secretary of State's letter requests the developer, NNB GenCo (SZC) Ltd and ONR to respond to the questions raised in the Austrian Government's submission.

ONR's Role in the SZC Project

NNB GenCo (SZC) Ltd applied to ONR on 30 June 2020 for a nuclear site licence to construct and operate a nuclear power station comprising two UK (EPR™) reactors at Sizewell C in Suffolk.

Our [Licensing Nuclear Installations](#) guidance describes the licensing process and the factors that we may take into account when reviewing a nuclear site licence (NSL) application. Our licence assessment activities utilise our [Safety Assessment Principles](#) (SAPs), Technical Inspection Guides (TIGs) and [Technical Assessment Guides](#) (TAGs) as appropriate.

The outcome of our licence application assessment will be the production of a Project Assessment Report (PAR), which will make a recommendation to the Chief Nuclear Inspector (CNI) on whether to grant a licence. We are in the final stages of our assessment of the licence application.

In addition, during the course of the Planning Inspectorate's (PINS) examination of NNB GenCo (SZC) Ltd's application for Development Consent for the SZC project, we provided several submissions and responded to a number of written questions from PINS.

We were further involved in providing advice to the Secretary of State in the preparation of the UK Government's submission concerning SZC to the European Commission in accordance with Article 37 of the Euratom Treaty and participated in the oral examination of that material by the European Commission's Article 37 Group of Experts.

Responses to the Austrian Government questions

The submission from Austria contains 13 questions which are set out in Chapter 8 of that document. Having discussed these with NNB GenCo (SZC) Ltd, we agreed that some of the

questions required a straightforward factual response regarding the project which we are content for NNB GenCo (SZC) Ltd to provide. Other questions have been considered by our relevant technical experts and where appropriate we have provided additional commentary on the answers provided by NNB GenCo (SZC) Ltd.

Using the numbering used in Chapter 8 of the Austrian Government's submission, we are content that NNB GenCo (SZC) Ltd provides answers to the following questions:

- 8.1 Q1 to Q4
- 8.4 Q2

Our responses to the remaining question are set out below.

8.2 Q1 Which of the assessment findings of the ONR's GDA step 4 assessment of Severe Accidents for the UK EPR™ have already been solved? How were they solved and if not, when is a solution expected for those?

Of the assessment findings we raised during the UK EPR™ Generic Design Assessment (GDA), 26 related to Severe Accidents. For the Hinkley Point C (HPC) project, 11 of these have so far been closed¹. The evidence submitted by the licensee for closure of these assessment findings has generally been of a technically detailed nature; our specialist inspectors have reviewed that evidence and have been content for each to be closed.

The licensee's supporting work for the remaining 15 assessment findings is progressing to achieve resolution prior to the allocated project milestones (these are typically late in the project, for instance containment pressure test or start of cold operations) and ONR is content that the HPC licensee is appropriately managing the resolution activities.

For Sizewell C, NNB GenCo (SZC) Ltd has concluded that no new or additional work was required in relation to severe accident assessment findings. We are content that the plan and supporting work for the resolution of the assessment findings for HPC are applicable to SZC.

8.3 Q1 When will be evaluated whether the UK EPR™ meets the safety goal of practical elimination of accident sequences leading to large or early releases of radioactive substances according to the approach of WENRA 2019? What could be the consequences for the Sizewell C Project if SZC Co. fails to meet this important safety objective for European NPPs?

The EPR design considered deterministically the practical elimination of large or early releases caused by high-pressure melt ejection, steam explosion and hydrogen combustion, and as such meets or exceeds the WENRA recommendations.

Our assessments of the safety case for the HPC EPR™ are carried out in accordance with our current Safety Assessment Principles (SAP) and Technical Assessment Guides (TAG). Both our SAPs and TAGs are revised regularly and take account of expectations from

¹ See [REDACTED]. The GDAFs closed are: AF-UKEPR-CSA-010; AF-UKEPR-CSA-011; AF-UKEPR-CSA-012; AF-UKEPR-CSA-013; AF-UKEPR-CSA-017; AF-UKEPR-CSA-018; AF-UKEPR-CSA-019; AF-UKEPR-CSA-020; AF-UKEPR-CSA-022; AF-UKEPR-CSA-023; AF-UKEPR-CSA-024.

