

A decorative graphic on the left side of the slide, consisting of four overlapping circular frames. The top frame shows a high-voltage power transmission tower. The middle frame shows the interior of a power plant with large cooling fans. The bottom frame shows an industrial facility with buildings and a body of water. The bottom-most frame shows a close-up of a blue, glowing circular component, possibly a turbine or a lens.

# National Workshop on Industrial Involvement

Supply Chain Management  
Operator considerations

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## MANAGEMENT

- Organisation
- Staff training and qualification

## QUALITY

- QA Program
- Audits
- Corrective Actions
- QA Records
- Non-Conforming Parts

## ENGINEERING

- Design Control
- Control of Special Processes
- Test Control
- Control of Measuring and Test Equipment
- Inspection, Test and Operational Status

## DOCUMENT CONTROL

- Document Control
- Procedures, Instructions and Drawings
- Procurement Document Control
- QA Records

## PROCUREMENT

- Procurement of Parts and Materials
- Handling, Storage and Shipping
- Control of Purchased Materials
- Identification, Control of Parts
- Non-Conforming Products

## SAFETY CULTURE

**These are the things you need to get an Operating License for a Nuclear Plant**

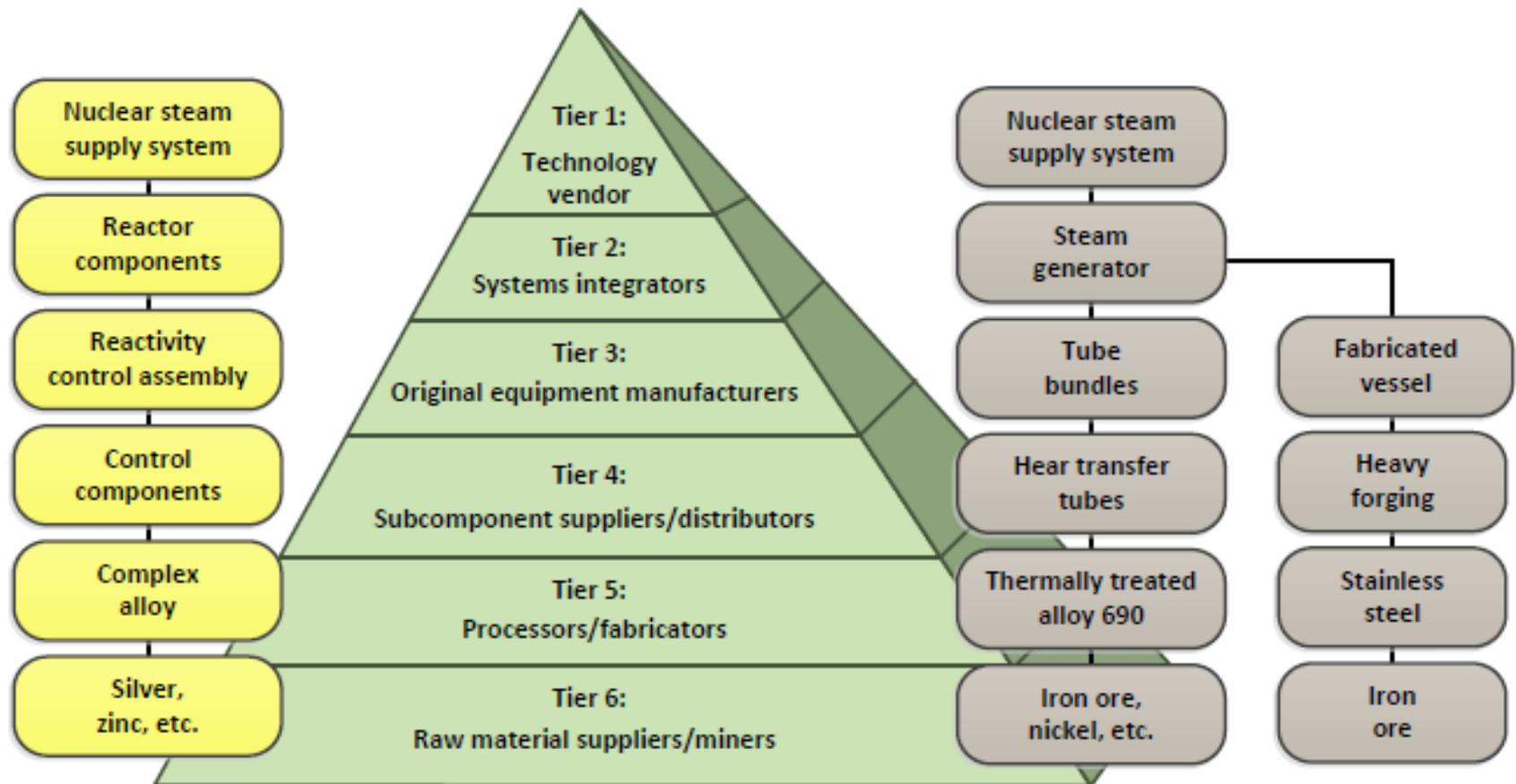
- Eskom's procurement activities are governed by the Constitution of the Republic of South Africa, 1996 and by the Public Finance Management Act, 1999 (PFMA). Both require that Eskom have in place a procurement system which is “fair, equitable, transparent, competitive and cost-effective”. Within this framework Eskom has an approved set of Procurement Policies, Procedures and Process Control Manuals (PCM).
- In addition, the procurement process must adhere to the requirements of administrative justice and comply with a number of statutory provisions regulating procurement, the prevention of fraud and corruption, competition and related matters.
- The Governance Process for the Procurement of the goods and services is provided against the background of the provisions of the Constitution of South Africa and relevant enabling legislation.
- It sets out the philosophy behind the integrated Project Sourcing Processes, as adopted by Eskom, and could assist stakeholders in understanding the responsibilities implied to the designated procuring agency.

