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Joint Programme Office
Nuclear Reactor Generic Design Assessment

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Date 1 February 2008

Your ref:

Unique No: WEC70020R

TRIM ref: 5.1.3.567. 2008/43563

GENERIC DESIGN ASSESSMENT – REGULATORY ISSUE RI-AP1000-0001 REV 0

From ongoing dialogue between Westinghouse and the Environment Agency, you will be aware that we have a number of concerns regarding the lack of information in your submission received to date, in particular in the following areas:

- Waste Strategy
- Generic Site Description
- Dose Assessment
- Impact on non-human species
- Demonstration of Best Available Techniques (BAT)

The deficiencies were further discussed during the face-to-face meeting between the Regulators and Westinghouse held at Redgrave Court on 21-22 January 2008. Based on the information received to date, and in accordance with the agreed Interface Protocol, we enclose a Regulatory Issue (RI) as we are of the opinion that you have not demonstrated (or may not be able to demonstrate):

I. that our regulatory requirements are met; or
II. that the Best Available Techniques will be used to minimise the arisings and impact of conventional and radioactive wastes.

These issues are of sufficient importance that they would prevent progression to the next step of Generic Design Assessment.

Both our requirements (in our P&I document) and your submission are in the public domain, and as we aim to conduct our assessment in an open and

transparent manner, the concerns identified in the RI will be presented in the Public Statement of the findings from our preliminary assessment.

We expect you to respond with a Commitment (as defined in the Interface Protocol section 3.4.3) to address our concerns and set out a timetable for submission of the required additional information. Assuming we are content with your response, we would reflect this ongoing programme of work in our Public Statement. This would also justify our progressing to the detailed assessment stage (assuming that you are successful in the forthcoming prioritisation exercise).

While we are issuing an RI because of lack of information, at this stage we are not aware of any fundamental concerns relating to the AP1000 design. The RI addresses significant issues but there are also observations and recommendations from the joint inspections that you need to consider and provide a response.

Yours sincerely

Nuclear New Build Team
Email: new.build.reactor@ hse.gsi.gov.uk

GDA Regulatory Issue		
	Unique No.:	**RI-AP1000-0001**
	Rev. No.:	**0**
	Date raised:	**1 February 2008**
	Reply required by:	**15 February 2008**
	TRIM Ref.:	**5.1.3.804. 2008/43317**

Raised by (Inspector / Regulator)**:**	**Environment Agency**
Authorised by (Inspector / Regulator)**:**	**Environment Agency**
Main Topic:	**Generic Design Assessment**
Title:	**Information required by the Environment Agency for the detailed assessment stage**

Description of Issue:

We published our "Process and information document for generic assessment of candidate nuclear power plant designs" (P&ID), version 1, on 10 January 2007.
The P&ID described our process for generic assessment and, in particular, listed in Table 1 the information to be provided.
We have completed our preliminary assessment (see P&ID paragraph 3.3) of your submission provided in August 2007.
We have found that the submission failed to provide information in a number of areas as referenced in Table 1 of the P&ID. Where information was provided, in some areas this lacked detail, in particular in terms of options appraisals to enable us to determine whether the Best Available Techniques would be used.
We consider that the lack of information prevents us from proceeding to our detailed assessment (see P&ID paragraph 3.4) without your Commitment (as defined in the Interface Protocol section 3.4.3) to address the deficiencies of information.

We have attached a Schedule to this Regulatory Issue that identifies where information is missing or deficient against the references in Table 1 of the P&ID. You should refer in the first case to the information requirements specified in Table 1 to define the additional information required. We have provided some comments to assist your understanding of our requirements and we will be available to answer any queries you may have.

We request your Commitment to provide additional information with a timetable listing each reference in the Schedule. We suggest you provide each part of information as soon as available to reduce delay to our public consultation proposal (see P&ID paragraph 3.5), and not later than end December 2008.

We request that further information provided is clearly signposted against the P&ID detailed references to facilitate our assessment.

