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REVISION HISTORY

Issue	Description	Date
00	PCSR June 2009 update (updates to GDA management, role of Steering Committee and AREVA organisational changes) (**Note**: Previous issues of this sub-chapter were included in UKEPR-0002-210)	22/06/09
01	Consolidated Step 4 PCSR update: - Minor editorial changes - Updates to GDA organisation - Updates to AREVA organisation - Additional information included in section 3	29-03-11
02	Consolidated PCSR update: - Note added below figure in §2.2 stating that the NII was replaced by the ONR in April 2011.	17-05-12

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SUB-CHAPTER 21.1 – PROJECT ORGANISATION

1. INTRODUCTION

A detailed description of the whole UK EPR project organisation requires that the organisational structure, interfaces, and responsibilities be clearly defined for the different phases, from design licensing through to plant operation.

For the present submission, the project organisation is focused on the scope of the GDA process. The post-GDA organisation can only be fully defined following a successful Generic Design Assessment, and will depend on the partnerships established for the future project phases, in particular the plant owner.

This section therefore outlines:

- the organisation for GDA project management;
- the main organisational arrangements foreseen to control the construction of a new plant in accordance with the applicable standards and regulations.

2. GDA PROJECT MANAGEMENT

2.1. SUMMARY

A joint project team has been established by co-applicants EDF and AREVA to manage the UK EPR GDA Project.

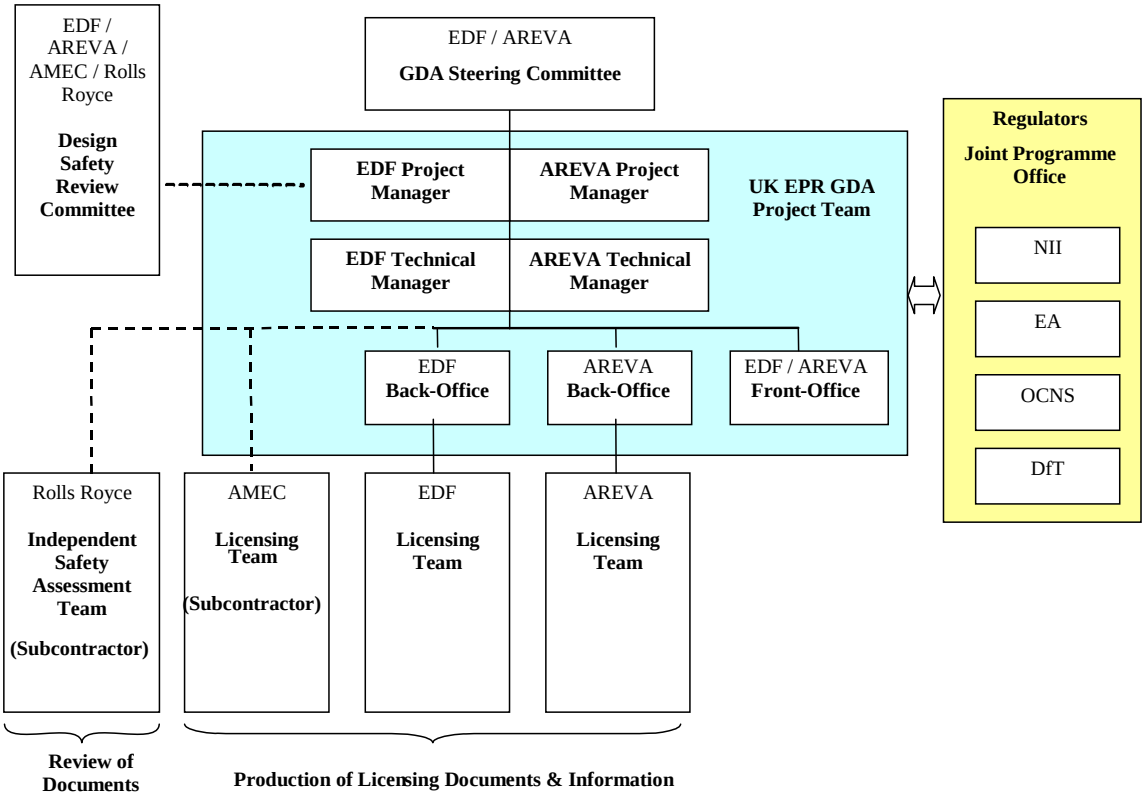
The Project uses the services of licensing teams drawn from the engineering organisations of AREVA, EDF and its subcontractor AMEC for the design activities and production of the licensing documents and information submitted to HSE and EA for the Generic Design Assessment of the EPR in the UK.

