AREVA

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Document Control Desk
Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Request for Review and Approval of Quality Assurance Program 0003, Fuel Management Manual, Revision 3, "AREVA Front End Business Group Fuel Business Unit Management Manual"

AREVA NP Inc. (AREVA NP) requests the NRC's review and approval for referencing, in licensing actions, the Fuel Management Manual (FMM), Revision 3 entitled "AREVA Front End Business Group Fuel Business Unit Management Manual" dated May, 2012. This manual will supersede and replace Revision 2 of the AREVA NP Fuel Sector Management Manual which was previously approved on March 11, 2011. This manual is submitted for approval as required by 10 CFR 71 Subpart H Section 71.101(c).

Changes to the manual are delineated in the "Summary of Main Changes." Specifically, AREVA NP is updating the manual to add an export classification statement and update the list of AREVA sites to which the manual applies. Additionally, updated information is relative to the applicable business units and U.S. Fuel Business Unit Organization. The Fuel Management Manual is nonproprietary.

If you have any questions related to this submittal, please contact Mr. Alan B. Meginnis, Product Licensing Manager at 509-375-8266, or by e-mail at alan.meginnis@areva.com.

Sincerely,

Pedro Salas
Director, Regulatory Affairs
AREVA NP Inc.

Enclosures

cc: H.D. Cruz
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Q004

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FRONT END BUSINESS GROUP

Fuel Business Unit

Management Manual

FMM, Revision 3
May, 2012
Effective: June, 2012

This document is electronically approved. Records regarding the signatures are stored in the Fuel BU Document Database. Any attempt to modify this file may subject employees to civil and criminal penalties.
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Export classification AL: N ECCN: N
Goods labeled with "AL not equal to N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN not equal to N" are subject to US reexport authorization. Even without a label, or with label "AL: N" or "ECCN: N", authorization may be required due to the final whereabouts and purpose for which the goods are to be used.

Summary of main changes

Note: Each change is identified in the merge

Item	Page	Description and justification
All FMM		Replaced "QSE" by "QHSE" (Quality Health Security Environment) Added: following foot note: Handling: Restricted AREVA
	i	Added: export classification and confidentiality clause
0.1	1	Suppressed: "Willmington " Added: "Industrial activities of CERCA, operated by FBFC since beginning of 2011, are also in the scope and are managed, as far as Quality is concerned, through a specific Quality Assurance Plan"
0.3	2	Added: "This manual is applicable to Fuel BU activities discussed above with the following exceptions: • Management and Sales activities of CERCA (although their processes review and management review have been temporarily subcontracted to FBFC) "
1.1	7	Modified: The group is also expanding considerably in renewable energies – wind, solar, bioenergies, hydrogen and storage – to be one of the key players in this sector worldwide in 2016.
Fig 1.3	8	Map modified with "Erwin" site suppressed
1.2	9	Modified: The Front End BG is headquartered in Paris (France) with main activities based in France, Belgium, Germany and the United States gathering over 8800 employees.
1.3.1	10	Modified: The Fuel BU is part of the Front End BG. With over 4,500 employees, it is present in France, Belgium, Germany and the United States through its 6 Divisions and CERCA industrial activities: • Products & Technologies Division • Supply Chain Division • Contracts & Services Division • Fuel Design Division • Zirconium Division (described hereafter) • Fuel Manufacturing Division (described hereafter)
Fig 1.5	10	CERCA suppressed as direct link below FBU – "R&D and Manufacturing ac-

		tivites for CERCA" attached under FBFC
1.3.2	11	Added: The Fuel BU includes CERCA R&D and Manufacturing activities (described hereafter)
1.3.4	11	Modified: FP gathers all the competencies needed to guide the development of products within a project management framework,
1.3.5	12	Modified: FM manufactures fuel assemblies from uranium and from the finished products supplied by FZ (86% of our raw material, excluding Uranium). It features 6 manufacturing sites: 2 in France, 2 in Germany, 1 in Belgium and 1 in the US
1.3.6	12	Modified: CERCA also produces a small series of mechanical components such as core irradiation capsules, core thimbles, radioactive sources for industrial and medical purposes in its LEA (laboratory of activities standards) facility in Pierrelatte.
Tab. 2.1	13	Modification of ref. PO ARV SHS GEN 4 into PO ARV 3SE GEN 1 Modification of ref. PO ARV SDI ENV 9 into PO ARV 3SE GEN 2
2.3	14	Suppressed: "in less than 3 months" from: Entities ensure that these applicable legal requirements are taken into account *(In less than 3 months)* in establishing, implementing and maintaining its Integrated Management System
Fig 3.2	19	Latest March 2012 version of FL BU Process map
Fig 3.3	20	Added: Level 2: procedures FQP and FSOP Level 1: procedures FSOP and local ones
3.4	22	Replace word "or" with "and" in the sentence below: Review and approval of changes are performed by the same organizations that reviewed and approved the original **and** by designated organizations having access to the necessary information for review (such as the previous revision)
Fig 4.1	23	FL BU QSSHE 2012 policy
Fig 4.3	27	Replaced: DQP by IPQ
4.4.3.1	28	Suppress "of the Fuel BU" in the first sentence.
4.4.3.2	28	Suppress "of the Fuel BU" in the first sentence and add ....reports **to** Fuel BU.... Modified: Senior Vice President Industrial Performance and Quality (IPQ).
8.2.3.2	50	Modified: ... with AREVA directives and with FL BU Management manual, processes and procedures. ..... Cross-audits are conducted by an audit team, which is independent from the Fuel BU being audited.
Appendix A Attach. 4	A-11	Update of the attachment to represent the Fuel Organization Chart

Contents

Appendices

Figures

Tables

External distribution

- Fuel BU customers (without appendix A except for customers regulated under 10 CFR 50, Appendix B, who will be provided a copy with appendix A)
- National regulatory authorities as required by national codes and regulations
- Customers and other stakeholders on request

Internal distribution

- Fuel BU Management System Committee
- Available via on line electronic documentation system

0. Introduction

0.1. Scope

This Management Manual describes the Quality, Occupational Health and Safety (OH&S) and Environmental Management System implemented within the Nuclear Fuel Business Unit (BU). It applies to the AREVA Front End Business Group (BG) Fuel BU at the locations of Paris, Lyon, Romans-sur-Isère, Pierrelatte, Dessel, Paimboeuf, Rugles, Montreuil-Juigné, Ugine, Jarrie, Lynchburg, Richland, Erlangen, Lingen, Duisburg and Karlstein (exclusion are described in the section 0.3).

Industrial activities of CERCA, operated by FBFC since beginning of 2011, are also in the scope and are managed, as far as Quality is concerned, through a specific Quality Assurance Plan.

This Manual fulfills the requirements of the following codes, standards and regulations:

Titles	References
National standards and regulations	
Arrêté du 10 août 1984 relatif à la qualité de la conception et de l'exploitation des installations nucléaires de base (French Regulation)	Arrêté du 10 août 1984
Allgemeine Forderungen an die Qualitätssicherung (KTA - German Nuclear Safety Standards Commission)	KTA 1401 (06/96)
Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants (US Regulation)	10 CFR 50 Appendix B
Quality Assurance Requirements for Packaging and Transportation of Radioactive Material (US Regulation)	10 CFR 71 Subpart H
Quality Assurance Program Requirements for Nuclear Facilities	ANSI/ASME NQA-1 2008 and Addenda ASME NQA-1a 2009
International codes and standards	
The Management System for Facilities and Activities (IAEA - International Atomic Energy Agency)	IAEA GS-R-3
Quality Management Systems – Requirements - (ISO - International Organization for Standardization)	ISO 9001:2008
Environmental Management Systems – Requirements	ISO 14001:2004
Health and Safety Management Systems – Requirements	OHSAS 18001:2007

Tab. 0.1: Requirements of standards, regulations and codes

Applicable requirements are completed in chapter 2. Where additional standards, requirements of statutory and regulatory bodies or requirements formally agreed with interested parties are to be used or exceptions to these standards are taken, these conditions will be noted in lower tier documents.

For projects regulated under the provisions of 10 CFR 50, Appendix B or 10 CFR 71 Subpart H, applicability of ANSI Standards and NRC Regulatory Guides are shown in appendix A.

For projects regulated under the provisions of KTA 1401, appendix B is applicable.

For projects regulated under the provisions of Order of August 10th, 1984 relative to the quality of design and operation of basic nuclear facilities, appendix C is applicable.

0.2. Purpose

The FL BU Management System is an Integrated Management System (IMS) and constitutes the foundation to ensure consistency of Quality, OH&S and Environmental Management and its continuous improvement through the entire BU and to emphasize that managers, those performing the work and those assessing the work, all contribute in ensuring that their work meets the stringent Nuclear Safety, Product Quality, OH&S and Environmental requirements. The Management System of the Fuel BU promotes and supports a strong Safety Culture.

Based on this Fuel Management Manual (FMM), each Entity develops documents with appropriate detailed measures.

The extent to which the Management measures are applied is consistent with the decision of the Management and with the importance of the particular product or process to nuclear safety. A graded approach is used, which satisfies the applicable requirements and ensures IMS requirements are met.

0.3. Applicability

The Integrated Management System of the Fuel BU, as described in this manual, is applicable for the Fuel BU locations of contracts, development, design, procurement, manufacturing, inspection, testing of materials, parts, components or assemblies for use in a reactor. It also applies to related engineering services and technical support including irradiated fuel inspection, repair or reconstruction of irradiated fuel, in-core monitoring hardware and software and nuclear plant analyses. It also applies to safety and environmental systems at the Fuel BU locations.

This manual is applicable to Fuel BU activities discussed above with the following exceptions:

- Management and Sales activities of CERCA (although their processes review and management review have been temporarily subcontracted to FBFC)
- Radiation protection systems which is managed at site level (to better take into account national regulations), and so is not part of the FMM,
- Office activities of Paris (Rue Lafayette) and Erlangen, which are covered by an OHSAS 18001 and ISO 14001 certification at site level,
- Office activities of Lyon and Lynchburg (Old Forest Road), which are covered by an ISO 14001 certification at site level and Health and Safety Management System not yet certified according to OHSAS 18001,
- CEZUS KK (Office activities in Japan),
- Erwin Tennessee facility, which is in the scope of NFS.

In the US, the IMS also applies to radioactive material shipping containers (see appendix A for compliance with 10 CFR 71 Subpart H).

0.4. Responsibility

The FL BU MS&CI (Management System and Continuous Improvement) Director is responsible for defining the content and changes to the Integrated Management System and FMM in con-

junction with the Management System Committee (MSC). Division and Entity specific requirements, including description of Division and Entity organizational structure, are provided in manual attachments or sub-tier documents. The FMM is released by the FL BU MS&CI Director.

0.5. Safety Culture

The development of a strong Safety Culture throughout the entire organization is essential to the Fuel operations. The Management System contributes to promote and support a strong Safety Culture by:

- ✓ Ensuring a common understanding of the key aspects of Safety Culture within the organization,
- ✓ Providing the means by which the organization supports individuals and teams in carrying out their tasks safely and successfully, taking into account the interaction between, individuals, technology and the organization,
- ✓ Reinforcing a learning and questioning attitude at all levels of the organization,
- ✓ Providing the means by which the organization continually seeks to develop and improve its Safety Culture.

The development of the Safety Culture within the organization may be performed through:

- ✓ The presentation of the policy to all employees,
- ✓ Systematic trainings offered to each new employee,
- ✓ Additional trainings on Safety Culture to employees,
- ✓ Qualification and surveillance of suppliers.

The monitoring of Safety Culture in the organizational units is performed through such as internal audits, deployment of safety visits in manufacturing sites, deployment of Human and Organizational Factors approach in each site.

0.6. Terms and definitions

Terms are used as defined in standards. Additional and deviating definitions used in this document are:

TERMS	DEFINITIONS
Corporate Department	Department that supports in the field of its missions, the whole of AREVA
Cross-audit	An audit performed periodically (once every 3 years minimum) by an independent audit team on a Fuel BU entity to assess compliance with AREVA directives and procedures and with Fuel BU Management Manual, processes and procedures.
Customer	Client of Fuel and its subsidiaries
Customer Complaint	Mark of dissatisfaction expressed by the customer regarding the performance of our products/services to the project manager or to upper managers, usually addressed by email or other written correspondence.
Division	Part of Fuel BU comprised of several Entities, related by their line of work: Fuel Design Division, Products & Technologies Division, Supply Chain Division, Contracts & Services Division, Fuel Manufacturing Division and Zirconium Division.
Entity	Subgroup of Fuel BU with the same level 3 IMS
Event	An event is a non-conformity or/and an undesirable situation, which can drive to consequences (incident, with needed corrective actions) or not (near-miss). Domains concerned by events are Quality, Nuclear Safety, Environment and Occupational Health and Safety.
Fuel related product	Materials, parts, components and assemblies for use in a reactor
Incident	Event in which a pollution or injury or illness or fatality occurred, or could have occurred
Internal supplier	Unit of AREVA providing a product to another unit of AREVA
Management System Committee (MSC)	A committee consisting of Management System (MS) Site Managers led by the FL BU MS&CI Director. Division/Entity MS Managers may participate as required by the FL BU MS&CI Director
Non conformance	A deficiency in a characteristic, documentation or procedure that renders the quality of a product or process, the safety and the environmental impact unacceptable or indeterminate
Nuclear Safety	The achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards.
Objectives	Goal to be reached, resulting from strategy, which can be measured and clearly set, for example achieving a new performance level or completing an activity such as a project
Procedure	A document that specifies or describes how an activity is to be performed (document = any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results)
Process	Set of interrelated or interacting activities which transforms inputs into outputs
Process Owner	Person appointed by the Management to pilot a process, identify and implement KPI for a process. The list of the appointed process owners is available on the Intranet

Product	Result of a process which may be a hardware product, a software product or service activities
QA Program	Quality program dedicated to a project
Resources	Includes human resources and specialized skills, infrastructure, work environment, information and knowledge, suppliers, as well as material, technology and financial resources
Safety Culture	The assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.
Safety Related	The managerial controls, administrative documents, operating procedures, systems, structures, and components that have been designed to mitigate the consequences of postulated accidents that could cause undue risk to public health and safety
Software Product	Set of computer programs, procedures, and possibly associated documents and data; a software product may be designated for delivery, an integral part of another product, or used in the design, development, or manufacturing process
Stakeholders	People (individuals, groups of people, representatives of organizations) who may be affected by the entity's operations or who may have an impact on the entity. Customers are part of stakeholders
Supplier	A person or organization that provides a product in accordance with a procurement document. An all inclusive term used in place of terms such as subcontractor, or vendor
Target	Quantitative definition of an objective (performance requirement)

Tab. 0.2: Terms and definitions

0.7. Abbreviations and definitions

ABBREVIATIONS	DEFINITIONS
BG	Business Group
BU	Business Unit
DQP	Quality Performance Department
EHS	Environment Occupational Health and Safety
FMM	Fuel Management Manual
FQP	Fuel Quality Procedure
FL BU	Fuel Business Unit
FSOP	Fuel Operating Procedure
HOF	Human and Organizational Factors
IMS	Integrated Management System
KPI	Key Performance Indicator
MPO	Managerial Process Owner
MSC	Management System Committee
NDT	Non Destructive Testing
OH&S	Occupational Health and Safety
OPO	Operational Process Owner
QHSE	Quality, OH&S, Environment and Nuclear Safety
SDCI	Sustainable Development and Continuous Improvement

Tab. 0.3: Abbreviations and definitions

1. Organizational presentation

1.1. AREVA

AREVA supplies solutions for carbon-free power generation. Its expertise and know-how in this field are setting the standard, and its responsible development is anchored in a process of continuous improvement.

As the global nuclear industry leader, AREVA's unique integrated offer to utilities covers every stage of the fuel cycle, nuclear reactor design and construction, and related services. The group is also expanding considerably in renewable energies – wind, solar, bioenergies, hydrogen and storage – to be one of the key players in this sector worldwide in 2016.

Every day, AREVA's 48,000 employees cultivate the synergies between these two major carbon-free offers, helping to supply safer, cleaner and more economical energy to the greatest number of people.

AREVA is divided into BGs which cover the nuclear power cycle and renewable energy:

Fig. 1.1: AREVA's core business

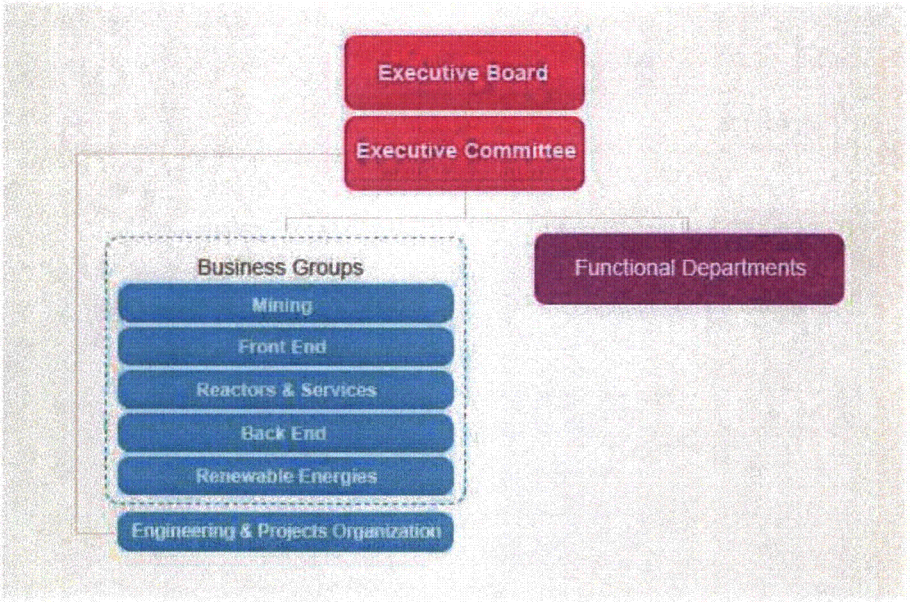


Fig. 1.2: AREVA organization

1.2. Front End Business Group

Fig. 1.3: Front End BG locations

Each subsidiary comprises several legal companies. These companies constitute the foundation of our legal and tax structure.

