



Public Report on the Generic Design Assessment of New Nuclear Reactor Designs

Update on the Public Involvement Process
for Step 3 of the Generic Design Assessment
Process

November 2009

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Executive summary

This report provides an update on the Health and Safety Executive (HSE) and Environment Agency's 'Public Involvement Process' (PIP) for the Generic Design Assessment (GDA) of two nuclear reactor designs: EDF/AREVA's EPR and Westinghouse's AP1000. The report also sets out how the HSE and Environment Agency (the nuclear regulators) will manage the PIP throughout the remainder of the GDA process.

As nuclear regulators, we recognise the importance of building public confidence in our ability to protect people and society from the hazards of new nuclear power stations by ensuring high standards of safety, security and environmental protection. We also recognise that working in a way that is open and transparent is a good way of helping build that confidence.

The GDA process was designed to be open and transparent, and decisions were taken early on to encourage the requesting parties to publish their safety, security and environmental submissions and to invite comments from the public on those. Summaries of the comments received are published in reports on the PIP at the end of each step of the GDA process.

Since publishing our Public Involvement Report on GDA Step 2 in March 2008, a total of 45 comments have been received; 26 directed at the requesting parties and 19 directed at Nuclear Directorate (ND). Of these, 32 related to the designs being assessed, three related to the GDA process more generally, and ten fell outside the scope of GDA.

In addition to this, we have revised the joint new build website to make it easier to use. This currently receives around 5000 visitors per month. We use the website extensively to publish information on the GDA process. We also continue to publish 'new-build' e-bulletins to notify subscribers of any new developments.

As well as publishing general information and our GDA guidance and technical assessment reports, we have started publishing a range of other documents, including quarterly reports that summarise our progress and highlight the key challenges we face going forward, and the regulatory issues we have raised against each of the designs we are assessing.

We make ourselves available to speak at regional, national and international events, and have organised seminars for key stakeholders. During Step 3, this included organising two events for non-governmental organisations (NGOs) and two for potential operators.

Introduction

This public report sets out the conclusions of the PIP carried out on behalf the HSE and the Environment Agency (the nuclear regulators) during Step 3 of the GDA process for new nuclear reactor designs. It explains how the PIP arose from our intention that GDA would be open and transparent, describes the key elements of PIP, outlines the outcomes of the process during Step 3 of GDA, and sets out how the PIP will be managed during Step 4 of the assessment process.

Background

As part of the government's Energy Review in 2006*, the nuclear regulators set out proposals for the 'pre-licensing' of nuclear power station designs. The process, which we called Generic Design Assessment (GDA), was designed to enable the nuclear regulators to assess the safety, security and environmental impacts of new reactor designs at a generic level, ie before receiving an application to build a particular nuclear power station design at a specific location.

Both the HSE and the Environment Agency are committed to working in an open and transparent way. This helps demonstrate our independence from government and the nuclear industry, and helps reassure the public that the safety, security and environmental implications of the designs are properly considered. We use the information we receive to help inform the decisions we make. However, responsibility for those decisions lies solely with us as regulators.

The original proposal from the regulators to government included a proposal that any applicant for GDA should place information about their proposal, and safety and environmental case, into the public domain, so that any interested party could provide comments. This is a key element of the PIP for GDA.

This process has been in place since the beginning of GDA, and the information received so far has helped inform our assessment. In addition, we receive correspondence directly via emails and letters on an ongoing basis, which is also used to inform our assessment. Where the correspondence does not relate to our work on GDA, it is passed on to the relevant authority.

The HSE GDA process is based on an assessment in four steps. At the end of each step they publish reports that provide an update on the detailed technical assessment work being undertaken by our nuclear assessors and highlight the technical issues that have been raised to date. The HSE is not undertaking a formal consultation as part of the GDA process, but is instead inviting comments on the assessment reports it published alongside this report at the end of Step 3. Relevant information will be used to inform the HSE's GDA Step 4 reports, which will be published at the end of GDA.

The Environment Agency's GDA process is based on two steps, consisting of a preliminary and detailed assessment. This is followed by a public consultation, which reflects its normal policy. Any comments received as part of the PIP, but after the closing date for the consultation, will be considered by the Environment Agency as part of any site authorisation process, if it is not practicable to consider them during GDA.

