Environment Agency

Generic design assessment

UK EPR nuclear power plant design by AREVA NP SAS and Electricité de France SA

Summary of consultation document

We are the Environment Agency. It's our job to look after your environment and make it **a better place** - for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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Introduction to GDA

As the leading organisation working to protect the environment, it is the Environment Agency's role to regulate discharges and waste disposals from nuclear power stations in England and Wales and ensure their impact on air, water and land is minimised.

In response to growing interest in nuclear power and potential applications to build new nuclear power stations in England and Wales, we have been working on a new approach, Generic Design Assessment (GDA), for assessing the environmental impacts of new reactor designs. GDA means that we assess the acceptability of the generic environmental aspects and the nuclear reactor design before individual site applications are made. This approach allows us to get involved at the earliest stage where we can have most influence and where lessons can be learned for site specific applications. It also gives us additional time to address regulatory and technical issues with designers and potential operators.

The new GDA approach has given us the opportunity to work more closely with the Health and Safety Executive (HSE), providing effectively a 'one-stop-shop' for nuclear regulation. The process is allowing a rigorous and structured examination of detailed environmental, safety and security aspects of the reactor designs over approximately four years. We believe that GDA is improving efficiency both for the Regulators and the nuclear industry, and delivering greater protection for both people and the environment. GDA cannot provide a complete assessment of a final "site-specific" design as there will be other issues, operator specific or site related, that we would expect to be considered during the environmental permitting and site licensing stages.

We are conducting our GDA work in an open and clear way and will communicate with industry, academics, trade unions, non-Governmental Organisations and other interested groups and individuals throughout the process.

GDA is in two stages: the preliminary assessment and detailed assessment. We completed the preliminary assessment and published our findings in March 2008.

Electricité de France SA and AREVA NP SAS (EDF and AREVA) submitted their UK EPR nuclear power plant design for generic design assessment in August 2007. They published the submission on their website (http://www.epr-reactor.co.uk) and invited people to comment. The submission has been revised during GDA, the current version on the website is up to date and is the basis of our detailed assessment.

Based on our past experience, authorising the disposal and discharge of radioactive waste is the area of regulation that has the highest profile; the greatest perceived uncertainties and the longest lead-time for our permitting of new nuclear power stations. For those reasons, our GDA focuses mainly on radioactive waste issues, although we have also looked at aspects of the design that relate to other areas such as abstraction and discharges to water, pollution control issues, as well as management of non-radioactive waste.

The consultation document summarises our detailed assessment findings so far on environmental aspects of the UK EPR nuclear power plant design. Our output from the GDA will be a public statement of our conclusions. If we are content with the environmental aspects of the design, that it should meet the high standards we expect, we will issue an Environment Agency statement of design acceptability (SODA). If we are not content we will not issue a SODA. We will use the comments and issues raised in this consultation to help inform our decisions.

When we issued our guidance on GDA in 2007, we envisaged that when we came to a decision on the acceptability of a reactor design, we may need to attach caveats. Previous experience in similar projects has also shown that it is not unusual for industry to take significant time to completely resolve some of the technical issues raised by regulators, in view of the need for new analysis, tests or research, etc., to be carried out or for the design detail to be completed. Also, there will be some requirements for commissioning tests, maintenance schedule, and operating rules, etc., that can only be fully addressed by a future operator. In these instances, a 'satisfactory' response to a technical issue for GDA could be one where the matter is not fully resolved or confirmed, but regulators judge it is acceptable for it to be carried forward for future resolution. It might then be appropriate for us to allow the project to proceed in a controlled manner. If any of the issues are considered by regulators to be particularly significant, but still resolvable, then these would be identified as GDA Issues. In these cases the Statement of Design Acceptability would be labelled as 'Interim', and we will expect the Requesting Parties to produce a Resolution Plan that identifies how the Issue would be addressed and closed out. At this stage of consultation, Resolution Plans have not been prepared.

We have also identified in our consultation document any other issues and assessment findings that we would expect to be addressed during site permitting and licensing, reactor procurement, design development, construction, or commissioning.