Requesting Party Response:

Requesting Party responsible person (name / position / organisation)**:**	
Respondee (if different to above)**:**	
Full / part response:	
Response number:	1
Response date:	

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List of all attached documents (include a filename for each attached document that uniquely identify each document by name and revision)**:**

Requesting Party Contact information:

Regulatory Issue RI-AP1000-0001 REV 0

Schedule of further information required for detailed assessment stage

P& I D Reference[1]	**Preliminary Assessment/** Information required[2]
1.3	**Information lacking** 1. The characteristics of the environs of the site/sites that are used to assess the environmental impact of the design. A critical group/groups should be defined with its habits. A sensitive habitat should be defined for non-human species. The Environment Agency report "Initial Radiological Assessment Method SC030162" should be referenced. Examples of recent assessments are given in "Decision on the future regulation of disposals of radioactive waste from British Energy Generation Limited's Nuclear Power Stations in England" published March 2007.
1.4	**Information provided as an overview, lacking in detail** 1. A definitive strategy shall be proposed for both radioactive and non-radioactive wastes covering the whole lifecycle of the plant including decommissioning. The strategy for radioactive waste should take into account the UK waste categories. 2. Information provided to support the strategy will need to include design information for the ancillary facilities required ie waste treatment or storage. 3. Information provided to support the strategy for spent fuel shall include all potential options for spent fuel management and design information for spent fuel facilities. 4. A review of the strategy shall be provided to demonstrate that the strategy has encompassed relevant UK requirements, as listed in the P & I D. 5. The strategy for non-radioactive wastes will need to demonstrate that the Waste Framework Directive, Waste Management Licensing Regulations 1994, Pollution Prevention and Control Regulations and Duty of Care requirements have been considered and will be satisfied.
1.5	**Information on proposed techniques provided but no BAT assessment** 1. A formal BAT assessment is required for each significant waste stream: an options appraisal for prevention or, if prevention not possible, reduction to the minimum emission. The appraisal should then be used to justify the chosen technique. The Environment Agency PPC guidance note H1 "Environmental Appraisal and Assessment of BAT" provides an indication of the approach we would prefer. 2. Design features that facilitate decommissioning and minimise arisings of decommissioning wastes are an important consideration for us and need consideration in detail.(some information in Chapter 20). 3. The P&ID indicates a number of issues "that reference should be made to". It is not clear these that issues have been addressed, you should ensure that further information does address these issues and is clearly signposted to facilitate assessment against each issue.
2.1	**Information provided but additional detail required** 1. Chapter 20 Decommissioning needs more detail and review to UK specific requirements in 1.4 and 2.1. 2. Chapter 11 Radioactive Waste Management provides some information at an overview level. Further information is needed. 3. Detail on the handling of solid wastes is required re UK requirements – this supports the strategy provided in 1.4 above and should answer 1.4.2 above. 4. Further detailed information is required relating to solid radioactive waste management and disposal routes.

P& I D Reference[1]	**Preliminary Assessment/** Information required[2]
2.2	**No information provided** 1. The monthly profile of emissions over longer periods including operating cycles is important for our assessment. It enables us to assess short term impacts for any peak emissions. It enables us to compare the design with current operating power stations across the world.
2.3	**Information provided – more detail required** 1. Expected annual average releases of airborne radionuclides and radioactive liquid effluents as determined by PWR GALE code are provided and compared with 10CFR20 limits. Annual Limits need to be prepared for the UK situation. You will need to justify these against your "realistic" emissions using the Environment Agency report referenced in the P&ID. You should compare these discharge limits with those of similar operating stations across the world and with other types of stations currently operating in the UK. 2. The derivation of emissions with supporting data will need to be audited by us, this could be met in part by inspection at offices/stations.
2.4	**Some information provided as an overview – more detail required** 1. The UK waste categories must be used when predicting arisings of radioactive waste. 2. Wastes arising during decommissioning need to be assessed as well as during operation.(Chapter 20 provides some information on activated and contaminated materials) 3. The physico-chemical characteristics of wastes are important to us so that we can assess the suitability of your proposed treatment, storage and disposal proposals. 4. Quantification of radionuclides within wastes are again important to us for the same reasons as 3. above.(some information in Table 11.4-1) 5. The views of the NDA with respect to the disposability of solid radioactive waste are important to allow us to satisfy ourselves that no orphan waste will be produced. You are strongly recommended to approach the Nuclear Decommissioning Authority regarding your disposal proposals and provide us with their views.
2.5	**Some information provided as an overview – more detail required** 1. Characteristics of new fuel and burn up are required as they are important issues which have a bearing on the amount and type of spent fuel produced. 2. Quantities of spent fuel over the station lifetime and estimates of short term storage quantities in the cooling ponds are required. 3. Longer term spent fuel management plans need to be detailed and supported with design of any storage facility. 4. Your plans for final disposal are required. As with 2.4 above you are recommended to approach the Nuclear Decommissioning Authority regarding your disposal proposals and provide us with their views.
2.6	**Some information provided as an overview – more detail required** 1. General arrangements for monitoring have been described but lack consideration of the issues raised by the P&ID: 1.1 adequacy against EU Commission Recommendation 2004/2/Euratom; 1.2 how a decision on adequacy of arrangements has been reached; 1.3 justification that the monitoring represents the Best Available Techniques. 2. Compare your proposals to our guidance on monitoring: M11 and M12.