The nuclear regulators have also set up joint nuclear new build web pages for the GDA process. This contains links to the websites of each requesting party (RP) – the organisations that have asked us to assess their reactor designs using the GDA process. The website is used extensively to publish information on the GDA process, including our technical assessment reports, guidance and regular updates.

* http://www.decc.gov.uk/en/content/cms/publications/energy_rev_06/energy_rev_06.aspx

Update on the Public Involvement Process

Under the PIP, the RPs have provided public access to their safety, security and environmental reports, except for commercially confidential information and sensitive nuclear information. Members of the public have also been given the opportunity to provide comments on the design information to the relevant RP. The RPs undertook a commitment to respond to all relevant questions.

The issues raised, and the RPs responses to them, are given due consideration by the nuclear regulators, who will publish their views on the main issues raised (and responded to) during the PIP at key stages of the GDA process.

Inviting comments

In total, 45 comments were received during the HSE's Step 3 assessment; 26 directed at the RPs and 19 directed at the GDA Joint Programme Office (JPO) via email. Of the comments received, 32 related to the designs being assessed, three related to the GDA process more generally, and ten fell outside the scope of GDA. Each comment has been forwarded to the appropriate RP or relevant authority and either responded to, or we are awaiting responses. All relevant comments, along with the responses, have been reviewed by the nuclear regulators. The main issues responded to by the nuclear regulators are summarised at Annex 1.

Issues raised on Westinghouse's AP1000 included: the proposed turbine overspeed trip mechanism; protection against missile attack and aircraft impact in relation to the containment structure; and the need for the steam and power conversion system to be hydrostatically tested.

Issues raised on the EDF/AREVA's EPR included: the types of spent fuel cask proposed; the inclusion and quantification of bounding levels for external hazards, eg earthquake limits, and the justification for stated quantities; the stated fuel melting temperatures; and the segregation of intermediate level waste and plans for its encapsulation, storage and disposal.

Both EDF/AREVA and Westinghouse responded to all relevant comments and we are taking these into account, where appropriate, in our assessment.

Westinghouse revised its GDA website and published updated safety, security and environmental information in August 2009, and EDF/AREVA published theirs in October 2009. The comments received were, therefore, largely based on the previous safety, security and environmental submissions.

New build website

The primary means of publishing information on the GDA process is via the Internet. Together, the nuclear regulators have developed a dedicated new build website, which contains information on the GDA process. The website was redesigned over 2009 in order to make it easier to use.

The website currently receives around 5000 visitors per month, and we expect this to rise as the potential sites for new nuclear power stations becomes clearer.

The new build website can be found at: www.hse.gov.uk/newreactors.

Publishing information

GDA was designed to be open and transparent, and publishing relevant and timely information is key to this. In addition to publishing general information on the GDA process, our GDA guidance, and our technical assessment reports (and summary reports designed for a more general audience), we publish a range of other documents, for example presentations and questions raised (together with the answers) at stakeholder events.

Quarterly reports

We began publishing quarterly reports on the GDA process on 7 May 2009. The reports, which summarise our progress and highlight the key challenges we face going forward, are part of our drive to increase public understanding of our role in assessing the safety, security and environmental impacts of new nuclear power station designs, and how we are progressing against our indicative timetable.

The reports are available at: www.hse.gov.uk/newreactors/quarterly-updates.htm

Regulatory issues

As part of our work to assess the nuclear power station designs currently going through GDA, we sometimes need to ask for more information from the design companies, or tell them if we judge that a particular feature of the design might not meet UK regulatory standards. The benefit of our GDA is that it allows us to identify these issues early in the design process where they can more easily be resolved.

We have systems in place for asking questions and highlighting concerns, which includes raising regulatory issues (RI). We raise RIs when we have concerns that are sufficiently important that they may, if not resolved, prevent a positive outcome for the RP on completion of GDA. So far, we have raised one RI on each reactor design on the topic of radioactive waste, which have now been cleared; and one on the EPR control and instrumentation systems, on which work is continuing.

More information is available at: www.hse.gov.uk/newreactors/regissues.htm.

e-bulletins

The 'new-build' e-bulletin network was set up to allow people to sign up to receive information on the GDA process. So far, 3288 people have signed up to receive e-bulletins.