The world leader in the front end of the nuclear cycle, the Front End Business Group combines operations related to uranium conversion and enrichment and the design and fabrication of nuclear fuel for both types of light water reactors.The Front End BG is headquartered in Paris (France) with main activities based in France, Belgium, Germany and the United States gathering over 8800 employees.

The Front End BG is grouped in 3 Business Units:

- ✓ Chemistry BU
- ✓ Enrichment BU
- ✓ Fuel BU

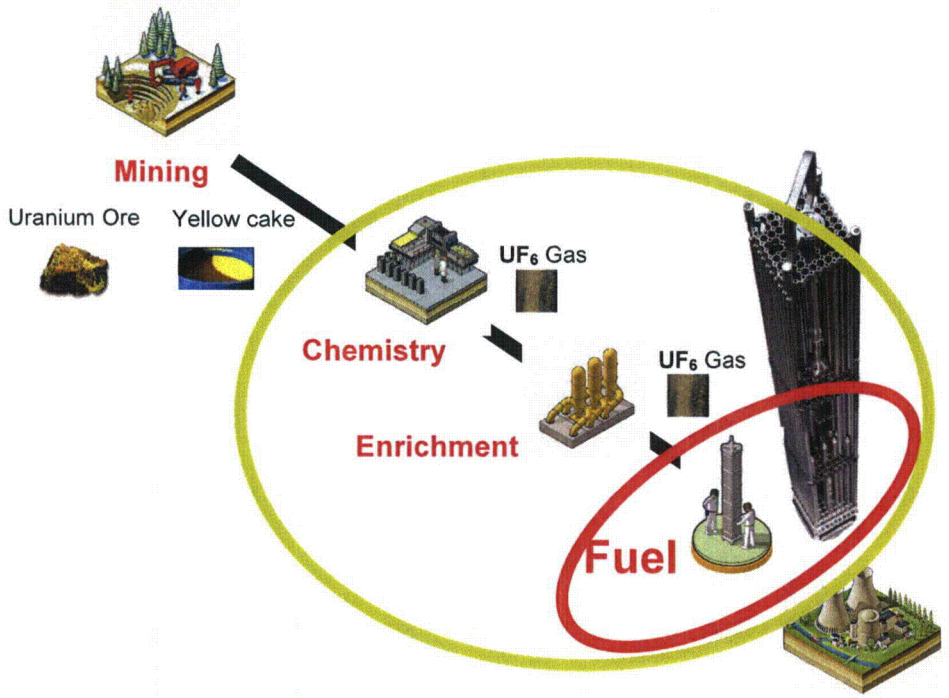


Fig. 1.4: Fuel BU position

This manual only applies to the Fuel BU, as described above.

1.3. FUEL BU Divisions

1.3.1. Organization

The Fuel BU is part of the Front End BG. With over 4,500 employees, it is present in France, Belgium, Germany and the United States through its 6 Divisions and CERCA industrial activities:

- Products & Technologies Division
- Supply Chain Division
- Contracts & Services Division
- Fuel Design Division
- Zirconium Division (described hereafter)
- Fuel Manufacturing Division (described hereafter)

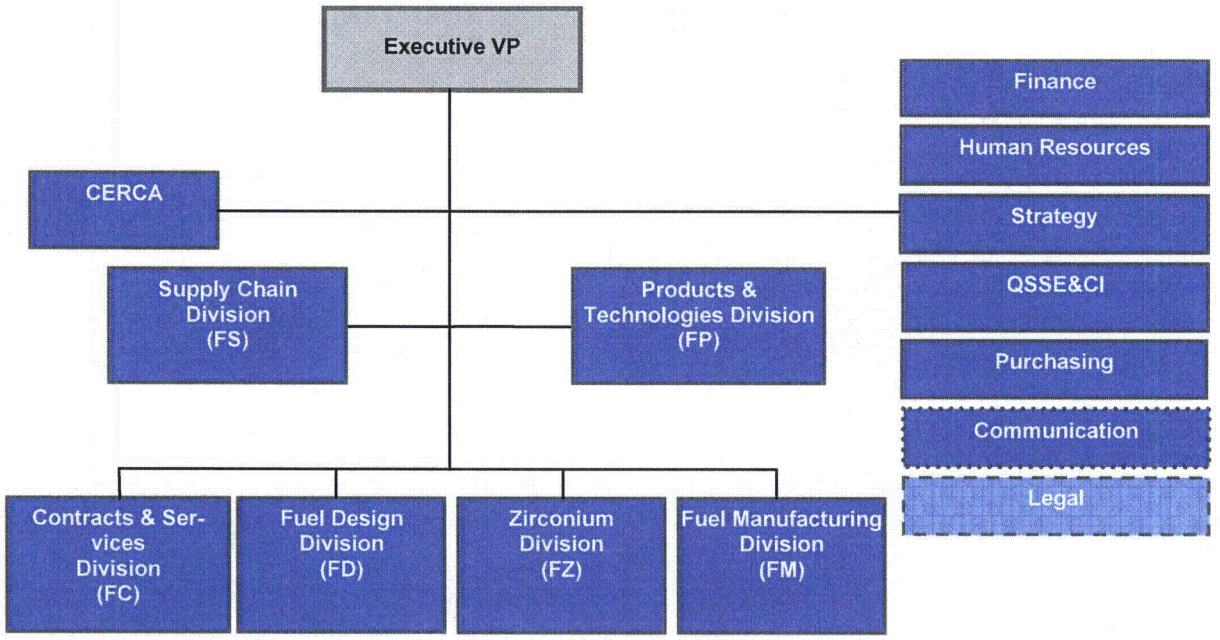


Fig. 1.5: Fuel BU organization

1.3.2. Activities

Fuel BU designs, fabricates and markets nuclear fuel assemblies for Pressurized Water Reactors (PWR), Boiling Water Reactors (BWR) and research reactors. A fuel assembly is made up of fuel rods (metal tubes) containing uranium oxide pellets (the fissile material), held in a metal frame (the skeleton) which is usually made of zirconium alloy. The Fuel BU also supplies MOX (a mixture of uranium and plutonium oxides) and ERU (Enriched Reprocessed Uranium) fuels, using fissile materials obtained during the recycling of spent fuel.

The Fuel BU includes CERCA R&D and Manufacturing activities (described hereafter).

With almost 38% market share, we are the world leader in the manufacture of fuel for PWR and BWR reactors.

As shown on the map fig. 1.3, the Front End BG locations include several entities in France, Belgium, Germany and United States.

1.3.3. Zirconium Division (FZ)

The FZ supplies the Fuel BU for approximately 50% of its business. The other 50% are dedicated to other customers. FZ also supplies Zr material for nuclear application outside the Fuel BU and other non nuclear products like Titanium, Oxides, for other customers and market.

Part of the Fuel BU, the FZ is the world's leading manufacturer of zirconium alloy products. It deals with all stages of processing, from the zircon, or Zirconia, to the finished products, whether flat, bars or tubes.

The manufacturing of zirconium products involves five CEZUS plants in France (Jarrie, Ugine, Rugles, Montreuil-Juigné and Paimboeuf) and one in Germany (ANF-Duisburg).

The FZ supplies the Group's fuel manufacturing units and more than 50% of its sales go for export. It has commercial branches in the United States and Japan.

To ensure optimum reactivity with customers, Zirconium activities have been organized into Product Lines:

- Flat product line in Rugles
- Barstock line in Montreuil, Paimboeuf
- And a Tubing line in Montreuil-Juigné, Paimboeuf and Duisburg

1.3.4. Products & Technologies Division (FP), Supply Chain Division (FS), Contracts & Services Division (FC) and Fuel Design Division (FD)

- FP gathers all the competencies needed to guide the development of products within a project management framework, from design through to industrial production, working closely with the Contracts & Services, Design, Manufacturing and Zirconium teams.

- The FS works as a worldwide operational Division to improve the products and services delivery performance in terms of time, quality and compliance with regulations and, more

globally, improve the efficiency of the supply chain processes in terms of cost and speed.

The teams ensure and optimize the information flow processes between operational Fuel Divisions: FC, FZ and FM, FD and FP. FS is also the main interface with Logistics BU.

- Striving for sustainable profitability, customer satisfaction and unique market positioning, the Contracts & Services Division manages all Fuel BU contracts and services activities with our customers worldwide. Contracts & Services is also responsible for preparing the offers for Fuel BU products and services and for carrying out all commercial activities remaining in the Fuel BU after the creation of Mining & Front End Sales.

- FD with resources in 5 technical activities (Neutronics, Thermal Hydraulics, Mechanics, Materials & Thermal-Mechanics and Technology & Prototyping Labs) and in 4 locations (Lyon, France – Erlangen, Germany – Lynchburg, USA – Richland, USA), provides resources to support core design, manages fuel assembly enhancements, develops new designs, maintains and keeps its tools at the state of the art and addresses any technical issues that may affect our customers and our products.

1.3.5. Fuel Manufacturing Division (FM)

FM manufactures fuel assemblies from uranium and from the finished products supplied by FZ (86% of our raw material, excluding Uranium). It features 6 manufacturing sites: 2 in France, 2 in Germany, 1 in Belgium and 1 in the US. The assemblies leaving the FM plants supply 134 of the 308 PWR/BWR reactors operating worldwide, i.e. 44% of the market.

FM Division's facilities produce:
- UO_2 powder and pellets
- Fuel rods and fuel assemblies manufacturing for BWR and PWR
- Components for fuel assemblies: spacer grids, upper and lower tie plates for PWR and BWR fuel assemblies as well as water channels for BWRs.

1.3.6. CERCA

CERCA, a wholly-owned subsidiary of AREVA, is the world's leading producer of fuel elements for research, test and high flux reactors:
- 25 types of fuel designs delivered to 40 countries
- TRIGA fuel types (joint-venture with General Atomic)

CERCA also produces a small series of mechanical components such as core irradiation capsules, core thimbles, radioactive sources for industrial and medical purposes in its LEA (laboratory of activities standards) facility in Pierrelatte.

2. External and internal requirements

In addition to standards and regulations identified in the section 0.1 of this Manual, Entities have to take into account several requirements to implement and improve their Quality, OH&S and Environmental Management System.

2.1. Internal requirements

All internal requirements are set up in AREVA charters, policies and other lower level documents (directives, guides, etc). The IMS takes into account internal requirements like:

Policies and charters	References
AREVA Values Charter	PO ARV DIR GEN 1
AREVA Nuclear Safety Charter	PO ARV 3SE GEN 1
AREVA Sustainable Development Declaration for suppliers	FO ARV PUR GEN 8
AREVA Occupational Health and Safety Policy	PO ARV 3SE GEN 13
AREVA Environment Policy	PO ARV 3SE GEN 2

Tab. 2.1: Charters and Policies

A group-wide model called AREVA Way has been developed from internal and external benchmarks and from the Group's commitments with regard to sustainable development.

It sets goals for us to achieve via ten commitments and lays down the path for achieving them through a continuous improvement system (see section 3.1.1). Each of these commitments is spearheaded by a corporate department, which defines the related programs and manages their deployment.

AREVA Way is expressed in a **Values Charter applicable to all executives and employees**. Management is responsible for implementing the Charter at all levels of the organization. The principles of the **Global Compact** are integral to our Values Charter and serve as inspiration for our sustainable development policy.

It is broken down into ten **AREVA Way commitments** that explain and describe our contribution to each of the **three sustainable development pillars**: **economic, social and environmental**.

2.2. Requirements of customers and other stakeholders

2.2.1. Customers requirements

Measures are established to ensure that customer requirements are identified and fulfilled with the aim of enhancing customer satisfaction (see sections 7.2 and 8.2.1). Communications with customers are defined at the most efficient level in order to collect, analyze and use information for improving customer satisfaction.

In order to achieve customer satisfaction, various activities are performed on a regular basis such as:

- Customer needs and expectations are determined, analyzed and taken into account during proposals
- Meetings with customer
- Management of customer complaints and requests
- Customer opinion surveys
- Customer Satisfaction Index measurement

2.2.2. Other stakeholders

According the AREVA Way definition, other stakeholders are employees or employee representatives, suppliers, elected representatives, residents, associations, administrations, the media and communities.

In effectively managing stakeholder relations, entities have to:

- Identify them and to enter into dialogue with them
- Enter into joint operations such as partnerships with some of them related to their concerns: impact measurements, environmental preservation, etc
- Improve the commitment to employees
- Improve the forecasting requirements, both qualitative and quantitative
- Improve concerns employees involvement in the entity's performance improvement

2.3. Legal requirements

In each country, entities have to identify, have access and update to the applicable legal requirements to which the organization subscribes related to its quality, environmental aspects and OH&S.

Entities ensure that these applicable legal requirements are taken into account in establishing, implementing and maintaining its Integrated Management System. Relevant information on legal requirements is communicated to persons working under the control of the organization and other relevant interested parties.

2.4. EHS requirements

Each entity ensures to take into account, according to applicable legal obligations, when establishing, implementing and maintaining its Integrated Management System of the:

- Hazard identification, risk assessment and determining controls
- Identification and assessment of environmental aspects

2.4.1. Hazard identification, risk assessment and determining controls

Entities implement methodology for hazard identification and risk assessment defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive.

Employees have to participate and be consulted in the methodology implementation.

Hazards, impacts and results of the risk assessments are documented in a risk analysis documents prepared in accordance with national regulation (e.g. "document unique" in France).

2.4.1.1. Hazard identification

To eliminate or control the potential risk of a hazard, sites must identify the hazards in their workplace (e.g. checklist including hazardous substances, manual handling, machinery and equipment, physical work environment...).

The hazard identification is carried out by site area, by job or by activity:

- Refer to workplace documents (e.g. manufacturing and maintenance files, safety data forms, documents established by the medical officer, accident reports, personnel request...)
- Visit of the workplace: it concerns an inventory of fixtures which allows to pinpoint, to identify and to record hazards
- Draft a synthesis

2.4.1.2. Risk assessment

After the hazard identification, the risk assessment allows to define a level of risk according to, at least:

- The seriousness of risk incurred
- The probability of appearance of undesired events, frequency of exposure of the employee(s)

A prioritization grid is implemented according to sites and their specificities (hazard, activity domain). The aim is to determine if the risk level is acceptable or not. Any statutory anomaly is processed as a priority.

2.4.1.3. Determining controls

Entities take into account the risk assessment to determine or change controls. The target is to reduce the risks according to the following hierarchy:

- Elimination
- Substitution
- Engineering controls
- Signage/Warnings and/or administrative controls
- Personal protective equipment

2.4.1.4. Update

The risk assessment is updated periodically as required and during important changes or modifications of activity, installation, organizational or Management Systems.

2.4.2. Identification and assessment of environmental aspects

2.4.2.1. Identification of environmental aspects (EA)

Each site identifies the environmental aspects of its activities, products and services within the defined scope of the environmental management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products and services.

The environment function of each site draws up a list of the EA. The identification of the EA is a process which determines the beneficial or negative environmental impacts. Each environmental impact is associated to each aspect identified. This list brings out the main EA encountered on the site concerned and those which have or can have significant environmental impacts.

2.4.2.2. Assessment of environmental aspects

The EA of each site are evaluated using an analysis matrix or grid of hierarchy according to their impact on the environment. Classification of the EA is done in consultation with the people concerned by the EA (e.g. environment department, representative agent, operators and maintenance).

Each EA identified is placed in the matrix (in accordance to the occurrence of the aspect and of its effect on the environment) which allows bringing to light the most damaging EA. The border between significant EA and non signification EA is set by the environment function of each site.

2.4.2.3. Management of actions and follow-up

The significant environmental aspects are identified and communicated to plant management. Site management decides on the points to be dealt with during the year considered according to the improvement axes, the focus and objectives set by site. The objectives, the actions to be taken are followed up during the management review.

2.4.2.4. Update

The environmental analysis is updated periodically according to the site instructions or at the time of the introduction of a new product or at each modification of product or activity.

3. Integrated Management System

The Fuel BU has established, documented, implemented, assessed and maintains a Management System integrating Quality, OH&S and Environment. It continually improves its effectiveness in accordance with the requirements (see chapters 0 and 2).

Design, procurement, production, inspection, packaging and handling activities are part of the IMS scope. US activities regulated under 10 CFR 71 Subpart H are additionally part of the IMS scope. These requirements are propagated through procedures such as engineering, manufacturing, inspection and administrative procedures.