P& I D Reference[1]	**Preliminary Assessment/** Information required[2]
2.7	**Initial information to be provided and detailed assessment required** 1. Information using our screening methodology is to be provided by 1 March 2008 by Westinghouse in response to TQ AP1000 000005. This will need to be further developed to answer issues in the P&ID, in particular: 1.1 annual dose from direct radiation; 1.2 short term doses – will need to relate to 2.2 above; and 1.3 build-up of radionuclides in the environment including at sensitive non-human habitats.
2.8	**No information provided- refer to P&ID for requirements**
2.9	**Some information provided, not readily comprehensible– some P&ID issues not addressed** Information not provided on: 1.1 effective height of stack 1.2 liquid release points 1.3 fractions of releases made via each release point 1.4 hydrographic data 1.5 dose receptor points 1.6 weather data 1.7 chemical form of the activity discharged 1.8 dose per unit intake factors 1.9 food consumption rates for all critical groups 1.10 critical group habits data for all pathways including critical groups exposed to more than one pathway 1.11 nearest food production location 1.12 nearest habitation
2.10	**No Information provided** 1. Refer to EA methodology in P&I document; R&D Report 128 and ERICA. 2. We will need to assess impact to flora and fauna within any sensitive habitat (Habitats Directive). Detailed quantitative assessment will be needed for us to carry out an appropriate assessment.
3.1	**No Information provided – refer to P&ID** We need information on the proposed method(s) of cooling
3.2	**No Information provided** **Information needs to be provided and detail is needed against UK regulatory requirements** 1. Provide information on the presence on site of List 1 and List 2 substances defined in the Groundwater Regulations; and 2. Demonstrate that BAT is used to prevent direct or indirect discharges of these to groundwater. 3. Define ground information to be gathered before construction, the use of a Conceptual Site Model is recommended. 4. Specify in general terms a monitoring programme for the life of the installation including use of boreholes. 5. Provide information on the discharge of listed dangerous substances and their concentrations in the receiving waters, required by the Environment Agency to assess whether Environmental Quality Standards could be exceeded. 6. Present an options appraisal to demonstrate that BAT has been used to prevent or minimise emissions of pollutants from each significant effluent stream. 7. Detail measures to contain unplanned emissions of effluents, spillages, firewater and localised floodwaters.

P& I D Reference[1]	**Preliminary Assessment/** Information required[2]
3.3	**Assessment against PPC not provided** The submission needs to address whether a PPC combustion activity permit will be required. 1. Provide relevant application information to enable the Environment Agency to assess whether a permit could be issued for the generic site. See "Applying for a PPC permit" on our web site.
3.4	**Assessment against COMAH not provided** 1. List all relevant COMAH materials with their maximum installation storage quantities and compare with COMAH qualifying thresholds. 2. State whether COMAH will apply and, if so, how compliance with the COMAH Regulations will be achieved e.g. provide a draft MAPP. Materials may include: Hydrogen, Hydrazine, Fuel Oil etc.

[1] Environment Agency "Process and information document for generic assessment of candidate nuclear power plant designs", Version1 issued 10/01/07, Table 1.

[2] Where no comments provided refer only to P&ID