# ISO Attributes of best practice procurement

## ISO 10845-1 – Construction Procurement: Processes, Methods and Procedures (Page 7)

<b>Attribute</b>	<b>Basic system requirement</b>
Fair	The process of offer and acceptance is conducted impartially without bias and provides participating parties simultaneous and timely access to the same information. Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Equitable	The only grounds for not awarding a contract to a tenderer who complies with all requirements are restrictions from doing business with the organization, lack of capability or capacity, legal impediments and conflicts of interest.
Transparent	The procurement process and criteria upon which decisions are to be made shall be publicized. Decisions (award and intermediate) are made publicly available together with reasons for those decisions. It is possible to verify that criteria were applied. The requirements of procurement documents are presented in a clear, unambiguous, comprehensive and understandable manner.
Competitive	The system provides for appropriate levels of competition to ensure cost-effective and best value outcomes.
Cost-effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and the least resources to effectively manage and control procurement processes.
Promotion of other Objectives	The system may incorporate measures to promote objectives associated with a secondary procurement policy (see 4.4) subject to qualified tenderers not being excluded and deliverables or preferencing criteria being measurable, quantifiable and monitored for compliance.

# Understanding the NPP supply chain



*“New build projects are typically concerned with how tier 1 technology vendors set up and manage their supply chains, while operating plants typically deal directly with tier 3 and below for spare parts associated with operation and maintenance activities”*