The main areas of technical responsibility of the three companies involved in the production of the licensing documents are as follows:

- **AREVA**: Nuclear Steam Supply System (NSSS) design and Balance of Nuclear Island (BNI) design;
- **EDF**: design of Balance of Nuclear Island (BNI), Conventional Island (CI), Balance of Plant (BOP) and overall design integration as well as plant operational considerations;
- **AMEC**: provision of technical support relative to UK practices (the EPR design is assessed against UK regulations).

2.2. UK EPR GDA PROJECT

The UK EPR GDA Project organisation and interfaces with external organisations are shown below:



Note: the NII was replaced by the Office of Nuclear Regulation (ONR) in April 2011.

The activities for the Generic Design Assessment of the EPR are carried out under the leadership of the joint UK EPR GDA Project Team comprised of the joint AREVA / EDF GDA Project Front Office based in the UK, and the AREVA and EDF Project Back Offices based in France, supported by the licensing teams from AREVA, EDF and their subcontractors.

Project Managers, who have been appointed by their respective co-applicant organisations AREVA and EDF, lead the UK EPR GDA Project Team and report to the GDA Steering Committee composed of EDF and AREVA senior management. The Project Managers are responsible for achieving the project objectives set by the GDA Steering Committee in terms of scope, schedule, quality and cost as well as the organisation and delivery of submissions and interfaces with the UK Regulators to obtain statements of acceptance for the UK EPR design.

The GDA Steering Committee has responsibility for governance over the GDA Project and also acts as an arbitration board for the joint Project if necessary.

UK EPR GDA Technical Managers are nominated from AREVA and EDF and report to their respective Project Managers. They are responsible for the technical coordination of the GDA work packages.

The joint GDA Project team members are geographically located in the Project Front Office and Back Offices. The staffing levels and division of roles and responsibilities between the Front Office and the Back Offices are adjusted in accordance with the GDA Project needs. The GDA Project Front Office provides a common UK base office for EDF and AREVA UK-based members of the GDA Project team.

The GDA Project team members in the Front and Back Offices ensure the day to day contact between the Project and the UK Regulators and ensure the management of formal and informal exchanges with the UK Regulators according to agreed interface processes. They support the Project through project administrative and control activities and through coordination support for the production of documents and information performed by the licensing teams, in respect of established quality management arrangements.

The Licensing teams within the EDF, AREVA and AMEC engineering organisations are responsible for the production of licensing documents and information in accordance with the Project requirements and with the respective Quality and Environmental (Q&E) Management systems within each organisation.

AMEC is a subcontractor of EDF, providing project and engineering services in support of the GDA Project.

An Independent Nuclear Safety Assessor (INSA), Rolls Royce Marine (or other suitable organisation for specific topics), provides independent review of specific submission documents, prior to their submission to the UK Regulators, which address safety case information not previously submitted and safety significant design changes depending on their categorisation. The INSA issues its recommendations in a formal report to the Project.

A Design Safety Review Committee (DSRC) composed of EDF, AREVA, AMEC and Rolls Royce independent senior level technical experts, is responsible for advising the Project on issues such as how to take INSA recommendations into account or recommendations on any safety significant issues. In all cases, final decisions are made by the Project Managers or, if necessary, by the Steering Committee.

In order to keep the UK EPR design as close as possible to the Flamanville 3 (FA3) EPR design (reference plant), any design change originating from the FA3 EPR Project or from interactions with UK regulators is dealt with by a UK EPR Design Change Committee (DCC), made up of the UK EPR Project Managers and Project Technical Managers and other technical experts. Depending on the DCC decision and of the safety significance of the change, an INSA review may be requested as well as the advice of the DSRC.

2.3. ENGINEERING AND PROJECT SUPPORT FOR THE GDA

Engineering and project support to the UK EPR GDA Project is provided by the engineering organisations of EDF, AREVA and AMEC licensing teams and back offices.

In addition, further supplier organisations are contracted by EDF or AREVA for engineering and project support, as needed. EDF or AREVA leads on establishing the contract and its implementation in accordance with the requirements of its own management system.

2.3.1. EDF support for the GDA Project

The **Nuclear Engineering Division (DIN)** of EDF provides the engineering and project support for the UK EPR GDA Project.

Within EDF Generation Department (DPI), the Nuclear Engineering Division (DIN) covers the activities of plant design, construction, commissioning and decommissioning of installations.