3.1. Process management

3.1.1. Continuous improvement

The Integrated Management System and the **AREVA Way** approach work in synergy. They have the same fundamental principles like the continuous improvement.

In this context, the IMS is based on the dynamic cycle "PDCA":

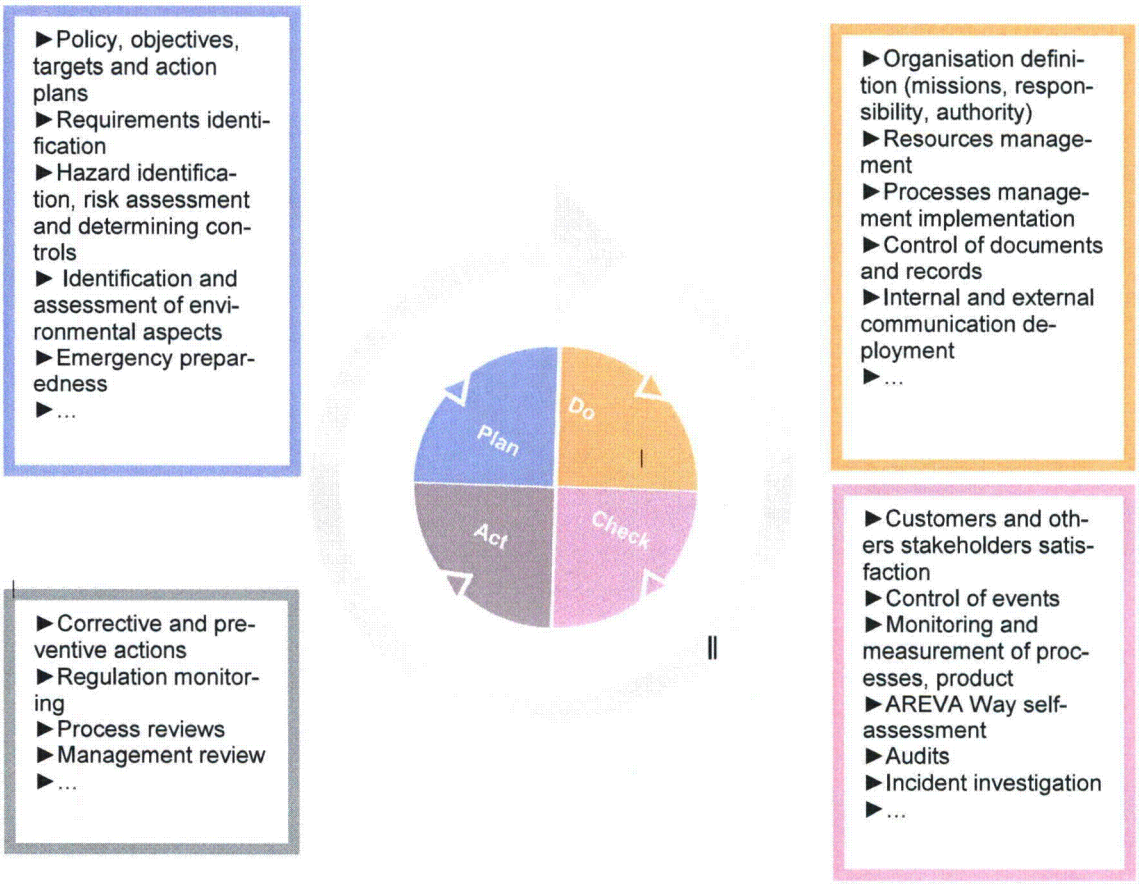


Fig. 3.1: PDCA cycle

The Fuel BU and Entities continually improve the effectiveness of the IMS by e.g. policy, objectives, process reviews, management review and several measurement methods (see chapter 8).

AREVA has put its sustainable development and continuous improvement approach at the heart of its strategy and defined ten commitments and seven values to drive its action (AREVA Way). To achieve its goals and respect its commitments, the AREVA group uses a continuous improvement process. Such management system allows us to structure and to decline our actions. Completed by non-financial reporting system, it allows us to analyze the main stakes in our professions, to clarify objectives of progress and to report in a factual way.

FL BU MS&CI Director supports and helps managers and staff to implement sustainable development commitments and makes sure that each of us is concerned about it in our daily lives.

This self assessment method (AREVA Way) gives additional evaluation results and complete the action plans for continuous improvement.

3.1.2. Process approach

The process approach takes into account management, realization and support processes:

- **Management processes:** The Fuel BU management develops the policies and strategies of the company based on its vision and mission, customers and others stakeholders needs, legal requirements and various feedback systems for continuous improvement of its performance. These policies and strategies are deployed through operational objectives that direct the day-to-day business of the company and ultimately to the individual performance expectations of each employee. They provide guidance and consistency for realization processes and support processes.

- **Realization processes:** The day-to-day business of the company is the realization or development of products & services and the infrastructure to support them, the process of getting an order and all the activities required to carry out that order.

- **Support processes:** They contribute to the smooth running of realization processes, by providing them with the necessary resources. Though they do not create any product directly perceivable by the customers and other stakeholders, they are necessary for the operation and sustainability of management and realization processes.

The Process Map for the Fuel BU, approved by the Fuel BU Executive Vice President and his Management Committee, illustrates the processes vital for operation and contains links to detailed relationship maps (showing the sequence and interactions between these various processes) and process descriptions for the individual processes (see intranet).

The organizations ensure the availability of resources and information necessary to support the operation and monitoring of these processes.

At the Fuel BU or Entity level, as appropriate, the individual processes are documented by process descriptions and/or procedures which include the necessary information regarding the sequence of the steps, main interactions between the processes and criteria. Indicators are used to measure the effectiveness of these processes as applicable.

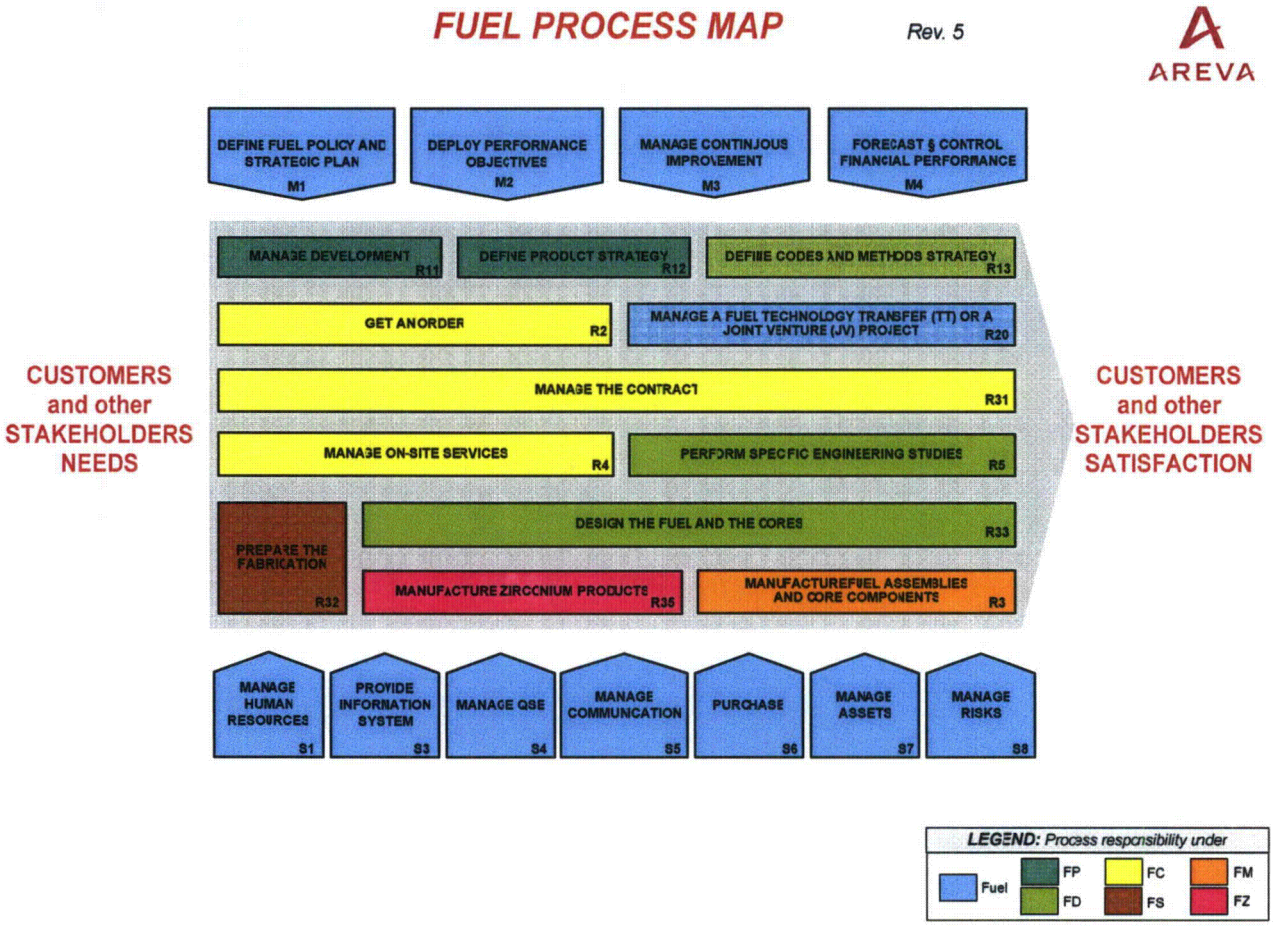


Fig. 3.2: Process Map for the Fuel BU

3.1.3. Process owner

The Fuel BU management assigns one managerial process owner (MPO) to each process defined at the BU level and the Entity management assigns a process owner (PO) to each process defined within this unit (see document on intranet – Fuel BU Process Owners).
Each process has a Process Identification Form (PIF). The MPO identifies the necessity to have a process description. Guidelines have been issued in order to help Fuel BU PO to manage their processes with the aim to improve their performance. These guidelines are available on intranet site.

3.2. System documentation

The AREVA IMS is structured (see Fig. 3.3) in accordance with requirements (see chapters 0 and 2), so that fundamental requirements are documented, understood and maintained throughout AREVA.

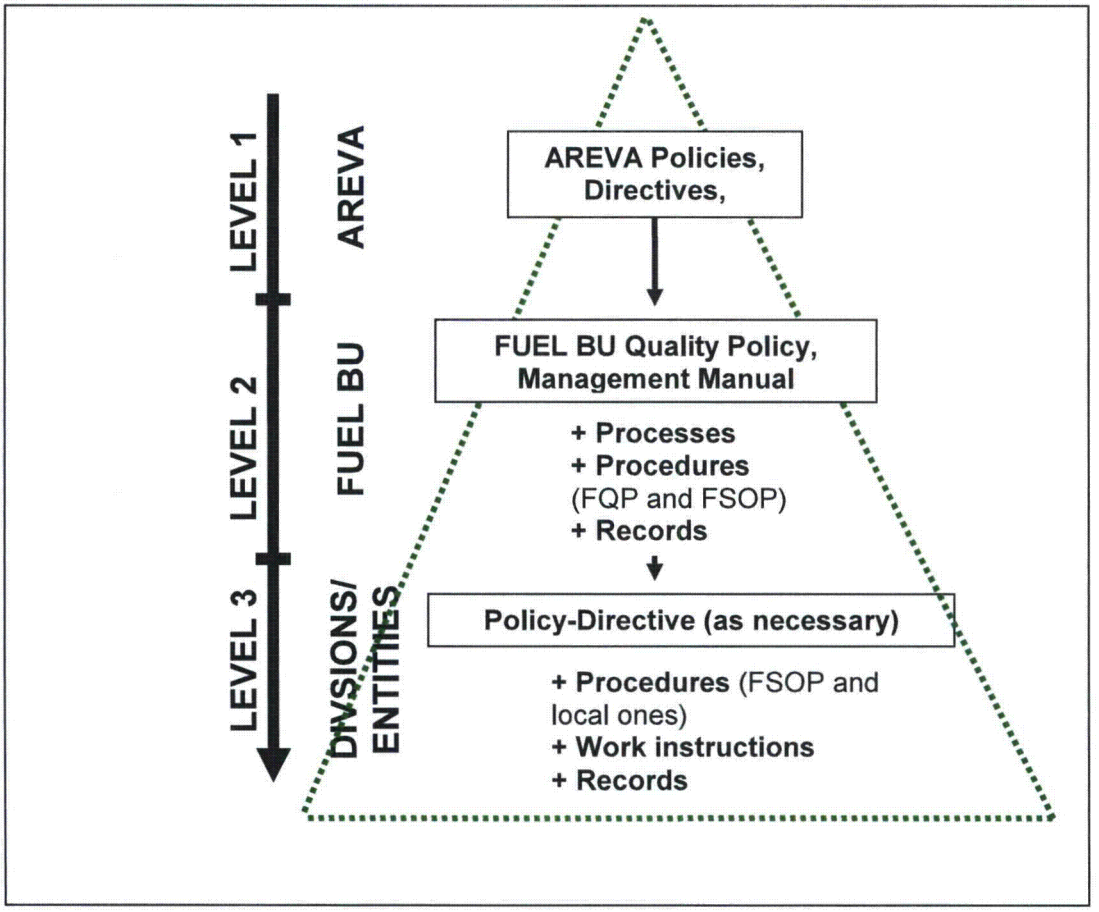


Fig. 3.3: Structure of the Fuel BU IMS documentation

The implementation of the Integrated Management System is due to the adoption of the AREVA Policies at the Fuel BU and Divisions/Entities levels (see chapter 4.1).

3.2.1. Fuel Management Manual

The Manual describes the organization and the principles selected to put into effect the policy, objectives and targets.
Preparation, review, approval: It is prepared, reviewed each calendar year and revised if needed by the Fuel BU MS&CI Director. He is responsible for collecting proposed changes from the BUs and Entities and incorporating appropriate changes. The approval will be done by the Fuel BU Executive Vice President.

Distribution: New or revised requirements of the Management Manual shall be transferred into lower tier procedures within 120 days following the issue of the revision, unless otherwise specified.

3.2.2. Process descriptions, procedures and/or work instructions of Divisions/Entities

Based on the Manual the associated provisions and measures are detailed in procedures. Those procedures can be applicable for the entire AREVA, the Fuel BU or specific to either a Division or Entity. Preparation, review and approval of these procedures are described in sub-tier documents. The procedures are available on the Fuel BU Intranet site.

3.2.3. Quality Assurance Plans (QAPs)

For specific projects, Quality Assurance Plans (QAPs) can be issued under the responsibility of the project manager. Preparation, review and approval of these QAPs are described in sub-tier documents.

3.2.4. Translation of documents

The English version is the reference version for the level 1 and level 2 documents. Level 3 documents may be issued in the regional language only.

3.3. Classification of characteristics

In order to place the correct amount of emphasis on the more important product quality characteristics, Divisions and Entities may implement a system of classifying quality characteristics in design documents for subsequent use in process qualification and/or product inspection and testing.

3.4. Control of documents and data

Measures are established and described in AREVA, Fuel BU and Divisions and Entities processes and/or procedures to control documents (including those prepared by customers or external sources, e.g. codes and standards) and electronic data bases, which are used for activities that may directly or indirectly affect the Quality of products, the OH&S and the Environment. The measures also assure that changes to documents and data bases are appropriately controlled.

Procedures cover the following aspects for:

- Preparation, review, approval and revision of documents,
- Release and distribution in order that applicable documents are available at the location where documents are used,
- Identification of changes,
- Identification of the applicable revisions of documents or data,
- The distribution of documents such as "Advanced Copies," "Temporary Document Revisions" or "Use with Restrictions" in order to avoid the unnecessary shutdown of key production operations,
- Ensuring that documents remain legible, readily identifiable and retrievable,
- Translation and review of translation of documents by competent translator. Translation is identified as such,
- Requirements for protection of proprietary information,
- Requirements for archiving.

Review and approval of changes are performed by the same organizations that reviewed and approved the original and by designated organizations having access to the necessary information for review (such as the previous revision).

3.5. Control of records

Measures are established and described in Fuel BU and sub tier procedures to control records - including those prepared by customers or external sources - consistent with applicable regulatory or customers and other stakeholders requirements. Records may be paper, hard copy, microfilm or electronic.

Records are retained to provide evidence that requirements have been fulfilled and that the IMS functions effectively. They can include operating logs, results of reviews, inspections, tests, audits, monitoring of work performance and materials analyses. Associated records from suppliers form part of these records. The records may also include closely related data such as qualifications of personnel, processes and equipment.

Procedures cover the following aspects for:

- Classification of permanent and non-permanent records
- Identification, collection and indexing
- Filing and archiving requirements (duration, storage, location, etc.)
- Conditions for preservation, retrieval and disposition

Inspection and test records identify the inspector or data recorder, the type of observation, the results, the acceptability and the action taken in connection with any deficiencies noted. Records are identifiable and retrievable.

Records are provided to customers in accordance with contract requirements.

4. Management responsibility

4.1. Management commitment and policy

QSSHE Policy

Quality Safety Security Health Environment

Fuel BU

March 2012

The Fuel BU's ambition is to become the benchmark supplier of fuel assemblies and associated services for PWR and BWR power utilities worldwide.