Engaging directly with stakeholders

In addition to speaking at regional, national and international events, we have also organised a number of seminars for key stakeholders. Two events were held for NGOs and two were held for potential operators. More information, including copies of the presentations, is available on the new build website at:

www.hse.gov.uk/newreactors/events.htm. We have also stepped up our engagement with site stakeholder groups.

Evaluation

In order to assess the effectiveness of our stakeholder engagement activity, we have put in train a number of initiatives to monitor and assess our effectiveness and these are described below.

Internal and external reviews

As part of the GDA governance arrangements for GDA, the HSE put in place an independent Process Review Board (PRB). Their reviews of the GDA process include assessing the effectiveness of the PIP. So far, the HSE has commissioned two reviews by the PRB and their reports are available on the new build website, together with HSE's responses to the findings.

In addition to this, we carry out internal audits after each step of the GDA processes, including on stakeholder engagement. The last audit covering stakeholder engagement took place in August 2009 and made two recommendations:

- to improve overall visual presentation on the joint GDA web site, particularly the front page, in order to immediately engage attention to encourage further exploration; and
- to investigate the web system and ensure the search engine enables users to find information regarding GDA or new build directly, rather than through a variety of links from other sources.

We are currently working to address these recommendations.

Market research

On the recommendation of the independent PRB, the Environment Agency commissioned research to help gauge public understanding, perceptions and confidence in the nuclear regulators' roles in the nuclear new-build process.

Initial research was conducted in June 2009, which indicated low levels of awareness and interest in nuclear power generally, and also of the HSE's and Environment Agency's role as nuclear regulators.

We are using the findings to inform our communications strategies.

Ongoing monitoring and reporting

For the duration of the PIP for GDA, we will continue to monitor the comments made to the RPs and the responses provided. We will also continue to take account of the comments we receive directly in taking forward our assessment. The HSE will summarise the comments received during Step 4, along with any responses, in its report on the PIP for Step 4. The Environment Agency will summarise the key themes coming out of its consultation in its formal response.

Looking forward

This will be the last report on the public involvement process before the end of GDA. We therefore set out below how we plan to manage the end of the PIP.

Managing the end of the GDA public involvement process

A key element of the PIP for GDA is providing opportunities for the public to comment on the design information provided by the RPs. Where relevant, we use these questions and the responses provided by the RPs to inform our assessment.

In addition to this, we receive correspondence from members of the public on an ongoing basis. We either respond to this or, where it does not relate to our work on GDA, pass it on to the relevant authority. Where comments made relate to our assessment work, we use them to inform our assessment.

In order to complete its assessment by June 2011, the HSE will need to make sure that it receives all the information on which it will base its decisions in sufficient time for any relevant comments to be taken into account in preparing its Step 4 assessment reports. Therefore, the HSE will not be able to consider comments on the RPs' safety submissions, or on the HSE's Step 3 reports, received after 31 December 2010. As already mentioned in this report, any comments received as part of the PIP, but after the closing date for the Environment Agency's consultation, will be considered as part of any site authorisation process, if it is not practicable to deal with them in GDA.

Environment Agency consultation

The Environment Agency will carry out a consultation in 2010 on its findings of its assessment of the reactor designs. It will consider comments received and issues raised to help inform its decisions about the acceptability of the designs.

This consultation on the Environment Agency's preliminary view on the acceptability of the designs is due to commence in spring/summer 2010. It will include an online consultation.

A draft communications and stakeholder engagement plan has been developed for the consultation. Stakeholder feedback on this will be sought.

Ongoing stakeholder engagement activity

We will continue to carry out other stakeholder activity, in line with our joint GDA Stakeholder Strategy, for the duration of GDA.

We are also developing a communications and engagement programme for local communities around nominated sites to raise awareness and understanding about our roles and the opportunities that exist for people to input.

Milestones

The following table sets out key dates for the public involvement process.