Nuclear Safety Management Programme

Quality and Safety Management Requirements for Nuclear Suppliers Level1

Safety Culture Programme

Supplier Safety and Quality Management Requirements

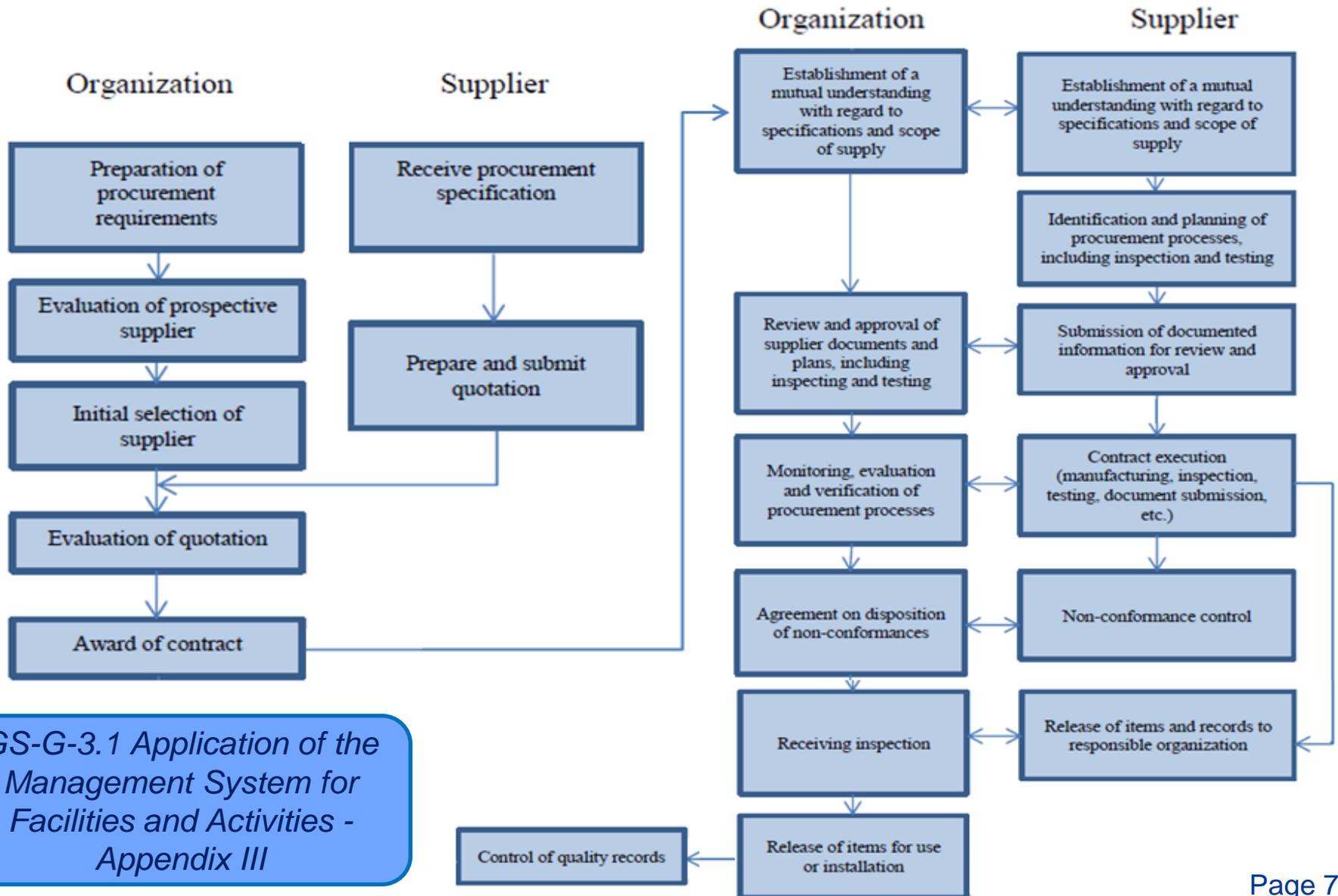
Nuclear Safety Level 2 Supplier Quality Management Requirements

Supplier Quality Programme Requirements

Supplier Qualification and Audit Manual

Level 1 Supplier Safety Culture Enhancement Programme Requirements;

# Typical nuclear power procurement process



*GS-G-3.1 Application of the Management System for Facilities and Activities - Appendix III*

- This document (RD0034) details the requirements of the NNR for **quality and safety management systems** (QMS, SMS) for licensees, applicants of a nuclear licence, as well as for designers and suppliers involved in the design, manufacturing, construction, commissioning, operation, modification and potential decommissioning for a nuclear installation in South Africa under the National Nuclear Regulator Act of 1999 (NNRA).
- **All parties** and organisations **that are in any way involved** in activities important to nuclear safety related to siting, design, manufacture, construction, operation, modification, and eventual decommissioning of a nuclear installation, as defined in the NNR Safety Regulations, **are required to develop, introduce and maintain Management Systems** (SMS, QMS) that appropriately comply with the applicable requirements of this document (RD0034).
- The IMS requirements defined in this RD directly relate to Quality and Safety Management. Aspects such as security, economics, and environmental or health management are outside the scope of this RD but may form part of the management system of an organisation.
- **Eskom as the licensee is required to develop, implement, maintain and continually improve an INTEGRATED MANAGEMENT SYSTEM**

# Principal QM & SM Requirements

## Non-nuclear

### ISO

**ISO 14000**

**EMS**

**ISO 9001:2008**

**QMS**

**ISO 18000**  
**SM**

ASME,  
DIN, BS

**OHSA, NEMA**  
**NERSA,**

## Nuclear

### IAEA

**QA - NS-R-3**

(Site evaluation for Nuclear Installations)

**IMS - GS-R-3**

(The Management System for Facilities and Activities)

**Safety - DS349**

(Application of the Management System for Nuclear Facilities)