In line with AREVA's strategic action plan, the Fuel BU's performance plan, its "Fuel Excellence Plan", is built around 5 main focus areas :

- **The high safety level of our facilities,**
- **The development of our workforce,**
- **The quality and reliability of our products,**
- **Our competitiveness,**
- **Our unique market positioning.**

Our priority:
Individually adopt exemplarity of safety/security behavior and together, sustainably develop a prevention culture.

Our workforce puts the FEP into practice in line with key processes shared by all entities. These processes guarantee both the durability of the organization and the measurement of performance indicators.

» The continuous improvement in our performance depends on our ability to:

- Evaluate and consistently take into account customer satisfaction in terms of product performance and delivery lead times;
- Guarantee a high safety and security culture level at all times, focussing our efforts on the prevention of accidents and on a well-defined behavioral approach measurable by all;
- Maintain key competencies and develop our talents for our business ;
- Control the impact of our activities on the environment;
- Maintain a safe and health environment for all our employees and our suppliers.

Markus Birkhofer
Fuel BU Executive Vice President

Fuel BU

AREVA

PO FE FL GEN3 R0

Fig. 4.1: Fuel BU QSSHE 2012 Policy

The applicable version is the one on AREVA intranet.

This policy is defined by the Fuel BU Executive Vice President.

AREVA Fuel BU management is committed to the deployment, implementation and continuous improvement of the effectiveness of the Integrated Management System. To achieve this, overall expectations are established and management is responsible that the desired and result is obtained.

AREVA Fuel BU Policy is documented, implemented, maintained and reviewed periodically for continuing suitability. It is communicated and understood by all persons working for or on behalf of the entity and available to customers and other stakeholders.

Each Entity has the choice either to appropriate AREVA Fuel BU Policy or to implement its own Quality, OH&S and Environmental policy. Whatever the implemented policy, it meets all requirements in accordance with this FMM.

All personnel perform their duties in agreement with the requirements set forth in the IMS of the Fuel BU and all related documentation.

Persons who are assigned the functions of assuring that the required Quality, Occupational Health & Safety and Environmental protection has been achieved are identified so that they are provided with sufficient organizational freedom, resources and authority to perform their functions.

4.2. Customer focus

Top management (Fuel BU and Division/Entity levels) shall ensure that customer requirements are determined and met the aim of enhancing customer satisfaction (see section 2.2.1).

4.3. Planning

4.3.1. IMS objectives

The Quality, OH&S and Environmental objectives are based on the AREVA Fuel BU Policy. They are documented and established at relevant functions and levels within the organization.

Objectives are measurable and practically include:
- The commitments to the prevention of injury, illness and pollution
- The compliance with internal and external requirements
- The continuous improvement

Best-practice sharing within AREVA is also an element of the IMS. Such comparison leads to identification of strengths and areas of improvement that influence the deployment of objectives.

Information on customer's feedback, results of audits, process reviews, self assessments, Management Review conclusions and product verifications are used as sources for the definition of objectives.

Additional OH&S and Environmental objectives are defined at an Entity level to take into account the specific regulations, the results of risk analysis and the customers and other stakeholders' needs. They are quantified and measurable, and if applicable, indicators are set up to assess their performance.

Syntheses (objectives assessments) are established at Entity level and are the basis of reporting to the Fuel BU level.

4.3.2. IMS system planning

IMS planning within the Fuel BU ensures that IMS objectives, including those needed to meet the requirements from customers and other stakeholders and standards are established and reviewed at all levels within the organization. This shall be achieved by measures such as:

- Identification of internal and external requirements (see chapter 2): e.g. these of customer resulting from contract reviews, identification and assessment of risks and environmental aspects
- Consideration of technical options, financial, operational and business requirements
- Assurance that the integrity of the IMS is maintained when customer specific changes are required (if needed, those changes are included in a Quality Assurance Plan) or due to other internal or external changes
- Provisions of controls, processes, production and inspection equipment, resources and skills
- Assurance of compatibility between design, production and inspection and applicable documentation
- IMS assessment during audits, process reviews and Management Reviews
- Comprehensive training programs for all personnel likely to affect or to impact Quality, Occupational Health & Safety and Environment
- Identification and development of process capability measurement to ensure product and product verification requirements are satisfied
- Measures and analysis of environmental and safety parameters
- Preparation of inspection plans
- Establishment of acceptance criteria

4.3.3. Programme(s)

Each Entity establishes, implements and maintains a programme(s) for achieving its objectives. It includes as a minimum:

- Designation of a person in charge who has authority for achieving objectives at relevant function and level of the organization and
- The means and time-frame by which the objectives have to be achieved.

The programme(s) is reviewed at regular and planned intervals and adjusted as necessary, to ensure, that the objectives are achieved.

4.4. Responsibility and authority

In AREVA, Fuel BU and Divisions, top management ensures that the responsibilities and authorities are defined and communicated within the organization.

4.4.1. AREVA

AREVAs´ organizational structure is given in Fig. 4.2. The applicable version is available on AREVA intranet.

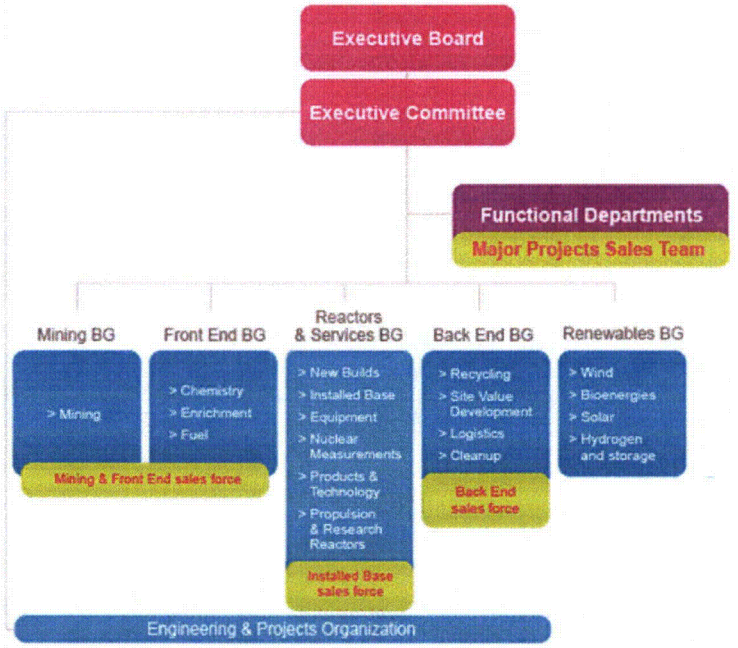


Fig. 4.2: Organizational structure of AREVA

4.4.2. Responsibility and authority of the Fuel BU

In order to favor integration within the Fuel BU, enhance dialogue, develop cross approaches between Entities doing the same kind of activity, the Fuel BU is managed according to six Divisions (see Fig. 1.5). The main target of this structure is to achieve global optimization at the Fuel BU level.

Each Entity retains its legal responsibilities. Management accountabilities and responsibilities within the Fuel BU are defined, in part, by provisions within this Management Manual, which defines integrated Quality, OH&S and Environmental requirements applicable to the worldwide Fuel BU activities. Entity QHSE Managers have the responsibility and authority to ensure local and national regulatory requirements and contract responsibilities are met. These responsibilities, authorities and requirements are defined in Entity procedures. EHS responsibility is formalized by written delegation of power to the site managers.

The Fuel BU Entities are located in three regions (France including Belgium, Germany and the United States). Because of international boundaries, each regional legal enterprise must comply with its own national regulatory, reporting and financial requirements. A legal enterprise may contain elements of more than one Division or Entity. Reporting relationships between and among the Divisions, Entities and legal enterprises are defined in lower-tiered documents.

4.4.3. QHSE Management Representative authority and responsibilities

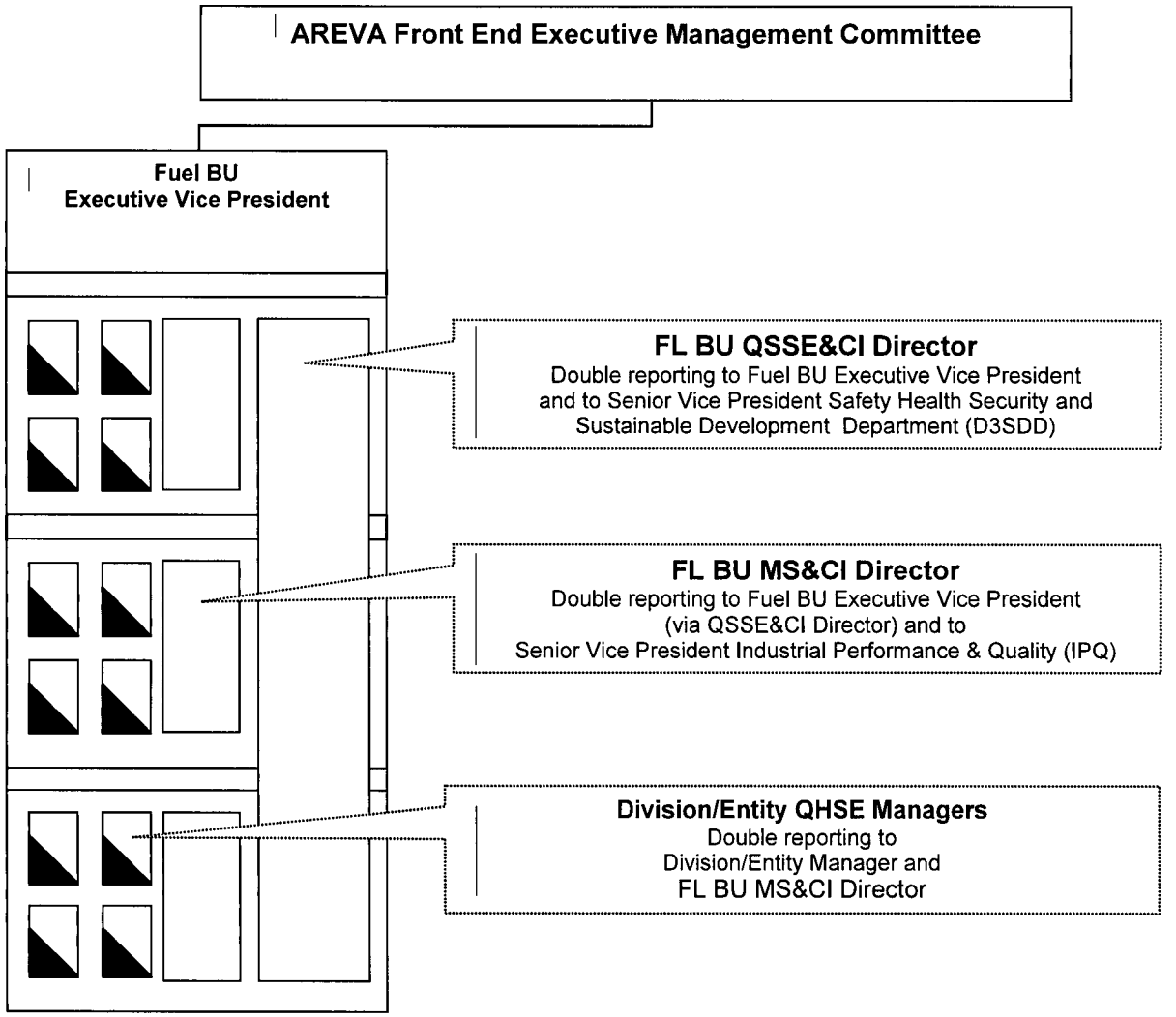


Fig. 4.3: Functional IMS organization of the Fuel BU

According to the Entity, the IMS organization may change. There are either:

- QHSE Managers or
- Q Managers, Environmental and/or Safety Managers.

4.4.3.1. FL BU QSSE&CI Director

The FL BU QSSE&CI Director reports to Fuel BU Executive Vice President and to the Senior Vice President Safety Health Security and Environment Department (D3SE).

He is responsible for providing the assurance that the Entities control and can guarantee the admissible risk level with respect to OH&S, and in order to ensure control over significant environmental aspects.

This position is responsible of Nuclear Safety, Occupational Health & Safety and Environment related activities including the interpretation of requirements.

The management of the system and continuous improvement is assigned to the MS&CI Director.

Qualification requirements for the FL BU QHSE&CI Director are:
- A bachelor's degree in a technical field,
- At least ten years experience in responsible management of technical or manufacturing activities in the nuclear field, five years of which have been in fields allied to nuclear quality assurance,
- Knowledge of applicable QHSE-related codes, standards, and regulatory requirements,
- Thorough knowledge of the AREVA QHSE Programme(s).

The Fuel BU Executive Vice President may designate equivalent experiences where needed.

4.4.3.2. FL BU MS&CI Director

The FL BU MS&CI Director reports to Fuel BU Executive Vice President (via QHSE&CI Director of the Fuel BU) and to Senior Vice President Industrial Performance and Quality (IPQ).

He is the Management Representative of the Fuel BU IMS and responsible for providing the assurance that the Divisions control and can guarantee the quality and reliability level required by the customer.

The FL BU MS&CI Director is independent and as such has no direct responsibility for product design, engineering services or production. This position is responsible for supervising the implementation of the system regarding Fuel BU Quality and to define, deploy, manage, execute and audit the IMS for the Fuel BU.

Specific responsibilities include:
- Preparation and maintenance of the Fuel BU Management Manual and procedures in cooperation with the Entity QHSE Managers
- Organization and administration of Management Reviews at the Fuel BU level
- Definition of continuous improvement measures of Integrated Management System
- Coordination of improvement programs between the Entities or Divisions
- Coordination of audits to verify implementation of the Entity Integrated Management requirements
- Obtaining and maintaining certification of the IMS by an accredited certification body

The FL BU MS&CI Director function is supported by the QHSE Managers of the Entities. The FL BU MS&CI Director may delegate specific tasks and responsibilities to be performed to the respective Integrated Management organizations. The FL BU MS&CI Director has the overall authority to make decisions on interfacing integrated management matters within the Fuel BU. This position has the authority to submit Quality, OH&S and Environmental-related matters directly to the FL BU Executive VP and the Senior Vice President Quality and Performance. The FL BU MS&CI Director will defer to the Entity QHSE Managers for resolution of local regulatory concerns. The FL BU MS&CI Director has the organizational freedom and authority to identify and report Quality, OH&S and Environmental issues recommend, initiate and provide solutions, verify implementation of solutions and initiate actions to prevent the recurrence of events.

The Management System Committee is composed of the Divisions/Entities QHSE Managers, the FUEL BU QHSE&CI Director and led by MS&CI Director.

Qualification requirements for the FUEL BU MS&CI Director are:

- A bachelor's degree in a technical field
- At least ten years experience in responsible management of technical or manufacturing activities in the nuclear field, five years of which have been in fields allied to nuclear quality assurance
- Knowledge of applicable QHSE-related codes, standards, and regulatory requirements
- Thorough knowledge of the AREVA IMS Programme(s)

The Fuel BU Executive Vice President may designate equivalent experiences where needed.

4.4.3.3. Division/Entity QHSE Managers

The QHSE Managers within the various Division/Entities are independent and as such they are charged with no direct product design, engineering services or production responsibilities. They are responsible for interpreting requirements and for the deployment and maintenance of the IMS within their respective organizations. This deployment integrates the inter-organizational functions required to implement the global IMS, as well as defining system elements that address local EHS requirements and authority regulations and direct customer requirements. In matters of potential conflict, the QHSE Managers shall retain the authority to interpret local regulations consistent with regulatory expectations.

Specific QHSE Managers responsibilities include:

- In charge of the definition of the content and the development of the IMS in compliance with FMM, processes and procedures:
  - Take into account requirements (e.g. local regulations...),
  - Identification, reporting and put forth solution in IMS issues,
  - Formulating and implementing IMS programs,
  - Preparation and maintenance of specific procedures,
  - Providing IMS indoctrination and training and developing and implementing enhancement initiatives,
  - Performing supplier evaluation,
  - Developing and implementing a comprehensive audit program to verify compliance. Participating or performing audits in other Entities upon request of the FL

BU MS&CI Director - Conducting Management Reviews within the Entities as needed.

- Communication:
  - Interfacing with the other Entities on IMS matters,
  - Reporting regularly on the performance of the IMS (particularly FL BU MS&CI Director and management),
- Authority to stop work for their respective facilities in order to maintain the requisite Quality and EHS commitments,
- IMS control related to the product of the Entity as appropriate. This involves:
  - Preparation/review of product related documents,
  - Performance of inspection and surveillance, including at suppliers' shops,
  - Coordination of disposition of nonconformance,
  - Compilation/review of records and product certification.
- In Quality Assurance:
  - Interpreting and administering the Quality Assurance Programs,
  - Providing the necessary organization and qualified personnel to carry out the required Quality Assurance / Quality Functions,
  - Participation in contract reviews as required,
  - Monitoring and conducting corrective and preventive actions.

Qualification requirements for QHSE Managers are:

- A bachelor's degree in a technical field,
- At least ten years experience in responsible management of technical or manufacturing activities in the nuclear field, five years of which have been in fields allied to nuclear quality assurance,
- Knowledge of applicable quality-related codes, standards and regulatory requirements.

The Entity Executive may designate equivalent experiences where needed.