The Nuclear Engineering Division consists of six Departments:

- Nuclear Department (**CNEN**) for nuclear design engineering;
- Electromechanical Department (**CNEPE**) for electricity production engineering;
- Operating Plant Services Department (**CIPN**) for nuclear base engineering;
- Deconstruction, Waste Management and Environmental Engineering Department (**CIDEN**) for decommissioning and environmental engineering;
- Basic Design Department (**SEPTEN**) for thermal and nuclear engineering and projects;
- Expertise and Inspection Department for Manufacturing and Operation (**CEIDRE**) for inspection and testing appraisal.

CNEN, CNEPE, CIDEN, CEIDRE and SEPTEN Departments are involved in the pre-licensing phase of the UK EPR Project. Their location and scope of activities are summarised hereafter.

CNEN, located in MONTROUGE, carries out the following tasks:

- Project management of future projects, including the UK EPR;
- Design engineering: EPR implementation studies on the nuclear island;
- Project management and maintenance of engineering Computer-Assisted Design (CAD) tools and Electronic Document Management software (GED) for the whole of the DPI and for customers outside the DPI;
- Administration of the EDF part of the UK EPR GDA Project Front Office.

CNEPE, located in TOURS, carries out activities in the following areas:

- Design studies for the conventional island, pumping station and EPR site buildings;
- Support for operators of all nuclear units with respect of the conventional island and pumping station.

CIDEN, located in VILLEURBANNE, is responsible for:

- Dismantling of shutdown nuclear reactors;
- Defining the nuclear waste management strategy for all waste resulting from dismantling, and the design and implementation of waste treatment installations;

- Preparing the environmental files required by regulations.

CEIDRE, located in SAINT-DENIS and AIX-EN-PROVENCE, provides:

- Technical expertise in metallurgy, electrical systems, nuclear fuel, mechanics, non-destructive testing (NDT) concerning the manufacturing, assembly and installation of equipment for Nuclear Power Plants (NPP);
- Technical expertise and laboratory testing in civil works, including participation in geology, hydrology and seismology reviews;
- Chemistry and radiochemistry requirements for system conditioning and for products used in NPPs;
- Inspection at suppliers' premises and on NPP sites with respect to regulatory and contractual requirements;
- Assistance for the definition of applicable industrial solutions to resolve technical issues arising during manufacturing, installation or operating phases;
- Conformity assessment services: CEIDRE hosts the EDF's User Inspectorate (UI) to assess the conformity of pressure equipment (nuclear and conventional) to the appropriate regulations. The UI is accredited according to the ISO 17020 Standard for inspection and is accepted by the French Safety Authority to carry out work on nuclear pressure equipment.

SEPTEN, located in VILLEURBANNE, has overall responsibility within EDF for the technical design philosophy and management of future plant designs, in connection with research and development. It carries out the following tasks:

- Developing future plant designs, taking account of technological monitoring, Research and Development and national and international experience feedback;
- Providing support to the engineering Departments for application of design philosophies;
- Ensuring the technical consistency of nuclear fuel products and their use in the reactors;
- Supporting international activities developed by EDF.

The interfaces between the UK EPR GDA Project Managers and the Departments described above are ensured by the designation of individuals in each Department, responsible for coordinating the engineering work performed in their Department.

2.3.2. AREVA support for the GDA Project

AREVA is the world's leading supplier of nuclear power equipment and services. Reactors built by the group represent 100,000 MWe of installed capacity.

The **Reactors and Services** (R&S) Business Group of AREVA is organised into six Business Units:

- **Products and Technology**
- **New Builds**
- **Equipment**
- **Installed Base**
- **Nuclear Measurements**
- **Propulsion & Research**

In particular, the *Products and Technology Business Unit* is responsible for "ensuring licensing and technical performance of R&S products, and providing advanced, high-performance products and necessary technologies". The *New Builds Business Unit* is responsible for "delivering new nuclear reactors, from proposal phase until commissioning and hand-over to the client".

The activities of these business units cover various types of nuclear reactor designs: Pressurised Water Reactors, Boiling Water Reactors, Fast Breeders, High/Very High Temperature Reactors and Research Reactors. They also provide various kinds of services for other reactor designs or nuclear facilities.

For new Nuclear Power Plants, depending on the customers, the supply of products covers either components for the primary circuit, the Nuclear Steam Supply System, the Nuclear Island or turnkey Nuclear Power Plants in cooperation with a turbine generator supplier and/or other contractors (EPC, civil works…).