<i>Date</i>	<i>Event</i>
December 2009	Start of Step 4 GDA
Mid 2010	Launch of Environment Agency consultation
August 2010	Requesting party Step 4 submissions published
Autumn 2010	Environment Agency consultation closes
December 2010	End of public comments process for GDA
June 2011	GDA Concludes

Contact

If you have comments on this report, or any of the HSE's GDA Step 3 reports published alongside this report, please write to the JPO at the following address:

The Joint Programme Office
Nuclear Directorate 4N.G
Health and Safety Executive
Redgrave Court
Merton Road
Bootle
Merseyside L20 7HS

email: new.reactor.build@hse.gsi.gov.uk

website: www.hse.gov.uk

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Annex 1 Summary of issues raised during the public comment process

Issues raised	Regulators' response
The need for duplicate spent fuel ponds to provide additional safeguards.	The storage of spent fuel will be assessed as part of GDA. Our assessment, which is still ongoing, will consider a range of safety and security issues, including potential leaks, ageing and cask handling. We will publish our findings once the assessment is complete, in mid 2011.
Designs being assessed under the GDA process.	Westinghouse's AP1000 and EDF/AREVA's EPR.
When the site licensing process will begin.	Once we have received a site licence application.
Adoption of high burn-up rates and the implications for storage.	The design of the fuel pond and associated systems would need to be designed to ensure sub-criticality and decay heat removal for all fuel burn-ups proposed.
The use of fuels of various degrees of enrichment, and the implications for the positioning of fuel rods within the reactor core and fuel ponds.	A number of safeguards would need to be in place to ensure that the core loading patterns were carefully complied with. The measures would be implemented at different stages of fuel loading.
Accepting additional reactor designs for GDA.	We are not considering assessing additional reactor designs under the current GDA exercise.
GDA considers the fuel cycle in its entirety, eg storage of waste on site in fuel ponds and in dry casks and the need for ongoing power supply on site beyond the lifetime of the reactor.	With regard to longer-term management, several options are available to store spent fuel. Whichever option is selected, it will need to take into account the enrichment and residual heat of the spent fuel elements. The management of waste, as well as the integrity of back-up power supplies, are considered as part of GDA.

Issues raised	Regulators' response
<p>The meaning of GDA approval of reactor designs.</p>	<p>Under GDA, the regulators do not formally 'approve' the designs, although they need to satisfy themselves that the designs could be operated safely and securely. If the regulators were satisfied with the design they would issue confirmations stating that they were content for the designs to be built on sites in the UK. If the confirmations were issued with exclusions in certain areas, ie additional work that needed to be undertaken, then these issues would be addressed during the licensing and construction phases, in-line with normal practice for this type of project.</p>
<p>How GDA is taken into account in assessing designs for a site licences.</p>	<p>For each new reactor to be built, the operator would need to apply for a nuclear site licence and provide a supporting site specific safety report. Basing this on the design examined during GDA would minimise the additional assessment that would need to be undertaken by the regulators.</p>

Annex 2 Abbreviations and definitions

Abbreviations

C&I	Control and Instrumentation
DECC	Department of Energy and Climate Change
GDA	Generic design assessment
HSE	Health and Safety Executive
ILW	Intermediate level waste
LLW	Low level waste
RI	Regulatory Issue
RPV	Reactor pressure vessel

Definitions

Generic Design Assessment (GDA): The process under which the nuclear regulators carry out an assessment of the safety, security and environmental aspects of a new nuclear power station design, in advance of any formal application to build such a station at a particular site.

Joint Programme Office: A joint office set up by the HSE and Environment Agency to provide a single point of contact for GDA.

Nuclear Regulators: HSE (comprising both the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security), and the Environment Agency.

Public Involvement Process: The process adopted by the nuclear regulators which allowed members of the public to view and comment on the public version of the Safety, Security and Environment Report (SSER) provided by the requesting parties.

Requesting party: The organisation(s) seeking Generic Design Assessment of a reactor design and who have signed written agreements with the regulators.

Step 3 GDA: Is a review of the safety and security aspects of the proposed reactor design. This involves an analysis at the system level and of the RPs' supporting arguments. The aim is to identify major issues that may affect the design acceptance, including those with the potential to lead to significant design or safety case changes.

Step 4 GDA: Provides a detailed assessment of the safety case. Allows the NII inspectors to assess whether the claims made by the nuclear power station designers about the safety of their design are justified and to come to a judgment about whether a Design Acceptance Confirmation can be issued.