4.4.4. Managing organizational change

The organizational changes are planned, controlled, implemented and communicated.

4.5. Management Review

Divisions or Entities may conduct Management Reviews as needed to fulfill local/legal requirements and support Division or Entity objectives.

Reports including conclusions of the Division Management Reviews will be distributed to the FL BU MS&CI Director as sources for the annual Fuel BU Management Review.

In each Division or Entity where an annual Management Review is held this review will include current performance and improvement opportunities related to the following, if applicable:

- Results of audits and self-assessments, risk assessments, incident investigations, systematic periodically evaluation of compliance with legal requirements,
- Customers and other stakeholders feedback, including customer complaints,
- Process performance and product conformity, performance of the organization,
- Results of process reviews,
- Results of participation and consultation as well as complaints of vicinity,
- Status of preventive and corrective actions, including trend analyses,
- Follow-up actions from earlier Management Reviews,
- The extent to which objectives have been met,
- Changes that could affect the IMS, e.g. legal and other requirements,
- Recommendations for improvement.

The Fuel BU Management Review covers the assessment of opportunities for improvement and of the need for changes to the IMS including Fuel BU Policy and objectives, to ensure its continued suitability, adequacy and effectiveness. It uses the Division Management Reviews, as appropriate, as an input.

The results of the Fuel BU Management Review are documented in reports containing the following topics:

- Improvement of the effectiveness of the IMS (e.g. policy, objectives, targets) and its processes performance,
- Improvement of products related to customer requirements,
- Improvement of OH&S,
- Improvement of environmental protection,
- Improvement of Nuclear Safety,
- Resource needs.

5. Communication, participation and consultation

5.1. Communication

Fuel BU management ensures that appropriate communication processes are established within the organization. In the Fuel BU IMS, the communication is implemented in the process "Manage communication".

The FL BU MS&CI Director ensures that communication takes place regarding the effectiveness of the IMS. To accomplish this, he relies upon the process owner of "Manage communication" as far as necessary.

5.1.1. Internal communication

Measures are established at all levels and functions to ensure that required information needed for the fulfillment of tasks are available to employees. Furthermore these measures ensure that information relevant to Nuclear Safety, quality, OH&S, environmental, customer needs, economics goals and also materials as well as policy, objectives and their achievement are communicated and available to persons working under the control of the organization.

Specific measures are defined and implemented to ensure information of subcontractors and visitors about the organization and potential hazards for OH&S.

Internal communication is performed through intranet, magazines, newsletters, reports, posters, meetings, etc.

5.1.2. External communication

At each level of the Fuel BU, information relevant to OH&S, environmental, quality and economics goals are communicated to customers and other stakeholders.

Communication with our customers is focused on:
- Product and project information
- Enquiries, contracts or order handling, including amendments, and
- Customer feedback, including customer complaints

With regards to OH&S hazards, environmental aspects and IMS (e.g. legal requirements and others requirements), Entities correspond as needed, including the creation of specific reports or documents, with customers and other stakeholders. In this way Entities communicate externally about its OH&S and significant environmental aspects.

5.2. Participation and Consultation

Management at all levels fosters the involvement of all individuals in the implementation and continuous improvement of the IMS.

Considering OH&S, Entities involve workers in an appropriate way in:

- Hazard identification, risk assessments and determination of controls,
- Incident investigation,
- Development and review of OH&S policies and objectives,
- Consultation about any changes that affect their OH&S,
- Representation on OH&S matters.

Employees are represented on OH&S matters, as required by regional or local unit regulations. Workers are informed about their participation arrangements, including who is their representative(s) on OH&S matters.

The consultation process integrates also subcontractors for changes affecting OH&S of their personnel who participates on AREVA activities.

Customers and other stakeholders (e.g. company doctors, external bodies, authorities, etc.) are consulted as necessary for all questions related to OH&S of personnel.

The arrangements related to participation, consultation and IMS organization are documented and communicated to personnel, by each Entity or subsidiary.

6. Resources management

Within Fuel BU, measures are established to identify and provide the resources, which are needed for:

- Carrying out the organizations´ activities,
- Establishing, implementing, maintaining and improving the IMS and continually improving its effectiveness,
- Enhancing customers and other stakeholders satisfaction by meeting their requirements,
- Ongoing reduction of risks and environmental impacts.

Resources include human resources and specialized skills, infrastructure, work environment, information and knowledge, suppliers, as well as material, technology and financial resources.

6.1. Human resources

At Fuel BU level human resources are managed in the process "Manage Human Resources".

6.1.1. Competence

Entities ensure that any personnel under its control (e.g. employees, contractors, temporary workers) performing tasks that may affect product quality, impact on OH&S or have the potential to cause a significant environmental impact are competent on the basis of appropriate education, training or experience.

In this way Entities determine the competence requirements for individuals at all levels and provide training or take other actions to achieve the required level of competence.

6.1.2. Awareness

A general indoctrination session is presented to each employee who performs activities affecting quality, OH&S and environment. This indoctrination is presented to new personnel before start of work. Purpose of the indoctrination session is to familiarize persons working under its control with:

- The importance of Nuclear Safety,
- Their roles, responsibilities and importance in achieving conformity to the QHSE policy, objectives and procedures and to the requirements of the IMS, including emergency preparedness and response requirements,
- The OH&S consequences, actual or potential, of their work activities, their behaviour and the OH&S benefits of improved personal performance,
- The significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance,
- The potential consequences for non respect of specified procedures.

Re-indoctrination is performed when significant changes in the IMS are issued.

6.1.3. Training

Comprehensive training programs are established in procedures in each Entity for any personnel whose activity may affect IMS.

These procedures address:

- Maintenance and promotion of organizational commitment, social, professional and methods competence of the employees,
- Determining training needs taking into account strategic and individual needs of the personnel as well as different levels of responsibility, ability, language skills and risk,
- Obtaining and maintaining the required skills to achieve the conformity to product specifications and process requirements,
- Scheduling and performing of training,
- Evaluating the effectiveness of the training by improvement of work performance (e.g. by annual evaluation),
- Legal safety training,
- Job-related training for the different tasks,
- Special training and certification for special processes,
- Audit performance in accordance with applicable codes and standards,
- Requirements for retraining and re-certification,
- Requirements for establishing and maintaining training records.

6.2. Other resources

Each Entity is responsible for identifying, providing and maintaining suitable resources to carry out their activities.

Infrastructure includes, but is not limited to:

- Building, work space and associated utilities,
- Process equipment, both hardware and software,
- Licensing installations,
- Supporting services such as:
  - Transport and packaging service,
  - Documentation and archiving service,
  - Information System and communication service.

At the Fuel BU financial resources are managed in the process "Forecast and Control Financial Performance".

People are provided with all tools and resources required to fulfill assigned tasks. The work conditions comply with all relevant OH&S regulations applicable for the specific work places and with the results of risk assessments.

7. Production realization

7.1. Realization processes

The Process Map of the Fuel BU illustrates the realization processes (see Fig. 3.2). According to the scope of supply of the particular order, the relevant parts of the Process Map shall apply to the production of product for a given contract.

These realization processes in conjunction with the management and support processes contain all necessary details or reference the implementing procedures to assure that:

- The IMS objectives and requirements linked to the product or services performances are achieved,
- Necessary processes and documents are established and specific resources for the product or services, OH&S and environment are provided,
- EHS risks due to the product or services realization are controlled by establishing and communicating operating criteria to employees and necessary documents and requirements to purchasing, suppliers and subcontractors
- Required verification, validation, monitoring, inspection and test activities specific for the product/services are planned and performed and the criteria for product/services acceptance are established,
- Records needed are prepared to provide evidence that the realization processes and resulting products meet the requirements.

Measures are established for monitoring and controlling the processes for their respective output according to criteria for acceptability. These measures ensure that resources and suitable production facilities are maintained and appropriate reviews and approvals are obtained for product, process and equipment changes.

Planning of product realization includes:

- Establishing QAPs, Project Master Plans, Development Plans and Inspection Plans as required,
- Analyzing EHS risks due to operations / workplace / process / machinery / work organization related to product/services realization,
- Design and development planning,
- Design reviews, verification and validation,
- Control of IMS records to provide evidence that the products meet the acceptance criteria.

7.2. Customer related processes

7.2.1. Determination of requirements related to the product

Contract review ensures that customer requirements are identified including:

- Product requirements specified by the customer, including the requirements for availability, delivery, support, Nuclear Safety, OH&S and Environment,
- Product requirements not specified by the customer but necessary for intended or specified use where known,
- Obligations related to the product, including regulatory and legal requirements.

7.2.2. Review of requirements related to the product

Product requirements, whether documented by the customer or not, are defined and results of reviews are documented prior to the commitment to supply products to the customer.

Feasibility assessment of all requirements, including applicable regulations, codes, standards and guidelines is performed.

Deviations from the requirements stated in the customers documents require resolution with other Entities as well as with the customer and – if necessary – with regulatory authorities and are communicated to relevant personnel.

Changes to contractual requirements are expediently addressed in the same manner as the original contract information and requirements.

7.3. Design and development processes

7.3.1. General

Procedures are established for the preparation and review of design documents, including the correct translation of applicable regulatory, stakeholders' requirements and design bases into design and procurement documents. Included are such activities as: physics, seismic, mechanical, thermal, hydraulic, radiation and accident analyses; associated development and maintenance of software programs; establishment of materials compatibility; determination of accessibility for in-service inspection, maintenance and repair, and the development and maintenance of QHSE standards.

Design processes determine how to prepare, review, approve and verify design documents for items and services within their respective areas of responsibility. Design documents include such documents as specifications, drawings, analyses and software program documentation. These documents specify technical, quality, OH&S and environmental requirements appropriate to the activities they cover. Wherever practical and applicable, industry standards and specifications are utilized in design specifications for suitable materials, parts, equipment and processes. They are independently reviewed for completeness and technical accuracy. Approved documents are required to procure or produce items.

The design and development of new products must not only conform to legal requirements and pertinent codes and standards but must also allow for environmentally relevant aspects of a product's life cycle (development, production, use, recycling/disposal). The aim is to conserve resources, extend the service life of products and simplify recycling and disposal.

The following principles apply to nuclear facilities:

- Product longevity should be ensured through the use of proven (i.e. conforming to assured safety methodology) materials and production methods and conservative design methods,
- The scope and duration of in-service inspections should be reduced through the use of designs that are amenable to testing and optimized production technology,
- Maintenance procedures should be optimized through appropriate logistics; use of remote-controlled equipment,
- Geometry and design shall allow for ease of decontamination,
- Determination and inspection of installation and process materials to be used.

Errors and nonconformance in approved design documents, including design methods such as computer programs that could adversely affect product performance, are documented and corrected. Deviations from specified QHSE standards are identified and controlled in accordance with procedures.

7.3.2. Design and development planning

Design and development of new products and changes to existing products are carried out as described in procedures. Steps are taking into account in order to reduce the Environmental impacts during the life cycle of products. Plans are prepared for each new product design and development activity. They describe or reference these activities and define responsibility for their implementation. The design and development activities are assigned to qualified personnel equipped with adequate resources. The plans are updated as the design evolves.

For software products the design and development process is suitably defined.

7.3.3. Design, organizational and technical interfaces

Procedures establish methods for the identification and control of design, organizational and technical interfaces and for their coordination among participating design organizations. These procedures establish methods for review, approval, distribution and revision of design documents to ensure that the appropriate design, organizational and technical interfaces are considered.

7.3.4. Design and development input

Input data which is necessary for the performance of design activities are such as:

- Customer's needs and requirements,
- The applicable technical, contractual, legal and regulatory requirements,
- The QHSE standards and any standards required for the design,
- Design analyses prepared, reviewed and approved in accordance with procedures,
- Other requirements essential for design and development.

7.3.5. Design and development output

Design and development output data are presented to a degree of detail and in a form suitable for verification. As a minimum output documents:

- Satisfy the requirements stipulated in design input,
- Provide appropriate information for production and service operations,
- Contain or reference product acceptance criteria and applicable QHSE criteria as needed,
- Define the characteristics of the product that are essential to its safe and proper use.

Design outputs are documented in design reports, design calculations, drawings and specifications, reload reports and parts lists. Design reports for new products or major changes to existing products demonstrate that design input requirements were met. Parts lists are used to define specific product designs by listing the applicable part structures, part names, part numbers and other information necessary for production and procurement activities. These design output documents are prepared, reviewed and approved as stated in procedures.

7.3.6. Design and development review

Design reviews are conducted at defined milestones in the design and development processes for new products or major changes to existing products:

- To evaluate the ability to fulfill requirements,
- To identify problems and propose solutions,
- To determine the importance to OH&S and Environmental aspects and impact.

The number of design reviews to be conducted depends on the scope and complexity of the project.

Individuals or groups other than those who performed the original design but who may be from the same Division or Entity conduct the design review process. Implementation and documentation of the design review results are specified by procedures.

Experience from production and results of reactor service or problems discovered during production or service activities are reported to the design organizations. This information and experiences from the recent design process shall be considered during the fuel design review process.

7.3.7. Design and development verification

Procedures are provided to assure verification of designs. Verification methods include independent review of design documents, design analyses (calculations) and design verification testing. The design organization determines design verification methods to be used.

7.3.7.1. Independent review of design documents

All design documents are independently reviewed for completeness and technical accuracy. The reviewer shall be any technically qualified individual other than the author of the document in compliance with local regulations.

7.3.7.2. Design analyses

Design analyses (calculations) are used to establish design requirements or to verify the design. The analyst is required to document the calculations as to purpose, assumptions, method, input data, results and conclusions in such a manner that an independent reviewer can verify its technical accuracy independent of the analyst. Design analyses are checked by independent reviewers who are competent in the particular type of analysis being checked.

Computer codes used for design analyses are verified, except for those that can easily be verified by a user, before use as stipulated in procedures.

7.3.7.3. Design verification testing

Design verification by testing is used whenever engineering judgment leads to the conclusion that design analyses or previous experience cannot substantiate a design or design feature.

Design verification testing is conducted by the test organization using test procedures that incorporate the requirements of design specifications that establish the design limits of the items or features being tested. If verification of a design or design feature is solely by test, the testing is conducted under the most adverse design conditions that can be practically achieved as determined by analysis.

Test results are reviewed by the responsible design organization to determine if they verify the design or design feature tested.

7.3.8. Design and development validation

The suitability of new product designs may be demonstrated by the placement of lead test assemblies or components in reactors to validate their performance under operating conditions.

Validation takes place within the framework of the specified acceptance criteria and procedures with reference to the terms and conditions of use. Acceptance criteria are defined in the design input. Acceptance is performed, e.g., during final inspection.

For software products adequate measures are implemented, e.g., validation plans.

7.3.9. Design and development changes

Measures ensure that changes and modifications to designs are identified, documented and controlled. The changes are verified and validated, as appropriate, and approved before implementation.

Design changes to previously approved and issued design documents shall be reviewed and approved in the same manner (unless otherwise specified) as the original documents. If those required to accept or approve are unable to achieve a unanimous agreement, the items of disagreement are referred to the next higher level of management until resolved.

7.4. Purchasing

7.4.1. Purchasing process

Measures are established in procedures to assure that products are procured from suppliers that meet the requirements of the Fuel BU and those specified in customer contracts or legal requirements. The Fuel BU purchasing process is described in the process "Purchase".

One or combinations of the following methods according to the importance of the purchased product are used for supplier evaluation:

- Supplier's third party certificates and references,
- Evaluation of supplier's QSE System,
- Review of performance data for former products and services of the supplier,
- Source, incoming inspection and/or surveillance results,
- Technical equipment and personnel of the supplier,
- Suppliers experience.

This evaluation leads to an assessment, which contains at least the registered name of the supplier including the location where the work is performed, scope of supply and expiration date as well as the condition under which the supplier is considered approved. Measures are established to accept or not accept supplier assessments performed by other Entities of AREVA.

These assessments are registered in a common database (Approved Suppliers List). Information related to the status of suppliers is contained within the Approved Suppliers List. The assessment is valid for a maximum duration of three years. The renewal is based on one or a combination of methods used for the initial evaluation.

Commercial grade and/or designated products for use in the reactor may be procured from suppliers where specific quality controls for nuclear applications cannot be imposed in a practicable manner. In these instances, an evaluation of the suitability of the item or service for nuclear applications is performed by the responsible process engineering and/or design organization. The critical characteristics of the item or service are also determined and documented as part of this evaluation. Special methods may be needed for verification of these critical characteristics. If needed, these special quality verification methods may include inspections, tests or commercial grade surveys or evaluations of the supplier.

7.4.2. Purchasing data

Procurement documents for the purchase of products include or reference the following provisions, as applicable:

- Scope of supply,
- Technical requirements,
- IMS requirements (e.g. respect to EHS requirements including regulations).

Purchase orders are reviewed prior to release by personnel different from those who prepare the order.

Procurement document changes receive the same approval as the original for the specific requirements that are changed.

7.4.3. Verification of purchased product

Measures assure that purchased products conform to the procurement documents. These measures include provisions as appropriate, for source evaluation and selection, objective evidence of Quality furnished by the supplier, inspection at the source and examination of products upon delivery at intervals consistent with the importance, complexity and quantity of the product or services.

