JOINT PROGRAMME OFFICE

REPORT ON THE JOINT REGULATORS' TEAM INSPECTION OF EDF/AREVA's ARRANGEMENTS AS PART OF GENERIC DESIGN ASSESSMENT (QUALITY MANAGEMENT ARRANGEMENTS)

DECEMBER 2007

REQUESTING PARTY:	EDF/Areva	**FILE REF.:**	
SITE:	La Défense and Montrouge France	**CC:**	
DATE:	3-7 December 2007		
INSPECTION No.:	04/07		
SUBJECT	Inspection of EDF/Areva Quality Management arrangements in support of GDA process.		
INSPECTION OBJECTIVES:	-To check that EDF/Areva have Quality Management Systems that provides organisational and procedural arrangements that adequately support production of the submission. - Through inspection, to establish that EDF/Areva have implemented and continue to review arrangements that adequately control their GDA related activities. - To inform the UK Nuclear Regulators' assessment of EDF/Areva's submission.		
INSPECTION BACKGROUND:	As part of the GDA process the UK Nuclear Regulators, from HSE Nuclear Directorate and the Environment Agency, carried out an inspection of EDF/Areva's QMS and in particular those arrangements relating to the development of the submission (environmental, safety, security report). An inspector from ASN, the Nuclear Regulatory Authority in France, attended throughout the inspection as an observer. For part of the Areva inspection an inspector from STUK, the Finnish Nuclear Regulator, also was present as an observer.		
FACILITY/AREA:	Areva, La Défense and EDF Montrouge		

SUMMARY OF INSPECTION

SUMMARY

The organisation and quality assurance arrangements for the UK EPR GDA Project Team have recently been developed and supplement the well established quality systems of the joint applicants. In addition a quality plan specific to joint operations has been developed. These, in addition to indicating a high level of commitment to the project, provide a sound basis for the operation of arrangements in support of the GDA process. The arrangements also include the control of interfaces with the UK nuclear regulators.

There is a defined and dedicated team responsible for delivering the GDA process. There are clear roles and responsibilities and a structured hierarchy of documents that are pertinent to the activities of the Project Team.

There is a clearly stated reference design, Flamanville (FA3) with design modifications for the UK EPR originating from two possible sources: FA3 changes, which take international experience feedback into account, and UK regulation, including changes resulting from interactions with regulators during the GDA process. ASN has carried out assessment of the design and safety justification sufficient to grant permission to start to construct Flamanville 3. ASN is continuing its assessment in preparation for the agreement for reactor fuelling.

The supporting QMSs (of EdF/Areva), which integrate quality and environmental management, are well established, comply with appropriate international and regulatory QA standards, are externally audited, and inspected by ASN. There are established processes in place for the control of documentation and interfaces between the co-applicants have been considered and established.

Evidence was found for the consideration of environmental issues during the design process and in the application of the Independent Nuclear Safety Assessment (INSA) and the Design Safety Review Committee (DSRC) processes. An environmental review was carried out in 2004 for EPR which led to development of a series of environmental objectives whose progress is tracked by an Environment Committee.

The identification of skills and human resources in the co-applicant organisations is evident and the commitment to recruitment, retention and succession planning is commendable. Intelligent customer issues should not arise during the GDA process.

Feedback from ASN, during the inspection, was positive regarding EdF's QMS particularly with regard to the arrangements for taking into account operational experience feedback. Additionally the Finnish nuclear regulator informed the team that Areva was improving interfaces with control of suppliers and development of safety culture, both of which are especially important at a time when the business is

growing and organisations are recruiting.

The UK Regulators' conclusion is that:

EdF/Areva operate appropriate separate and joint QMSs which include and integrate aspects that control the content and accuracy of submissions to the Joint Programme Office. The development of a quality plan specific to the GDA process, the adoption of INSA and DSRC concepts and the involvement of AMEC and Rolls Royce provide significant indicators of the co-applicants' commitment to the GDA process. EdF/Areva have experienced, knowledgeable and dedicated staff and the commitment to recruit to ensure continued adequate and continuing levels of technical resources is evident. On that basis, the UK Nuclear Regulators have confidence that the production and update of the submission is adequately controlled for this stage of the GDA process and that any comments or queries raised will be properly dealt with.