ASME NQA-1

### **NNR Licensing Documents**

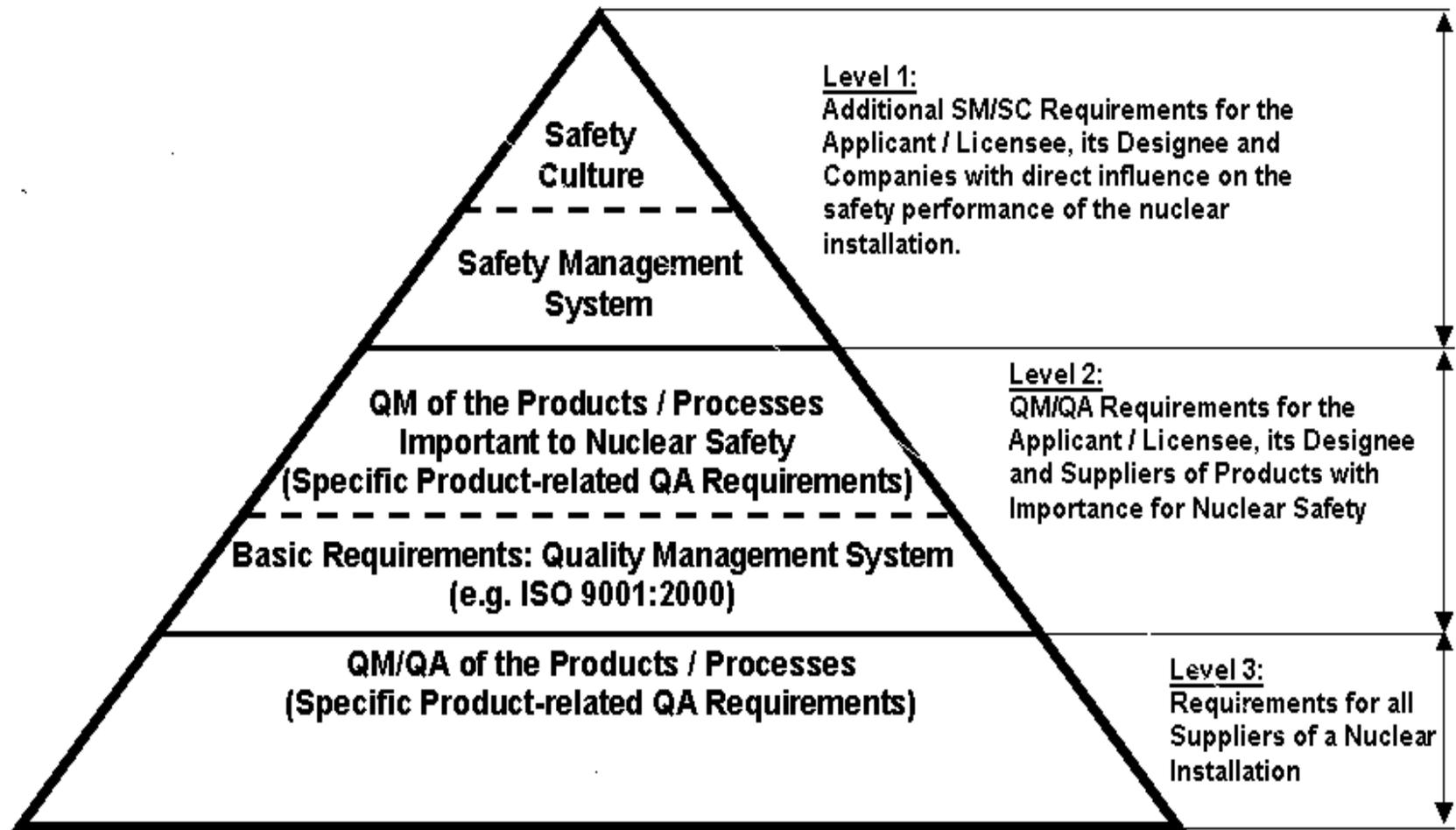
**NNR Siting Regulation – NILS**

**LD-1023 Koeberg QM requirements**

**RD-0034 - Q & S Management Requirements for Nuclear Installations**

**IMS for Nuclear**

- **Level 1 (Direct influence on the safety performance of the nuclear installation):**
- The licensee, his designee as well as suppliers assigned responsible for products of high importance to nuclear safety must additional to the Quality Management System (QMS) implement a Safety Management System (SMS) as part of an Integrated Management System. These organisations with a direct influence on the safety performance of the nuclear installation are additionally required to consider Safety Culture aspects as part of their IMS.
- **Level 2 (Products important to nuclear safety):**
- A QMS is required for organisations providing products important to nuclear safety which is compliant with ISO9001 or any equivalent internationally accepted QM standard. Accreditations according to accepted nuclear QM standards (NQA-1:2000) would be considered as a basis if provided for the organisation. In addition QM processes, design codes and standards have to be applied that are specific to nuclear installations. The safety and quality classification of the SSC and the application of the nuclear codes and standards require additional QM and SSC related QA measures which need to be implemented in the QMS of the respective organisations.
- **Level 3 (All products of the Nuclear Installation):**
- The implementation of an appropriate QMS is mandatory as a basis for all organisations involved in the products related to an application for or operation of a nuclear installation. The QMS requirements of the applied QM standard should include the consideration of the Quality Assurance (QA) measures specified for the particular products of the organisation. The determination of QM/QA requirements and the associated QM/QA system for products with no importance to nuclear safety rest with the licensee.
- **Summary - Compliance to ISO9001 is a minimum.**