People in charge of the inspection, either at the source or upon delivery, are entitled or qualified according to Entity procedures. If they perform a source inspection for another BU, they shall be qualified according to the applicable corporate procedure.

Documentary evidence that purchased products conform to the procurement requirements is retained and must identify the specific requirements such as standards, specifications and drawings.

For design services, the relevant design group monitors the quality of the required technical documents that are prepared by the supplier. Rules for releasing these documents are defined in procedures. If the supplier uses computer codes for critical studies, the verification actions consist of checking:

- The existence and validity of a calculation note,
- The validity of the codes,
- The validity of the input data with respect to the applicable ranges,
- The validity of the results obtained with respect to the limits set.

7.4.4. Product and service transfer between Entities

For the product and service transfer between the entities an internal order is used. IMS requirements consist of the implementation of the Fuel BU IMS and the requirements from the final customer, if any. Product and associated records received from another Entity is inspected for completeness and possible shipment damage.

Design service documents are reviewed by responsible design personnel for consistency with the internal order, completeness and quality of documents.

7.5. Production and service processes

7.5.1. Control of production and service processes

7.5.1.1. Fuel related products

Drawings and specifications issued by design groups may not be directly usable on the shop floor. On this basis, manufacturing and inspection documents are prepared to determine the chronological sequence and the description of manufacturing and inspections steps. Other documents are issued such as parameter sheets based on qualification of processes.

The documents can also include safety and environmental aspects. To ensure appropriate work instructions are disposed on all relevant places at the sites.

7.5.1.2. On-site service

For any work on-site an operation file is issued which includes the planning of the work (schedule, assignment of personnel), the sequential list of operations, the list of applicable documents and the documents themselves. In addition, the necessary documents required on-site, as prerequisites such as personnel accreditations or qualifications of equipment are also included.

The documents can also include safety and environmental aspects. To ensure appropriate work instructions are disposed on all relevant places at the customer sites.

7.5.2. Qualification or validation of production and service processes

7.5.2.1. Production processes

Production processes as required are qualified on the basis of qualification programs. The qualification programs define the production output to be evaluated, the characteristics to be inspected, the acceptance criteria to be defined or reviewed by the design function and the necessary documentation. The qualification also includes safety and environmental aspects, as far as applicable.

Production processes in which the quality achieved depends on the performance of the process and the results cannot be fully verified by subsequent inspections and tests are considered special processes are covered by more in-depth controls. These special processes are performed under controlled conditions with qualified procedures, trained and qualified personnel and suitable equipment and re-qualified if required.

Typical special processes and tests include welding, liquid penetrate testing, radiography, helium leak testing, ultrasonic testing, eddy current testing and nuclear rod assay.

For technically similar products, small quantities and non-repetitive production, qualification exemptions can be granted providing products or processes undergo more extensive inspection and surveillance.

The qualification process including required documents as well as archiving is described in procedures.

7.5.2.2. On-site service

The aim of the qualification is to demonstrate that:
- The functional requirements of the equipment are met,
- The desired result for the product subject to the work is obtained,
- No irreversible damage occurs to the product subject to the work.

The qualification process including required documents and archiving is described in procedures. Within the qualification process also safety and environmental aspects are considered.

7.5.2.3. Qualification of Non Destructive Testing (NDT) inspectors

Procedures for qualification of NDT inspectors are established and define the following items:
- The qualification levels suited to the tasks, as well as the contents and the duration of the training and corresponding experience,
- The terms of the certification tests and examinations, including the medical examinations designed for checking the physical ability of the applicants. These medical examinations, including visual acuity testing, are extended to all personnel performing visual inspection of the products,
- The responsibilities for granting certificates,
- The validity duration of the certifications and the conditions of their renewal,
- The updating and archiving of the certification files.

Certification of the personnel is not required for operating automatic inspection equipment and for carrying out, according to procedures, simple and repetitive operations, including frequent calibrations that can be considered as adjustments, providing surveillance is ensured.

7.5.2.4. Maintenance and EHS inspections

A maintenance program or maintenance plan is prepared to ensure implementation of preventive maintenance of equipment affecting the quality of the products, the OH&S and the environment. The objective of this preventive maintenance is to ensure a continuous, safe and stable process.

For maintenance operations (preventive or corrective) the conditions for restarting shall be defined as appropriate.

For all OH&S and environmental relevant machinery and equipment maintenance and EHS inspections are carried out in accordance to the local legal requirements, guidelines and approval documents. All necessary measures will be determined during maintenance planning equipment and machinery.

7.5.2.5. Software control

Before application, new and modified software used for the functional and mechanical design of fuel assemblies and other core components, as well as for manufacture and inspection, is subject to appropriate verification and validation to demonstrate suitability for the intended purpose.

7.5.3. Identification, traceability and status control

Measures are established and documented in procedures for the identification and control of products. These identification and control measures are designed to prevent the use of incorrect or defective products. These measures also assure that sub-components are traceable to finished products throughout production and use. Such traceability also supports warranty evaluations for product failures encountered in use or storage. Moreover these measures are established to indicate, by the use of markings such as stamps, tags, labels, routing cards or other suitable means, the status of inspections and tests performed upon individual hardware items.

Suitable configuration control measures are implemented for identification, traceability and status control of software products.

7.5.3.1. Identification

Traceability is maintained through receipt of material to final shipment. Procedures require that identification be maintained either on the item or on the package or on the records traceable to the item. Methods of identification and traceability are such that they provide, at all times, a link between the product and the related documentation and prevent the use of nonconforming products or product that has not yet been accepted.

Any fuel related product which loses its identification is considered as potentially nonconforming until such time as the identity can be established or the item is dispositioned by the nonconforming control system (see Section 8.3).

7.5.3.2. Inspection and test status

Controls are established to assure that the inspection and processing status of items which will become part of the product or are important to the manufacturing process are adequately identified from receipt of the items to end use, in order to prevent inadvertent bypassing of operations or inadvertent use.

The following controls are employed to assure that the status of fuel related products are adequately identified:

- Lot cards, production order routers, station reports, route cards, inspection forms, and/or checklists are utilized to identify and control lots or items and to transfer identification when several items are joined into a single unit.
- Inspector or operator identification is entered on the identity/control documentation to signify the completion of operations or inspections.
- Hold points may be established at specified points in the process whereby material processing may not proceed until formally inspected and released by authorized person-

nel and/or the customer. Release points are designated in associated procedures. Releases become part of the quality records.

- Conditional release of fuel related products beyond hold points may be initiated by completion of a "Conditional Release" or equivalent. Conditional Releases are not to be used to waive specification requirements. Conditional Releases shall be converted to Full Releases, at the latest, prior to product shipment.
- Rejected items are suitably identified (e.g. hold tags) and / or separated from acceptable items to prevent their inadvertent use.

7.5.4. Customer property

Uranium hexafluoride (UF_6) is an example of customer property of fuel related products. Acceptance of such product is based on quantity and inspection followed by a formal release. Inspection includes visible damage on the packaging or product, review of the documents required to evidence Quality and as appropriate, physical and/or chemical analysis.

Engineering analyses, plant data and software are examples of non-hardware types of purchaser property. Acceptance of data and analyses is done through the validation of data or results.

Precautions are taken to preclude damage to customer property. A report is issued for any loss, damage or other limitation according to Entity procedures. This report is transmitted to the customer and kept according to Entity procedures dealing with the control of quality records.

7.5.5. Preservation of product

Procedural controls are established to assure that fuel related products are handled, stored, shipped and preserved in a manner such that quality, OH&S, environment is not adversely affected. Trained individuals accomplish the special handling, storage and preservation in accordance with procedures. Where special controls are not required for handling, storage and preservation, standard material handling and transportation methods are used to protect against physical damage.

7.5.5.1. Control of prohibited materials

Measures are established to assure that materials detrimental to fuel performance are sufficiently controlled or not used. The measures include control of essential material purchases and evaluation of the process via appropriate analyses, as required to assure that adequate control is maintained over the use of such materials.

7.5.5.2. Packaging and storage

Procedures for packaging and storage assure that fuel related products, which are subject to deterioration or damage through exposure to air, moisture and other environments, are protected during procurement, production, interim storage and final shipping.

7.5.5.3. Delivery

Shipping of nuclear material is performed in accordance with national and international regulations. As requested by the customer upon receipt of nuclear fuel at the customers´ plant, inspection is performed, based on a procedure which is mutually agreed between involved parties.

7.6. Control for measuring and test equipment

Inspection, measuring and test equipment is defined as those devices used to measure characteristics for the purpose of determining acceptance of products to specified requirements where subsequent inspection is not performed.

Furthermore inspection and measuring equipment is also defined as those devices that are used for measuring of OH&S and environmentally relevant parameters.

Procedures for calibration and use of the measuring and test equipment are established and document the basis of calibration. These procedures describe requirements such as:

- Traceability of calibration standards according to national or international standards, where such standards exist. In the event there are no national or international standards, the basis of the calibration is documented.
- Equipment within the scope of the calibration and maintenance program is procured, controlled and used to ensure the required degree of accuracy, reproducibility and traceability.
- Frequencies of recalibration are established, based on required accuracy usage, stability of the equipment and, where feasible, the calibration status is identified by tag, label or other appropriate means.
- Nonconforming equipment is clearly identified and its use prohibited or suitably restricted until repaired or calibrated.
- Environmental conditions for calibration
- Handling and safeguarding of equipment
- Use of test hardware (fixtures, templates)

Inspection, measuring and test equipment being used to determine product acceptance that is found to be out of calibration will be removed from service and recalibrated before being used again. Products are then considered as potentially nonconforming.

Calibration records for measuring, inspection and test equipment are maintained. As a minimum, identification number of the equipment, calibration method and results of calibrations are recorded.

8. Measurement, analysis and improvement

8.1. Planning of measurement, analysis and improvement

Measures are established in procedures for planning and implementing measurement, analysis and improvement processes, which are needed:

- To demonstrate product conformity,
- To monitor and measure characteristics of activities that have significant environmental impact,
- To monitor incidents / events, illness and other evidence of nonconformities,
- To monitor performance, applicable operational controls and conformity with objectives and targets,
- To monitor the extent to which objectives, programs, legal requirements,... are met,
- To monitor the effectiveness of controls (e.g. for OH&S),
- To monitor improvements,
- To ensure IMS conformity,
- To continually improve the effectiveness of the IMS,
- To use statistical techniques as appropriate.

8.2. Monitoring and measurement

At the Fuel BU several measurements of the performance of the IMS are implemented.

8.2.1. Assessment of customers and other stakeholders satisfaction

Each Entity monitors information on customer feedback to ensure the customer requirements are satisfied and that communication during the processing of customer complaints is satisfactory.

Customer satisfaction surveys are realized based upon face to face interviews. The satisfaction survey results help Fuel BU and Entities to improve their performances.

Moreover the customer focused metrics are implemented. At Fuel BU level, the following metrics are used:

- Customer complaints ,
- On time delivery,
- End of project evaluation,
- Contract fulfillment (e.g. for customers of FZ BU who are not covered by project evaluation).

And globally, a composite metric, the Customer Satisfaction Index (CSI) is implemented at Fuel BU level.

These indicators are completed by those obtained from the reporting process implemented as part of the project management method PMI.

Employee satisfaction and involvement is periodically measured at AREVA level through Employee Opinion Surveys (EOS). The lines of improvement identified are converted into action

plans which form parts of the Entity's AREVA Way objectives which are monitored using AREVA Way model.

In order to enable dialogue with the various players, AREVA has deployed a local stakeholder mapping methodology. This approach involves identifying the main economic, environmental, social and societal issues for AREVA sites and those involved in their environment. Sites could thus confront their perception with actual expectations of their stakeholders. Actions plans were then put together to better meet expectations. This method implementation is not compulsory for all sites.

8.2.2. Evaluation of compliance

According to our commitment to fulfill all legal and other relevant requirements measures are established to evaluate periodically the conformity with these requirements.

The evaluation of compliance with legal and other relevant requirements is part of internal audits and site inspections. The evaluation results are discussed and approved as part of the Management Review.

8.2.3. Audits

A comprehensive program of planned and periodic audits is carried out to verify compliance with all aspects of the IMS. The audit process is described in a corporate procedure. The audits include the evaluation of work areas, activities, quality, OH&S or environment-related practices and review of documents and records. The audit program includes supplier audits, as well as internal audits. Audit reports are documented and distributed to appropriate management and necessary corrective actions are taken to correct noted deficiencies.

8.2.3.1. Internal audits

Internal audits are performed at Division and/or Entity level in accordance with the applicable AREVA procedure and this manual. The internal audit schedules are issued annually and revised as necessary by each Division and/or Entity.

Internal audits are scheduled to cover the applicable QHSE program and are chartered to identify potential improvements. The elements of the QHSE program will be audited by each Division and/or Entity every 3 years.

Audits are led by qualified auditors in accordance with the applicable AREVA procedures who do not have direct responsibility in the area being audited.

The lead auditor, or designee, monitors implementation and verifies the effectiveness of corrective actions. The Division and/or Entity QHSE Managers ensure that the corrective action program is effectively implemented.

Internal audit findings with global implications are distributed to all Division and/or Entity QHSE Managers within the Fuel BU and to the FL BU MS&CI Director.

8.2.3.2. Cross-audit

Cross-audits, complementing the internal audits, are performed to check the consistency of the Divisions or Entities IMS with AREVA directives and with FL BU Management manual, processes and procedures. The cross-audit schedule is approved by the FL BU MS&CI Director and then implemented by the Divisions and Entities. Cross-audits are conducted by an audit team, which is independent from the Fuel BU being audited.

8.2.3.3. Customer or authority audits

Customer or Authority audits are performed at Divisions and/or Entities. Results are evaluated by the audited QHSE Manager. If the audited is not in charge of the contract, the results are transmitted to the appropriate Division and/or Entity QHSE Manager for resolution. Audit nonconformities with global implications are distributed to all Division and/or Entity QHSE Managers within the Fuel BU and to the FL BU MS&CI Director.

8.2.3.4. Third party audits

Coordination of audits and answer to the nonconformities or comments from the certification body audits is under the responsibility of the FL BU MS&CI Director.

8.2.4. Monitoring and measurement of processes

The effectiveness of processes is reviewed at regular intervals with the aim of continuous improvement. The review is based on product and IMS requirements as well as on defined process indicators.

Statistical techniques for measurement and monitoring of processes are applied, if useful for the following purposes:

- To determine effectiveness of processes,
- To control and monitor processes,
- To analyze processes in order to improve process performance such as increase yield, reduce variability,
- To improve product reliability and performance,
- To analyze problems and develop corrective and preventive actions.

8.2.5. Monitoring and measurement of product

Inspection procedures are established and executed to verify conformance with specifications and drawings for accomplishing activities affecting quality.

Inspections for acceptance of the work will be performed by individuals other than those who performed the activity being inspected. However, certain inspections may be performed by individuals who performed the activities being inspected provided such inspections do not require sensory or human judgment. Examples of inspections which may not require independence are:

- Physical inspections with gages which do not require recording of data (e.g. go/no-go gages),
- Automated inspections – automated coordinate measuring machines, gamma scanner, etc.,

- Automated processes or "mistake-proof" tools – heat treatment furnace charts, torque wrenches with set breakaway,
- Inspection of assembly attributes which are generated by multiple operations and are not readily traceable to an individual operation/operator.

Inspection by the manufacturing organization may be applied during production and for final inspection of finished product, provided such inspections are subject to documented surveillance by Quality personnel to assure their acceptability.

Examinations, measurements or tests of product processed are performed for each production step where necessary to assure Quality. The provisions of special processes (see section 7.5.2.1) apply if inspection of products is impossible or disadvantageous.

Inspectors are qualified / trained in accordance with procedures.

Procedures for in-process inspections are established to monitor processing parameters and equipment. In-process inspections are documented on production routers/travelers, route cards, computer systems, etc.

8.3. Control of event

8.3.1. Control of nonconforming product

Measures are established in Fuel BU and Entity processes and procedures to control products which do not conform to requirements in order to prevent their inadvertent use. These procedures include, as appropriate, provisions for identification, documentation, segregation, disposition and notification to affected organizations. Nonconforming products will be reviewed and accepted, repaired or reworked or rejected in accordance with procedures.

Products, which are reworked or repaired, are inspected in accordance with applicable inspection requirements applied to the original items or as specified in applicable rework or repair procedures.

When a nonconforming product is detected after delivery or use has started, actions are taken by the responsible Entity, which are appropriate to the effects or potential effects of the nonconformance.

Measures ensure that any defect in fuel related product or any noncompliance with customer requirements which could create a substantial Nuclear Safety hazard is communicated to the customer without delay.

For products to be delivered to US customers or when required by customers, the requirements of 10 CFR 21 "Reporting of Defects and Noncompliance," are fulfilled in the affected Entities. A similar reporting procedure is implemented for other contracts as required by the customer.

8.3.2. Emergency preparedness

At the Entity level procedures are implemented to identify emergency situations and to plan how to react and respond to such situations with the aim to avoid consequences for staff, neighbours, machinery, equipment and the environment or reduce them at an acceptable level.

Emergency plans are regularly checked and revised, e.g. after emergency trainings or the occurrence of emergency situations.

Crisis communication is realized in compliance with the "Manage communication" process.