EdF/Areva Organisational Overview

1. EdF/Areva have developed a UK EPR GDA organisation which has an element of independence from its parent organisations yet benefits from the significant resources each brings to the joint undertaking. The GDA Project Organisation has set clear organisational interfaces and responsibilities that are necessary to co-ordinate the day-to-day operations of the Project. The co-applicants operate in a spirit of mutual co-operation, presenting a common interface with the UK Regulators.

2. The co-applicants have declared that the Reference Design for the UK EPR GDA is Flamanville 3 (FA3).

3. EdF/Areva consider that FA3 design documents issued during the detail design phase are consistent with the Preliminary Safety Analysis Report. Data exchange has been subjected to specific configuration management procedures including review and authorisation. It is intended that the UK EPR design will be kept as close as possible to FA3. FA3 reference design changes will require corresponding changes to the UK EPR GDA documents. Arrangements for informing the UK Regulators of changes and subsequent consideration and control of these changes have been developed and are in the early stages of implementation. The introduction of INSA and DSRC functions, which include environmental expertise, align closely with controls applied to current UK Nuclear Licensees.

4. Roles and responsibilities for posts within the UK EPR GDA Project Team are described in the Project Quality Assurance Plan, as are the interfaces with organisations that have been contracted to carry out some aspects of licensing (including submission preparation) and independent safety assessment. The function and responsibilities of the EdF/Areva GDA Steering Committee are currently under review with a more active and directive role envisaged. The Inspection Team commented that a clearer statement on the committee's governance role would be beneficial.

5. The non GDA organisational arrangements of both Areva and EdF remain unchanged. Both organisations have significant technical resources to fulfil their highly related but mainly distinct activities.

6. The arrangements for the production and review of submission chapters within the joint organisation are robust with allocated authors from one co-applicant organisation and allocated reviewers from the other. Where chapter authorship is given to AMEC (which accounts for approximately 10% of the work), both EdF and Areva review the output including all aspects requiring change to the FA3 documentation that is applicable to the UK. Rolls Royce perform an independent nuclear safety assessment (INSA) role with the recommendations being considered by a Design and Safety Review Committee (DSRC) with membership from EdF/Areva/AMEC/RR. Although not required at this stage EdF/Areva have taken into account the requirements of Licence Condition 17 in addition to INSA and Nuclear Safety Committee (NSC) adaptations.

7. Arrangements have been established between the co-applicants to ensure that documents relating to the GDA process are properly controlled. Both companies have established electronic document management systems. A dedicated and secure electronic link has been developed such that documents are held in readable form on both systems. Access rights control authorisation and change protocols are in place.

8. The co-applicants have significant technical resources, as may be expected from such large well-established organisations, and the commitment to the ongoing recruitment of core skills is obvious. Succession planning is an integral part of both organisations' HR strategies and the retention of skilled and experienced staff is not an issue for either of the co-applicants. The inspection team were impressed with both organisations' approaches to identification of skills, recruitment, training, mentoring and retention. It is unlikely that issues such as singleton expertise or difficulties relating to intelligent customer will arise as the technical resource levels are significant and increasing. However, as a worldwide problem in the nuclear industry, the skill pool is finite and needs to grow to satisfy the increasing demand. This applies to nuclear safety, environment and security-related skills.

9. Areva and EdF's approaches to the selection and use of contractors follow generally accepted practice of having approved vendor lists based upon combinations of questionnaires, audits and surveillances. For the design stage, however, there are no contractors used, with the exception of Rolls Royce (for INSA of changes specific to the GDA) and AMEC. AMEC operates a QA system which has been certificated to BSENISO 9001: 2000 by Lloyds Register Quality Assurance, which is appropriate to the nature of the work being carried out. The output of AMEC, under the contract with EdF, is subject to reviews by both EdF and Areva independently. This is considered a high level of scrutiny and would, in organisational terms, satisfy elements of Nuclear Licence Condition arrangements should these apply.