Engineering and Projects (E&P), a resource organisation, has been created within AREVA with the purpose of providing the business units with design, construction and commissioning and inspection services. In addition E&P provides R&S with project management resources and develops project methods and tools at the Business Group's request.

For the UK EPR GDA Project, the AREVA project team belongs to the Products and Technology Business Unit and is supported by the E&P organisation. The interfaces between the UK EPR GDA Project and E&P described above are ensured by the designation of individuals in each department, responsible for coordinating the engineering work performed in their department.

2.3.3. AMEC support for the GDA Project

AMEC refers to **AMEC Nuclear Holdings Ltd (ANHL)**, which provides technical and project support to the UK EPR Project for the UK EPR Generic Design Assessment.

ANHL is the overarching organisation which covers work by subordinate Business Units including AMEC Nuclear UK Ltd. ANHL has appointed an overall Programme Director and Project Manager for the contract.

The general responsibilities for the key personnel are as follows:

- A Project Director who is accountable on behalf of ANHL for the overall project delivery and relationship management between ANHL and the UK EPR GDA Project, and is responsible for:
  - Receiving all work requests from the UK EPR GDA Project and, after consultation, allocating the work to the appropriate business unit;
  - Review and approval and maintenance of the Quality Management Plan;
  - Ensuring coordination of the work on behalf of ANHL;
  - Monthly project reporting and invoicing;
  - Ensuring the production of collated project accounts for the Project, using information provided by the business units;
  - The management of generic project issues;
- Individual Project Managers, responsible for ensuring delivery of work packages involving their areas under the contract, and compliance with each organisation's procedures.

AMEC has fifty years experience of working on UK civil nuclear sites, in all phases of the plant lifecycle from design through construction and maintenance to decommissioning. AMEC's UK Nuclear operations are undertaken by AMEC Nuclear Holdings Limited, The UK businesses as a whole employ some 13,000 people.

Programme, project management, and technical expertise is provided by AMEC Nuclear UK Ltd.

From the headquarters of AMEC's Nuclear business in Knutsford, Cheshire and further UK offices situated throughout the UK, AMEC provides a single multi-disciplinary organisation, capable of providing the wide range of skills necessary for the successful completion of projects. Adjacent to the Birchwood Park office in Warrington are fully equipped laboratories and workshops for physical and chemical testing and analysis, staffed by highly experienced consultant scientists and engineers.

3. ORGANISATION POST-GDA

As explained in the Introduction, the post-GDA organisation will depend on the plant owner, which could be any one of a number of established utilities.

It is assumed that the main responsibilities for the post-GDA phase of the UK EPR project can be split into the following functions:

- The **Plant owner (Operator)** will have safety and environmental responsibility in relation to plant operation, wastes and effluent management. The plant owner will be responsible for setting up the plant operating organisation and the interface arrangements with the architect engineer and the suppliers. The owner will also be responsible for establishing arrangements for maintaining integrity of the design and for maintaining a level of detailed and specialised knowledge necessary to achieve safe operation of the plant over its lifetime.

- The Operator will have responsibility for applying for the nuclear site license for a specific UK EPR plant and for obtaining necessary environmental permits for plant construction and operation. The operator will also be responsible for ensuring compliance with the nuclear site license conditions and other statutory safety and environmental obligations, over the plant lifetime.

- The Architect Engineer will provide engineering and project management support to the Operator. The specific role and responsibilities assigned to the Architect Engineer will be dependent on the Operator's in-house capability.

- Suppliers are organised to meet the requirements of their contractor, in particular those requiring independent verification of engineering inputs/outputs by a competent person who is different from the originator. Third party independent review will be required for some activities involved in manufacturing and installation of equipment.

- AREVA and EDF have arrangements in place to facilitate knowledge transfer and to fully support the plant owner and its organisation in all phases of nuclear new build projects. Data hand-over and comprehensive training programmes constitute the main elements of knowledge transfer which are discussed and agreed between the vendor and future plant owner during contract negotiations. The scope of the knowledge transfer package takes into account the scope of delivery, and the knowledge and experience of the involved plant owner (operator) and architect engineer.

In case open items remain at the end of the GDA, EDF and AREVA will apply processes to address these open items during the nuclear site licensing process including appropriate knowledge transfer to ensure the operator is able to close open items during that phase.

Detailed arrangements for knowledge transfer must account for a number of operator specific factors and therefore for the UK EPR may only be fully defined in later licensing phases.