WENRA, including the treatment of accidents involving large or early releases of radioactive substances.

The design has continued to evolve, and the safety case is being developed to take account of this. Our assessments thus far, have concluded that the design is acceptable against our deterministic and probabilistic criteria for design basis and severe accidents, with risks reduced as low as reasonably practicable (ALARP). The design of the nuclear island for the SZC plant is identical to that at HPC, so conclusions concerning the very low likelihood of severe accidents, are expected to be the same.

8.3 Q2 Is it planned to review whether the UK EPR™ design meets the recent European safety standards/requirements by WENRA?

We undertake assessments of the developing EPR designs for HPC and SZC against our current SAPs in conjunction with relevant TAGs. We actively participate in related international activities and routinely review new guidance from international organisations such as WENRA. Whenever we update the SAPs and TAGs, we take into consideration any relevant new information and expectations from WENRA and from other organisations.

8.3 Q3 According to WENRA (2019), all WENRA countries apply the notion of practical elimination to types I and II; some countries also apply it to type III. For which types of scenarios should the concept of practical elimination be applied in the UK?

As noted in the NNB GenCo (SZC) Ltd response to this question, their design safety assessment covers scenarios equivalent to Types I and II. In addition, the UK EPR™ design has extensive additional provisions to protect the containment in severe accident scenarios.

8.3 Q4 Which of the assessment findings of the ONR's GDA step 4 assessment of Probabilistic Safety Analysis for the UK EPR™ are solved already? How were they solved and, if no solution has been found yet, when should they be solved?

We agree with NNB GenCo (SZC) Ltd's response to this question. We would add that of the 46 assessment findings in this topic area, 26 have been closed for HPC. The evidence submitted by the licensee for closure of these assessment findings has generally been of a technically detailed nature; our specialist inspectors have reviewed that evidence and have been content for each to be closed.

Resolution of the outstanding 18 is not expected until much later in the HPC project, typically by the first loading of nuclear fuel. We are satisfied with the rate of closure of the outstanding assessment findings related to this topic.

8.3 Q5. Which recent national and international studies concerning external hazards (flooding risk, seismic hazard, tsunami and climate change) have to be taken into consideration to determine design basis requirements? Which margins against external hazards have to be implemented for the Sizewell C?

Our assessment of the SZC hazard characterisation studies is currently ongoing. Our assessment takes into account UK and international relevant good practice, including our SAPs and External Hazards TAG (NS-TAST-GD-013). SAP EHA.4 outlines our expectation that design basis events should be derived conservatively to take account of data and model uncertainties and that the design basis events are 1 in 10 000 years for natural external hazards and 1 in 100 000 years for man-made external hazards.

We are a sampling organisation and as part of our assessment of NNB GenCo (SZC) Ltd's site licence application we will not assess all the hazard characterisation studies. For some of those assessed, we have identified the need for further work by the licensee post-licensing (if a licence is granted) to enable the hazard characterisation studies to fully meet our expectations. However, we are not currently aware of any external hazards that would preclude the use of the SZC site or impact our decision on granting a nuclear site licence.

8.4 Q1 What are the requirements with respect to the planned NPP design against the deliberate crash of a commercial aircraft? 2. Does the UK EPR™ fulfil those requirements based on the present state of knowledge (not only relying on the data of the supplier but on the assessment of ONR)?

We expect deliberate crash of a commercial aircraft to be included in the design basis for a new nuclear power station. We assessed the deliberate crash of a commercial aircraft for the UK EPR™ as part of GDA and are satisfied that it is adequately taken into account in the design at HPC. The design of the nuclear island at SZC replicates that at HPC, including the protection against aircraft crash.

ONR, April 2022