10. An environmental review was carried out in 2004 for EPR which led to the development of a series of environmental objectives the progress of which is tracked by an Environmental Committee.

QA Arrangements Overview

11. EdF/Areva have developed a UK EPR GDA Project Quality Assurance Plan which describes the co-applicants' joint organisation and specific project provisions to deliver detailed safety, security and environmental submissions in support of the GDA process. The QA Plan references the management systems of EdF and Areva which provide many of the established procedures to deliver safety, security and environmental aspects for the joint process. Both the co-applicants recognise the quality function as central to the delivery of projects and have qualified and experienced staff working within these functions.

12. The QA Plan references level 2 organisational and procedural documents which include INSA/DSRC roles and responsibilities which have been introduced to provide an independent assessment function for changes that have an impact on the UK submissions documents. Established change control processes have existed for many years within the co-applicants' individual organisations and the joint arrangements supplement these. Review and authorisation of design changes are appropriate. Evidence was found for the integration of environmental considerations during the design process for EPR, for example via specific technical reviews. The new procedures, in the main, have been written and implemented to provide arrangements to align with the requirements laid down in the GDA Interface Protocol (JPO 003). The introduction of these is seen as a positive indicator of EdF/Areva's commitment to the UK Project. Additionally this approach has focussed on safety, security and environmental considerations and has replaced the more traditional approach of a quality system being generally written around safety with environmental and security aspects being seen as mainly the responsibility of the operator.

13. The co-applicants' quality management arrangements are written to comply with national and international quality standards including the Quality Order of August, 10, 1984 (currently under review) relative to the quality of the design, construction and operation of Basic Nuclear Facilities (French Regulation). This Order is applicable from and including the design stage throughout all subsequent stages of existence of the nuclear installation. Together with the Order, management systems based on ISO 9001, ISO 14001 and IAEA 50-C-Q provide an appropriate set of requirements against which EdF/Areva have developed arrangements.

14. With regard to internal auditing and review, arrangements are in place for both organisations and these have operated for some years as a standard element in their QA systems. Work is ongoing to extend the coverage of audits and reviews to GDA related activities and organisation. Both of the

co-applicant organisations have been audited many times by external organisations including ASN. The preparation for this inspection and the enthusiasm of the presenters and other contributors provided the inspection team with confidence that both organisations consider that they have effective management systems.

Observations

15. EdF and Areva have adequate quality management systems that are well established and have been written to meet the requirements of appropriate national and international QA standards. The integration of quality and environmental management systems and application to the UK Project is noted.

16. The production of a GDA specific Project Quality Plan, which is underpinned by the quality systems of EdF and Areva is seen as a positive indicator of the co-applicants' commitment to the GDA process. The quality plan describes the organisational and procedural arrangements to manage the UK Project.

17. The co-applicants have adopted arrangements generally in-line with LC arrangements in the areas of INSA and NSC. Additionally there are indicators that LC 17 has also been considered.

18. Both EdF and Areva employ experienced and knowledgeable staff and both are actively recruiting new staff to ensure adequate technical skills for the future. It is unlikely that issues relating to intelligent customer will arise as there is significant depth in core skills and the application of succession planning in the co-applicant organisations.

19. Procedures for document and change control are evident and have operated in both organisations for a number of years. The operation of these functions is recognised by the co-applicants as fundamental to the design process and essential for control of in-house authorisation and regulatory interface.

20. ASN has carried out assessment of the design and safety justification sufficient to grant permission to start to construct Flamanville 3. ASN is continuing its assessment in preparation for agreement to fuel the reactor. Additionally IRSN has carried out significant reviews of the design.

Recommendations

21. Recommendation 1: The EdF/Areva Project Team should consider, as part of its restatement of the role of the GDA Steering Committee, the role the latter plays in providing governance to the process.

22. Recommendation 2: The EdF/Areva Project Team should consider the formal tracking of Regulatory Issues, possibly by using the existing action

tracking database.