- (1) The licensee must ensure for its own organisation and for all suppliers of products important to nuclear safety that a QMS is implemented during **all stages of the life cycle of the nuclear installation**
- (7) The licensee and the suppliers of products important to safety must develop documents describing their management system. This set of documents must include a **management system manual (QM)** supported by additional documents describing the **management policy, priorities, objectives and processes**
- (8) The organisational structure, functional responsibilities, levels of authority and **interactions** of departments and persons responsible for managing, performing and assessing work must be described in the documents
- (9) The organisation must provide a description of the **processes** and **supporting information** to reflect how work is prepared, reviewed, carried out, recorded, assessed and improved

- 30) **Senior management** must ensure that management systems are established and implemented, assessed and continually improved and must demonstrate its commitment to do so
- 31) The commitment of senior management of the organisation in terms of safety and quality of the products must be clearly defined and documented and must be communicated to the staff. **Management at all levels must demonstrate its commitment to the implementation, assessment and continual improvement of the management system**
- 41) The authority and responsibilities of the persons and organisational units performing activities affecting quality and/or nuclear safety **must be clearly established and defined in writing**

- Safety Management (SM) is concerned with the safety of the entire process, including the reliability of the products with respect to their nuclear safety functions. As reliability can only be achieved through adequate performance (quality), in this sense the quality of the products is a supporting attribute for safety.
- The introduction of SM provides for organisational structures and performance measures which, together with the QMS, ensure that the processes related to the life cycle of the nuclear installation and its SSC's are governed by safety aspects including consequences of failures and other occurrences. An appropriate Safety Culture (SC) must be adopted within each organisation dealing with such processes to support safety during all phases of the life cycle of a nuclear installation.
- The senior management of the licensee and its designee must define, document and implement a safety policy which demonstrates the organisation's commitment to high quality and safety performance and to a strong safety culture. The policy must be supported by the definition of accepted standards/guides and targets (Quality Manual).

## Safety Culture defined

An organization's values and behaviours modelled by its leaders and internalized by its members that serve to make nuclear safety the overriding priority.

- **RD0034 enforces this on suppliers**

<b>Principles for a Strong Nuclear Safety Culture</b>	<b>Key Elements of the Safety Culture Programme</b>
<p>Everyone is personally responsible for nuclear safety;</p> <p>Leaders demonstrate commitment to safety;</p> <p>Trust permeates the organisation;</p> <p>Decision-making reflects safety first;</p> <p>Nuclear technology is recognized as special and unique;</p> <p>A questioning attitude is cultivated;</p> <p>Organisational learning is embraced;</p> <p>Nuclear safety undergoes constant examination.</p>	<p>Management Commitment</p> <p>Individual Awareness/Questioning Attitude</p> <p>Training, Knowledge, Authority and Competence</p> <p>Acceptance of Authority (Role of the Regulator)</p> <p>Safety-promoting Work Environment</p> <p>Open Communication</p> <p>Learning from Events</p> <p>Continual Improvement</p> <p>Control and Monitoring of Performance</p>

**This requires a mindset of doing the right things all the time.**

**In any technical innovation project, paper becomes very important : Paper to record the precise size, shape, constitution, history and pedigree of each piece of equipment and every part.**

**Paper which describes where it was made, who made it, which batch of materials was used, how it was tested, transported, installed and how it performed. Paper becomes especially important when **changes** are made- and there are always changes to make things work. Changes to replace a component which didn't make the grade. Changes to ease an operators workload or to make it easy to push the right button and difficult to push the wrong button.**

- Safety Management (SM) is concerned with the (Nuclear) safety of the entire **process**, including the reliability of the products with respect to their nuclear safety functions. As reliability can only be achieved through adequate performance (quality), in this sense the quality of the products is a supporting attribute for safety.
- Quality Management (QM) comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system or component will perform satisfactorily in service.
- The senior management of the licensee and its designee must define, document and implement a safety policy which demonstrates the organisation's commitment to high quality and safety performance and to a strong safety culture. The policy must be supported by the definition of accepted standards/guides and targets.
- Procurement processes must be aligned to these attributes to ensure safe successful commercial operation of the NPP



**Thank you**