8.4. Incident investigation

In the field of OH&S and Environmental management, incidents are seen as event. To improve EHS and to avoid incidents measures are established to investigate, analyze and record all kinds of incidents. The aim is to understand deficiencies and other factors (e.g. Management of Human and Organizational Factors) that are causing or contributing to the occurrence of incidents. The results of such investigations are documented, maintained and communicated.

The procedure of incident investigation is realized at Entities level. It is the basis for the corrective and preventive actions and helps to improve emergency preparedness.

8.5. Analysis of data

The Fuel BU and its Entities collect and analyze appropriate data to determine suitability and effectiveness of the IMS and identify improvement potential (performance indicators). This includes data generated by measuring and monitoring activities and other relevant sources.

Analysis of data and performance indicators identify areas of improvement for the IMS. The results of the analysis are internally communicated to all organizational units to facilitate improvement initiatives.

These data are analyzed to provide information on:

- Stakeholders satisfaction, stakeholders complaints,
- Conformity to product requirements,
- Audits results,
- Conformity to legal requirements,
- Status of EHS,
- Characteristics of processes, products and their trends,
- Completion of corrective and preventive actions,
- Suppliers' performance.

Results of data analysis by the Entities are transmitted to the FL BU MS&CI Director in order to determine suitability and effectiveness of the IMS.

8.6. Corrective and preventive actions

In case of actions to correct or prevent nonconformities, safety risks assessments have to be done prior to implementation; these risk assessments must be recorded.

8.6.1. Corrective actions

Actions are taken to analyze and eliminate the causes of nonconformities including events, emergency situations and stakeholders' complaints in order to prevent recurrence. Such corrective actions are appropriate to the effects of the encountered problems and are also used to drive process improvement.

Nonconforming conditions, audits, inspection or surveillance of products, stakeholders' complaints or other events which can adversely affect quality, OH&S and environment constitute the main sources of corrective actions. Such situations are analyzed for root or apparent causes and reported to appropriate levels of management for review and decision.

Depending on the effect of the nonconformance, corrective actions are defined. A follow-up system is implemented. Evidence of implementation and verification of effectiveness is monitored.

Lists of actions in progress are periodically issued or filed in databases and communicated to involved people in charge of the actions, management and the project manager (if applicable).

Corrective actions can also be imposed to the suppliers following surveillance and/or audit activities.

The corrective action process is described in Fuel BU and Entity processes and procedures.

8.6.2. Preventive actions

Actions are taken to analyze and eliminate the causes of potential nonconformance in order to prevent their occurrence. Such preventive actions are appropriate to the effects of the potential problems.

The procedure for planning and implementing preventive actions consists of the following:

- Evaluating and using suitable sources of information concerning quality, OH&S, environmental impacts of products, machinery and activities,
- Applying analysis methods where useful (e.g. risk assessments),
- Defining actions which may result in a safer and more reliable product, in improving of OH&S and in reduction of environmental impacts,
- Implementing and documenting preventive actions,
- Monitoring and reviewing effectiveness of implemented actions.

Analysis of quality, OH&S and environmental data, audits and other actions such as process reviews are the main source of preventive actions. The preventive action process is described in Fuel BU and Entity processes and procedures.

Appendix A

Quality Assurance Plan for Projects Regulated Under 10 CFR 50, Appendix B Criteria and for Shipping Containers Regulated Under 10 CFR 71, Subpart H

1. Applicability

This appendix is fully applicable at all Fuel BU facilities conducting work on projects under US NRC Regulation 10 CFR 50, Appendix B or conducting work on shipping containers subject to 10 CFR 71, Subpart H. It is not applicable to projects conducted neither under other national regulatory requirements nor on shipping containers not regulated under US NRC 10 CFR 71, Subpart H.

2. QA Program Elements

All sections of this Manual apply to work on projects under US NRC Regulation 10 CFR 50, Appendix B or conducting work on shipping containers subject to 10 CFR 71, Subpart H.

The following additional requirements apply to work on shipping containers subject to 10 CFR 71, Subpart H:

- For revisions that impact our QA Program elements applied to 10 CFR 71 activities, we will obtain prior US NRC approval before implementation.
- Measures are established as described in this Manual to control the design, procurement, fabrication, handling, shipping, cleaning, assembly, inspection, testing, use, maintenance, repair and modification of components of our approved containers used to ship fissile and Type A and Type B quantities of radioactive material.
- Shipping container components are classified in accordance with design control procedures that determine their safety significance based upon appropriate regulatory guidance. These classifications, in part, determine the level of quality controls applied to the procurement and use of the components.
- Design control measures as described in this Manual are applied to container attributes such as criticality controls, compatibility of materials, accessibility for in-service inspection, and decontamination capability. These attributes are specified in license drawings which accompany certificates of compliance (C of Cs) issued by the US NRC. Changes in the conditions specified in the package approval require US NRC approval.
- Discrepant shipping containers are removed from service and either refurbished/repaired to comply with license requirements or the license is amended (if justified) to accommodate the new configuration(s).

3. Correlation of 10 CFR 50, Appendix B Criteria and 10 CFR 71, Subpart H Requirements with ISO 9001 Requirements

See Attachment 1.

4. Applicability of NQA-1 and other Standards

See Attachment 2.

5. Matrix Chart of AREVA QA Program and QA Procedures Related to QA Criteria

See Attachment 3.

6. US Fuel BU Organizational Chart

The US Fuel BU is an Entity as used and defined within this quality manual. See Attachment 4 for US Fuel BU organizational reporting relationships.

7. NRC QA Program Approval

See Attachment 5.

- End -

Attachment 1

Correlation of 10 CFR 50, Appendix B Criteria and 10 CFR 71, Subpart H Requirements with ISO 9001 Requirements

10 CFR 50, Appendix B QA Criteria		Corresponding ISO 9001 Requirements	FMM Section Which Imposes Criteria/Requirement	10 CFR 71, Subpart H Requirements
I	Organization	Management Responsibility	4.4	71.103
II	QA Program	QA System and Management Responsibility, Training	3.0, 4.0, & 6.0	71.101 & 71.105
III	Design Control	Design Control	7.3	71.107
IV	Procurement Document Control	Purchasing	7.4	71.109
V	Instructions, Procedures, and Drawings	Not Applicable	7.5	71.111
VI	Document Control	Document Control	3.4 & 3.5	71.113
VII	Control of Purchased Material	Purchasing, Purchaser Supplied Product, Quality Audits	7.4, 7.5.2, & 8.2.3	71.115
VIII	Identification and Control of Materials and Parts	Product Identification and Traceability, Inspection and Testing	7.5.3 & 8.2.5	71.117
IX	Control of Special Processes	Process Control	7.5.2	71.119
X	Inspection	Inspection and Testing	8.2.5	71.121
XI	Test Control	Not Applicable	7.5.3	71.123
XII	Calibration of Equipment	Inspection, Measuring, and Test Equipment	7.6	71.125
XIII	Handling, Storage, and Shipping	Handling, Storage, Packaging, and Delivery	7.5.5	71.127
XIV	Inspection, Testing, and Operating Status	Inspection and Test Status	7.5.3	71.129
XV	Nonconforming Material	Control of Nonconforming Product	8.3.1	71.131
XVI	Corrective Action	Corrective Action	8.6	71.133
XVII	QA Records	Quality Records	3.5	71.135
XVIII	Audits	Quality Audits	8.2.3	71.137

Attachment 2

Applicability of NQA-1 and other Standards

The AREVA Quality Assurance Program satisfies the requirements of Appendix B to 10 CFR 50, "Quality Assurance Criteria for Nuclear Power Plants"; USNRC Regulatory Guide 1.28, "Quality Assurance Program Requirements"; NQA-1-2008 and the NQA-1a-2009 Addenda "Quality Assurance Requirements for Nuclear Facility Applications"; 10 CFR 71, Subpart H, "Quality Assurance Requirements for Packaging and Transportation of Radioactive Material"; and ANSI N14.1 (2001), "Uranium Hexafluoride Packaging for Transport."

Since the Quality Assurance requirements and guidelines of the NQA-1 and other Standards were initiated to apply to nuclear power plants, interpretation is required to determine their applicability to services, and the design and manufacture of a plant component such as nuclear fuel. The AREVA Quality Assurance Program follows guidance of Regulatory Guide 1.28 Revision 4 insofar as it applies to fuel design and fabrication activities performed by AREVA. The extent to which the ANSI Standards and Regulatory Guide1.28 are deemed to be applicable to AREVA activities is summarized in the table which follows. The listed ANSI Standards apply only to nuclear safety related activities. Specific exceptions to the documents are included with appropriate justification.

APPLICABILITY OF NQA-1 AND OTHER STANDARDS		
Standard	**Title**	**Subject and applicability**
NQA-1 Part I Requirement 2 and Nonmandatory Appendix 2A-1	Quality Assurance Program	Applicability: Applicable with the following clarifications: 1) Levels of capability and associated certifications are applicable only to special processes, as defined by ASNT-TC-1A. 2) Formal levels of qualification are not assigned for nuclear fuel ultrasonic test and helium leak check equipment operating personnel. However, formal training programs for all inspectors are conducted and documented in accordance with ASNT-TC-1A recommended practice. The degree of evaluating acceptability of test results is limited by procedure, to comparing chart or dial readings of product tests versus acceptance limits established using approved standards. 3) Practical experience and on-the-job training times may vary from the ASNT-TC-1A classifications. Other inspections and testing qualifications, while formalized, are not deemed to require designation of levels of capability or certification. In addition, physical examinations after initial training are verified biennially in lieu of annually per Section 2.5, since this is company policy. 4) A special category, "Level II Rod Film Reader Only," is defined at the Richland facility to evaluate acceptability of fuel rod weld radiographs only. This classification requires less extensive general training and experience than "Level II," and limits qualification to an in-depth ability to read and interpret film only. Special training with demonstration of ability to consistently detect defects is required and is documented in training files. 5) Liquid penetrant inspectors are trained and certified under an AREVA developed training program. This program is based upon ASNT-TC-1A.
NQA-1 Part I Requirement 2	Quality Assurance Program	Paragraphs 303 and 304 Calibration and lab services supplier audits may be performed by QC auditors, rather than QA auditors, due to the specialized and limited scope of these audits. QC auditors are appropriately trained and qualified in accordance with approved procedures, but are not required to be formally designated Lead Auditors.
NQA-1 Part I Requirement 7	Control of Purchased Items and Services	Applicability: Applicable as modified below consistent with Regulatory Guide 1.28: 1) After the award of a contract, AREVA may determine, after an evaluation including items 2, 3 and 4 below that external audits are not necessary for procuring items: a) that are relatively simple and standard in design, manufacturing, and testing; and b) that are adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery. For other procurement actions not covered by the above exceptions, audits should be conducted as described below. 2) AREVA will either audit its supplier's QA program on a triennial basis or

APPLICABILITY OF NQA-1 AND OTHER STANDARDS		
Standard	**Title**	**Subject and applicability**
		arrange for such an audit. The triennial period begins when an audit is performed. AREVA may perform an audit when the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program that has the required scope for purchases placed during the triennial period. If a subsequent contract or a contract modification significantly enlarges the scope or changes the methods or controls for activities performed by the same supplier, AREVA will conduct an audit of the modified requirements, thus starting a new triennial period. If the supplier is implementing the same QA program for other customers as that proposed for use on AREVA contracts, supplier evaluations as shown in Section 7.4.1 of this manual may serve as the first triennial audit. When supplier evaluations as shown in Section 7.4.1 of this manual are used as the first triennial audit, they will satisfy the same audit elements and criteria as those used on other triennial audits. 3) If more than one purchaser buys from a single supplier, AREVA may either perform or arrange for an audit of the supplier on behalf of itself and other purchasers to reduce the number of external audits of the supplier. The scope of this audit should satisfy the needs of all the purchasers, and all the purchasers for whom the audit was conducted should receive the audit report. Nevertheless, when AREVA is relying on the results of an audit performed on behalf of several purchasers, AREVA remains responsible for the adequacy of the audit for AREVA needs. 4) AREVA will conduct annual evaluations of suppliers. These evaluations will be documented and will take the following considerations into account, where applicable: a) the review of supplier-furnished documents and records such as certificates of conformance, nonconformance notices, and corrective actions; b) results of previous source verifications, audits, and receiving inspections; c) operating experience of identical or similar products furnished by the same supplier; and d) results of audits from other sources (e.g., Nuclear Procurement Issues Committee audit reports or NRC inspection reports). 5) A general grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples in which the 90-day general grace period could be applied. The grace period does not allow the "clock" for a particular activity to be reset forward. The "clock" for an activity is reset backwards by performing the activity early.
NQA-1 Part I Requirement 18	Audits	Applicability: Applicable with the following comments and exceptions: With respect to the yearly internal audit frequency requirements of Regulatory Guide 1.28 paragraph 2.a, the term "Applicable elements..." is interpreted within the following context. AREVA conducts comprehensive internal QA Audits of important quality functional areas. Each functional area audit may address implementation of one or more of the QA Program criteria (elements) applicable to the area. Each QA Program criterion is

APPLICABILITY OF NQA-1 AND OTHER STANDARDS		
Standard	**Title**	**Subject and applicability**
		audited at least once every three years during the performance of functional area audits. The basis for this frequency is the considerable QA involvement in support of customer program audits which occur numerous times yearly. In determining the audit scope and frequency, an evaluation of the area being audited is performed. The evaluation may include some or all of the following: prior quality assurance program audits, results of audits from other sources, assessment by AREVA lead auditors during their support for utility oversight activities, nature and frequency of identified discrepancies, significant changes in the organization or quality assurance program, and the corrective actions taken to correct discrepancies. Paragraph 600 A written reply to the audit report is obtained only if required by the audit report or the audit report transmittal. Written responses to individual audit nonconformances are obtained in accordance with Section 8.6 of this manual.
NQA-1 Part II Subpart 2.2	Quality Assurance Requirements for Packing, Shipping Receiving, Storage and Handling of Items for Nuclear Facilities	Applicability: Applicable with the following clarifications: Paragraph 201.1 defines nuclear fuel as a Level A item. As such, paragraph 302.1 applies with the following exceptions: 1) Subparagraph (a) is amended to eliminate the need for temperature and humidity controls. 2) The serial number of the fuel assembly constitutes adequate item identification as required by Subparagraph (i). Shipping container marking shall comply with the requirements of applicable state and federal regulations governing nuclear fuel shipments. Additionally, the following sections of NQA-1, Part II Subpart 2.2 are deemed to apply: 406, 502.1(e), 502(a) (8), 502.2(b) (2), and (4), 503, 504, 506, 601 (at fuel fabrication site only and with the exception of temperature and humidity controls). Storages in shipping containers may satisfy the requirements of Section 601.
NQA-1 Part II Subpart 2.7	Quality Assurance Requirements for Computer Software for Nuclear Facility Applications	Applicability: Applicable with the following exception: 1) NQA-1, Part II Subpart 2.7 does not apply to the Manufacturing Equipment Software (MES) systems at the Horn Rapids Road facility. These systems are governed by the site license with the NRC (SNM-1227).
NQA-1 Part IV Subpart 4.1	Application Appendix: Guide on Quality Assurance Requirements for Computer	Applicability: Applicable with the following exception: 1) NQA-1, Part IV Subpart 4.1 does not apply to the Manufacturing Equipment Software (MES) systems at the Horn Rapids Road facility. These systems are governed by the site license with the NRC (SNM-1227).
NQA-1 Part III	Guidance on Design Control	Applicability: Applicable with the following clarifications: Paragraph 200 is applicable with the following clarification and exceptions

APPLICABILITY OF NQA-1 AND OTHER STANDARDS		
Standard	**Title**	**Subject and applicability**
Nonmandatory Appendix 3A-1		which make the paragraph more consistent with Nuclear Fuel Design. Paragraph 200 is modified to read as follows: "The design shall be such as to be capable of accommodating the following where applicable: (a) Basic functions of each structure and component (b) Performance requirements (c) Regulatory requirements including the applicable issue and/or addenda (d) Codes and standards including the applicable issue and/or addenda (e) Design conditions such as pressure and temperature (f) Loads such as seismic, thermal, and dynamic where required (g) Environmental conditions anticipated during fabrication, storage, and operation, such as pressure, temperature, humidity, corrosiveness, and nuclear radiation (h) Interface requirements, including definition of the functional and physical interfaces involving structures and components (i) Material requirements, including such items as compatibility and corrosion resistance (j) Mechanical requirements, such as vibration, etc. (k) (Not applicable) (l) Hydraulic requirements such as allowable pressure drops and fluid velocities (m) (Not applicable) (n) (Not applicable) (o) Layout and arrangement requirements (p) Operational requirements under various conditions, such as plant startup, normal plant operation, plant shutdown, plant emergency operation, special or infrequent operation and system abnormal or emergency operation (q) Provision for accommodating installation of necessary instrumentation (r) (Not applicable) (s) (Not applicable) (t) Failure effects requirements of structures, and components, including a definition of those events and accidents which they must be designed to withstand (u) Test requirements including in plant tests and conditions under which they will be performed (v) Accessibility, maintenance, repair and in service inspection requirements for the fuel, including the conditions under which these will be performed"
NQA-1 Part I Requirement 17		Applicability: Applicable with the following clarifications: Paragraph 400, "Classification," of Requirement 17, "Quality Assurance Records," provides guidance on the retention of "lifetime" and "nonpermanent" records. Paragraph 401, "Lifetime Records," discusses the scope and responsibilities related to these records. AREVA or its authorized agents will maintain lifetime records for the life of the particular item while it is installed in the plant or stored for future use. "Lifetime Records" do not need to be retained by AREVA if they are transferred in accordance with approved procedures to AREVA customers in accordance with contract requirements. Paragraph 402, "Nonpermanent Records," identifies nonpermanent records