When all GDA Issues have been addressed to our satisfaction then the Interim status of the GDA outcomes would be reviewed and, if appropriate, a final Statement of Design Acceptability would be provided, together with a report describing the basis of the GDA Issue resolution. Only when all GDA Issues related to the SODA have been addressed to our satisfaction will we confirm to HSE that we are content it considers providing Consent to start nuclear safety related construction of the reactor.

Should a SODA be issued, the design and safety case will continue to evolve as the detailed design progresses and site-specific applications are developed. We would expect that the generic reactor design submitted for GDA and the SODA will be used to underpin the permissions to construct a fleet of reactors identical except for site-specific requirements and the requirements of different operators.

Our findings so far, pending consultation

We have now carried out a detailed assessment of EDF and AREVA's submission for the UK EPR nuclear power plant design and our conclusion, pending consultation, is that we could issue an interim statement of design acceptability for the UK EPR. This is subject to a number of potential GDA Issues covering the following areas:

Potential GDA Issues

a) Decommissioning of the UK EPR.

b) Disposability of spent fuel following longer term interim storage pending disposal.

From our assessment so far, we have also identified other issues covering the following areas:

Other issues

a) The changes to the 'reference case' for the site-specific strategy and evidence that the site-specific strategy achieves the same objectives shall be provided at site- specific permitting.

b) Zinc injection as an option for the UK EPR to aid corrosion control.

c) Assessment of the removal of secondary neutron sources (to further minimise creation of tritium) when EPR operational information becomes available.

d) Review of the Best Available Techniques (BAT) assessment on the minimisation of the production of activated corrosion products, where possible improvements were identified in the PCER.

e) Providing the design of certain discharge tanks with associated demonstration of BAT for size and leak-tight construction.

f) Providing a BAT assessment to demonstrate that controls on the fuel pool minimise the discharge of tritium to air.

g) The sizing of filters and the demineralisation system in the liquid waste processing system.

h) Disposability of intermediate level radioactive waste (ILW) following longer term interim storage pending disposal.

i) If smelting of any low level waste (LLW) is pursued at site-specific permitting, demonstrating that the conditions of acceptance of any available smelting facilities can be met.

j) If incineration is pursued at site-specific permitting for certain waste streams, demonstrating that the conditions of acceptance of any available incineration facilities can be met.

k) Evidence at site-specific permitting that specific arrangements for minimising low and intermediate level radioactive waste (LLW and ILW) exist.

l) The monitoring of gaseous, aqueous and solid discharges and disposals of radioactive waste.

We have provided a draft interim statement of design acceptability in Annex 1 of the main consultation document to help inform this consultation. We also seek views on our proposed limits for radioactive waste discharges.

Some of our GDA Issues and other issues are the subject of ongoing assessment by HSE in its GDA Step 4 assessment, which may raise further issues that could affect our conclusions.

What next?

This consultation seeks your views on our preliminary conclusions following our detailed assessment so far of the EDF and AREVA UK EPR new nuclear plant design. We will carefully consider your views in reaching our decision on whether to issue a statement of design acceptability.

We want to hear from members of the public, industry, non-Governmental organisations (NGOs) or any other organisation or public body.

This 16 week consultation began on 28 June 2010 and will close on 18 October 2010. Please send your response to arrive by 18 October 2010.

There are a number of ways you can let us know your views.

Online Visit our website at https://consult.environment-agency.gov.uk/portal/ho/nuclear/gda.

You can also submit a response by email, letter or fax. It would help us if you would send your comments using the form provided in Annex 8 of the main consultation document. Send them to:

Email: gda@environment-agency.gov.uk

Post: Sue Riley
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Fax: 01768 865606

We will publish all responses to our consultation before the end of 2010 and summarise our progress with HSE in our quarterly reports, which we will continue to place on our joint website (www.hse.gov.uk/newreactors).

We will consider all the responses to our consultation and HSE's assessment before coming to a final decision on the acceptability of the UK EPR. We will publish our final conclusions, having carefully considered all comments received, in our decision document that we intend to publish in June 2011.

Would you like to find out more about us,

or about your environment?

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