APPLICABILITY OF NQA-1 AND OTHER STANDARDS		
Standard	**Title**	**Subject and applicability**
		as those records that "show evidence that an activity was performed in accordance with the applicable requirements." AREVA or its authorized agent does not need to retain these records for the life of the item because they do not meet the criteria for lifetime records. However, in accordance with Paragraph 700, "Retention," document retention periods for "Nonpermanent Records" will be documented and records maintained for their retention period. Paragraph 601 is applicable with the following clarification and exceptions: 1) Calibration records are maintained in the calibration laboratory as these are not subject to vault storage until reasonable time after fuel shipment. 2) The requirements of 601 do not apply to nonpermanent QA Records. Retention times are established for these records and they are maintained by designated organizations. 3) Quality Control records and procurement records need not be transferred to vault storage.
NQA-1 Part III, Nonmandatory Appendix 17A-1	"Guidance on Quality Assurance Records"	Applicability: Applicable with the following clarifications: Paragraph 200 is applicable with the following clarification and exceptions: The list of typical lifetime records in paragraph 200 is considered for guidance purposes only and that the nomenclature of these records may vary. AREVA is cognizant that the list is not considered to be all-inclusive and is responsible for ensuring, in accordance with customer contractual requirements or 71.135 "Quality Assurance Records," of 10CFR71 Subpart H, that it maintains sufficient records to furnish evidence of activities affecting quality. Paragraph 601 is applicable with the following clarification and exceptions: 1) Radiographs of fuel assembly components are not retained as QA Records. Results of the review are recorded on Inspection Report and/or routing cards and these are saved as lifetime QA Records.
ANSI N14.1 (2001)	Uranium Hexafluoride Packaging for Transport	Applicability: Fully applicable.
ASME Boiler & Pressure Vessel Code Section III, Division 1	Rules for Construction of Nuclear Facility Components	Applicability: Repairs or rework that requires welding and inspection of 30B cylinders shall be performed in accordance with National Board Inspection Bureau (NBIB) "R" stamp requirements. Weld operators shall be certified in accordance with AWS D1.1 requirements and be employed by a NBIB "R" certificate holder. The AREVA designated welding engineer shall review weld procedures, procedure qualification records, welding operator qualifications, and rework travelers prior to weld operations. Weld inspectors shall be National Board Commissioned.

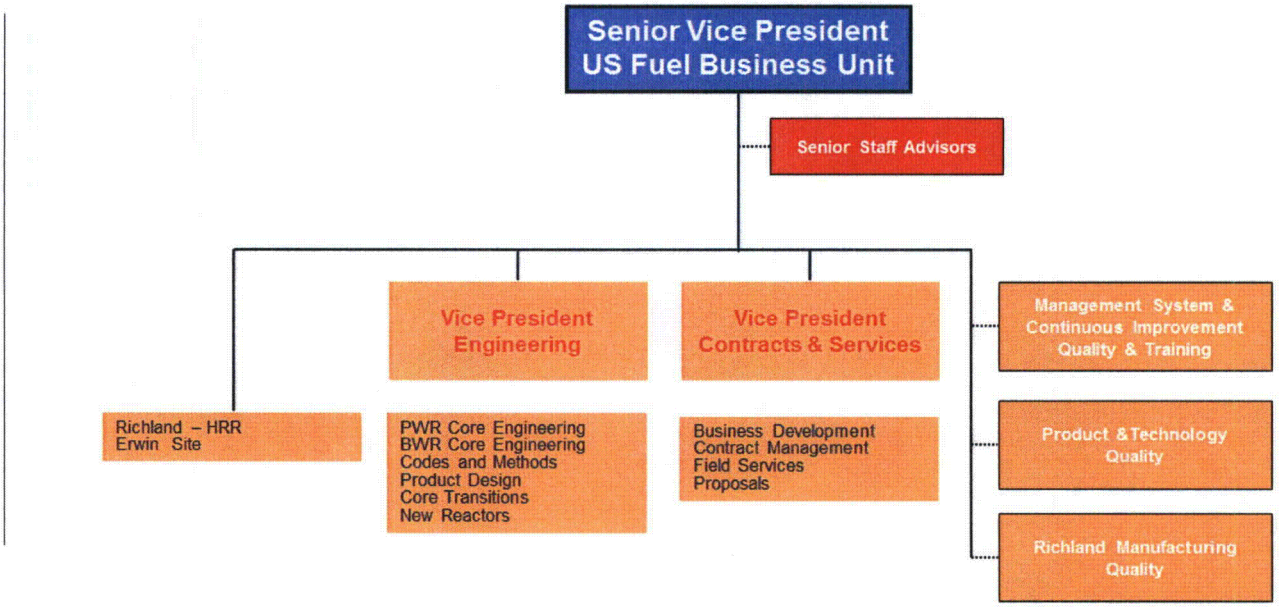
Attachment 3

Matrix Chart of AREVA QA Program and QA Procedures Related to QA Criteria

10 CFR 50, APPENDIX B / 10 CFR 71 QA CRITERIA		AREVA QA PROCEDURES By Number
I / 71.103	Organization	QAP #1
II / 71.101 & 105	QA Program	All Listed QA Procedures
III / 71.107	Design Control	QAP #4
IV / 71.109	Procurement Document Control	QAP #6
V / 71.111	Instructions, Procedures, and Drawings	All Listed QA Procedures
VI / 71.113	Document Control	QAP #5
VII / 71.115	Control of Purchased Material	QAP #6 QAP #7
VIII / 71.117	Identification and Control of Materials and Parts	QAP #8
IX / 71.119	Control of Special Processes	QAP #9
X / 71.121	Inspection	QAP #10
XI / 71.123	Test Control	QAP #10
XII / 71.125	Calibration of Equipment	QAP #11
XIII / 71.127	Handling, Storage, and Shipping	QAP #15
XIV / 71.129	Inspection, Testing, and Operating Status	QAP #12
XV / 71.131	Nonconforming Material	QAP #13
XVI / 71.133	Corrective Action	QAP #14
XVII / 71.135	QA Records	QAP #16
XVIII / 71.137	Audits	QAP #17

Attachment 4

US Region Fuel Organizational Chart



Attachment 5

NRC Approval

To be provided when obtained

Appendix B

Quality Assurance Plan for Projects Regulated Under KTA 1401

1. Applicability

This appendix is fully applicable at all Fuel BU facilities conducting work on projects under KTA 1401. It is not applicable to projects conducted under other national regulatory requirements.

2. QA Program Elements

All sections of this Manual apply to work on projects conducted under KTA 1401. Additionally, the following requirements shall be applied:

- Supplier shall prepare, implement and maintain a Quality Assurance Program which is commensurate with the applicable requirements of KTA 1401. The QA program shall be documented in a Quality Manual or, if agreed, in a Quality Assurance Plan which must be kept up-to-date.

3. Comparison between KTA 1401, ISO 9001:2008 and FMM

See Attachment 1.

Attachment 1

Comparison between KTA 1401, ISO 9001:2008 and FMM

KTA 1401 criteria		ISO 9001:2008 requirements		FMM sections which impose criteria / requirements	
1	Scope	1	Scope	0.1	Scope
2	Terminology	3	Terms and definitions	0.6	Terms and Definitions
3	Basic Requirements	4	Quality management system	3	Integrated Management System
		5.4	Planning	4.3	Planning
4	Organization	5	Management responsibility	4	Management Responsibility
		6.2	Human resources	6.1	Human resources
5	Planning and Design	7	Product realization	3.4	Control of Documents and Data
				3.5	Control of Records
				7.1	Realization processes
				7.3.	Design and Development Processes
				7.5	Production and Service Processes
6	Procurement	7.4	Purchasing	7.4	Purchasing
7	Fabrication, Assembly and Erection Including Quality Tests and Inspections	7.4	Purchasing	7.4	Purchasing
				7.5.5	Preservation of Product
				8.2.3	Audits
8	Commissioning		Not applicable		Not applicable
9	Specified Normal Operations and Incidents	7.5	Production and Service Provision	7.5	Production and Service Processes
				8.3	Control of Event
				8.4	Incident investigation
10	Inspection, Measuring and Test Equipment	7.6	Control of monitoring and measuring devices	7.6	Control for measuring and test equipment
11	Nonconformance Control	8.3	Control of nonconforming product	8.3.1	Control of Nonconforming Product
12	Documentation and Document Storage	4.2	Documentation requirements	3.2	System documentation
				3.4	Control of Documents and Data
				3.5	Control of Records
13	Auditing of the Quality Assurance System	8.2.2	Internal audit	8.2.3	Audits

Appendix C

Comparison between Order of August 10th, 1984 relative to the quality of design and operation of basic nuclear facilities and FMM

Order of August 10, 1984 relative to the quality of the design and operation of basic nuclear facilities	FMM Section which imposes Criteria/Requirement
Chapter I – General dispositions Implementation of a system for the plant utility	0 3 4.3
Chapter II – Plant utility's overall responsibility Application of measures relative to the plant utility	4.1 4.4 7.4.2
Evaluation, choice and monitoring of the suppliers	7.4.1 7.4.2 7.4.3
Chapter III – General principles Definition of the requirements to obtain and maintain the plant quality	2.1 2.2 2.3 7.3.5
Human resources	4.4.3 6.1 7.5.2.3 8.2.3.1
Technical resources	6.2 7.5
Organization and interface	1 4
Execution of an inspection	7.1 7.3.7 7.5.3.2 7.6 8.2.5
Corrective and preventive actions	8.6
Independence of the inspection	7.3.7.1 8.2.5 8.2.3.1
Organizational audits	8.1 8.2 8.5
Technical monitoring	7.4.1
Abnormal situations	8.3
Chapter IV- Article 10 – Documents relative to the activities concerned by the quality Description of general measures	1 3.2 4.4
Preliminary descriptions of the requirements	7.3 7.4 7.5 7.6 8.2.5 8.3

Order of August 10, 1984 relative to the quality of the design and operation of basic nuclear facilities	FMM Section which imposes Criteria/Requirement
Progress report	3.5 7.3.5 7.5.3 7.6
Report on the technical monitoring	3.5
Report on organizational audits	3.5
Chapter IV- Article 11 - Archiving	3.4 3.5
Chapter V – Anomalies and incidents	8.3
Chapter VI – Specific measures Generation of design documents	7.2 7.3.1 7.3.2 7.3.3 7.3.4 7.3.5 7.3.9
Design verification	7.3.7 7.3.8
Design review	7.3.6

Appendix D

Comparison between FMM, ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007, IAEA GS-R-3

FMM	ISO 9001:2008	ISO 14001:2004	OHSAS 18001:2007	IAEA GS-R-3
0. Introduction				
0.1 Scope	1	1	1	1.10 - 1.13
0.2 Purpose	1	1	1	1.8 - 1.9
0.3 Applicability	1	1	1	1.10 - 1.11.
0.4 Responsibility	5.5.2.a	4.4.1	4.4.1	
0.5 Safety Culture				2.5
0.6 Terms and definitions	3	3	3	Glossary
0.7 Abbreviations and definitions	3	3	3	
1.Organizational presentation				
1.1 AREVA 1.2 Front End Business Group 1.3 Fuel BU Divisions				
2. External and internal requirements				
2.1 Internal requirements				2.1 - 2.4
2.2 Requirements of customers and other stakeholders		Title only		2.3 , 3.6
2.2.1 Customer requirements	5.2			2.3 , 3.6
2.2.2 Other stakeholders		4.3.2	4.3.2	
2.3 Legal requirements		4.3.2	4.3.2	
2.4 EHS requirements		Title only		
2.4.1 Hazard identification, risk assessment, determining controls and update			4.3.1	2.1 - 2.4
2.4.2 Identification and assessment of environmental aspects		4.3.1		
3. Integrated Management System				
3.1 Process management	4.1			2.1 - 2.2, 2.5 -2.7 , 5
3.1.1 Continuous improvement	8.5.1	4.1	4.1	6.17 - 6.18
3.1.2 Process approach	4.1			5.1 - 5.11
3.1.3 Process owner				5.6
3.2 System documentation	4.2.1 - 4.2.2	4.4.4	4.4.4	2.8
3.3 Classification of characteristic				
3.4 Control of documents and data	4.2.3	4.4.5	4.4.5	2.9 - 2.10 , 5.12 - 5.13
3.5 Control of records	4.2.4	4.5.4	4.5.4	5.21 - 5.22
4. Management responsibility				
4.1 Management commitment and Policy	5.1 - 5.3	4.2 - 4.4.1	4.2 - 4.4.1	3.1 - 3.2, 3.5 , 3.7
4.2 Customer focus	5.2			
4.3 Planning	5.4.1 - 5.4.2	4.3.3	4.3.3	3.8 - 3.11
4.4 Responsibility and authority	5.5.1 - 5.5.2	4.1 - 4.4.1	4.1 - 4.4.1	3.12 - 3.14, 5.28 - 5.29
4.5 Management review	5.6	4.6	4.6	6.7 - 6.10
5 Communication, participation and consultation				
5.1 Communication		Title only		3.3

FMM	ISO 9001:2008	ISO 14001:2004	OHSAS 18001:2007	IAEA GS-R-3
5.1.1 Internal communication	5.5.3	4.4.3	4.4.3.1	5.26 , 5.27
5.1.2 External communication	7.2.3	4.4.3	4.4.3.1	5.26
5.2 Participation and consultation			4.4.3.2	3.4
6 Resource management	6.1	4.4.1	4.4.1	4.1 , 4.2
6.1 Human resources	6.2	4.4.1 - 4.4.2	4.4.1 - 4.4.2	4.3 , 4.4
6.2 Other resources	6.3 - 6.4	4.4.1	4.4.1	4.5
7 Product realization				
7.1 Realization processes	7.1	4.4.6	4.4.6	
7.2 Customer related processes		Title only		5.14 , 5.16 , 5.17
7.2.1 Determination of requirements related to the product	7.2.1	4.4.6	4.4.6	
7.2.2 Review of requirements related to the product	7.2.2	4.3.1 - 4.4.6	4.3.1 - 4.4.6	
7.3 Design and development processes				
7.3.1 General				
7.3.2 Design and development planning	7.3.1			
7.3.3 Design, organizational and technical interfaces	7.3.1			
7.3.4 Design and development Input	7.3.2			
7.3.5 Design and development output	7.3.3	4.4.6	4.4.6	
7.3.6 Design and development review	7.3.4			
7.3.7 Design and development verification	7.3.5			
7.3.8 Design and development validation	7.3.6			
7.3.9 Design and development changes	7.3.7			
7.4 Purchasing				
7.4.1 Purchasing process	7.4.1			
7.4.2 Purchasing data	7.4.2	4.4.6	4.4.6	
7.4.3 Verification of purchased product	7.4.3			5.23 , 5.24 , 5.25
7.4.4 Product and service transfer between Entities				
7.5 Production and service processes				
7.5.1 Control of production and service processes	7.5.1			
7.5.2 Qualification or validation of production and service processes	7.5.2	4.4.6	4.4.6	5.18
7.5.3 Identification, traceability and status control	7.5.3			5.15 , 5.19
7.5.4 Customer property	7.5.4			
7.5.5 Preservation of product	7.5.5	4.4.6	4.4.6	5.20
7.6 Control for measuring and test equipment	7.6	4.5.1	4.5.1	
8 Measurement, analysis and improvement				
8.1 Planning of measurement, analysis and improvement	8.1	4.5.1	4.5.1	

FMM	ISO 9001:2008	ISO 14001:2004	OHSAS 18001:2007	IAEA GS-R-3
8.2 Monitoring and measurement				
8.2.1 Assessment of stakeholders satisfaction	8.2.1	4.3.2	4.3.2	3.6 , 6.1 , 6.2 , 6.3 , 6.4 , 6.5 , 6.6
8.2.2 Evaluation of compliance		4.3.2	4.3.2	
8.2.3 Audits	8.2.2	4.5.5	4.5.5	
8.2.4 Monitoring and measurement of processes	8.2.3	4.5.1 - 4.5.2	4.5.1 - 4.5.2	
8.2.5 Monitoring and measurement of product	8.2.4	4.5.1 - 4.5.2	4.5.1 - 4.5.2	
8.3 Control of event				
8.3.1 Control of nonconforming product	8.3			6.11, 6.12, 6.13, 6.16
8.3.2 Emergency preparedness		4.4.7 - 4.5.3	4.4.7 - 4.5.3.2	
8.4 Incident investigation			4.5.3.1	
8.5 Analysis of data	8.4	4.5.1	4.5.1 - 4.5.3.2	
8.6 Corrective and preventive actions				
8.6.1 Corrective action	8.5.2	4.5.3	4.5.3.2	6.14 - 6.15
8.6.2 Preventive action	8.5.3	4.5.3	4.5.3.2	6.15

End