LICENCE DOCUMENT

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COUNCIL FOR NUCLEAR SAFETY

No.	TITLE	Rev
LD-1023	QUALITY MANAGEMENT REQUIREMENTS FOR KOEBERG NUCLEAR POWER STATION	4

CONTENTS

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EXECUTIVE OFFICER

1. PURPOSE

1.1 This document details the requirements of the Council for Nuclear Safety (hereafter referred to as the CNS) for the implementation of a quality management programme by Koeberg Nuclear Power Station (hereafter referred to as KNPS)..

1.2 The objective of such a programme is to provide adequate confidence in the undertakings and the validity of the information submitted to the CNS in the safety assessments, standards and procedures through which assurance is maintained that the risk of nuclear damage posed by KNPS to both workers and the public will not exceed limits laid down by the CNS for the safeguarding of persons.

2. SCOPE

2.1 This document applies to KNPS and involves all the functions affecting the quality of items, equipment, operations, maintenance, services and other activities impacting on the risk of nuclear damage.

2.2 The requirements of this document support the principles and procedures related to nuclear safety, as detailed in the latest variation of the Nuclear Licence, NL-1.

3. DEFINITIONS

3.1 KNPS EXECUTIVE MANAGEMENT
The person(s) officially appointed as being responsible for the overall administration and management of the functions and duties of an organisation..

3.2 QUALITY MANAGEMENT FUNCTION
The functional group designated as responsible for the implementation of the defined quality management system of KNPS.

4. RESPONSIBILITY

4.1 KNPS Executive Management has overall responsibility for the establishment and implementation of an appropriate quality management programme consistent with the requirements of this Licence Document.

5. MANAGEMENT

5.1 A written policy shall be prepared and issued by Eskom stating the quality objectives to be attained during the design, manufacturing, erection, construction, commissioning, start up, operation, outage, shutdown and decommissioning stages of the plant.

6. MANAGEMENT REVIEW

6.1 The quality management programme shall be continually reviewed by Executive Management to assess its status and adequacy. During this review the results of the monitoring programme implemented at KNPS shall be assessed and evaluated to determine the extent, consequences and their subsequent effect on the management programme and impact on the KNPS overall safety case (SAR).

6.2 The review process shall assess the effectiveness of the monitoring programme and deficiency reporting mechanisms with regards to the implementation of identified corrective actions and in achieving and maintaining the programme objectives.

6.3 The Quality Management Function shall verify that the objectives of the overall quality assurance programme, as described in the latest revision of the KNPS quality management programme, have been implemented consistent with the licensing of the plant by implementing a monitoring programme according to acceptable QA procedures. The monitoring programme shall assure that activities important to safety are being performed according to written, authorised procedures.

7. ORGANISATION

7.1 The current organisational structure including on and off site organisation, functional responsibilities, levels of authority, lines of internal and external communication for management and the direction and execution of activities related to nuclear safety shall be clearly documented by KNPS.

7.2 Any proposed changes in the basic structure will be reported to the CNS prior to the changes being implemented.

7.3 The Executive Management of KNPS shall identify, in the organisational structure, the persons responsible for verification of conformance to established requirements and for conducting audits, surveillances and management reviews of the quality management programme.

8. QUALITY MANAGEMENT PROGRAMME.

8.1 The KNPS quality management programme shall be detailed in written, authorised documents to the satisfaction of the CNS.

9. DOCUMENT CONTROL

9.1 The administrative controls of the quality management programme shall be carried out in accordance with written, authorised procedures.

9.2 Activities related to nuclear safety shall be accomplished by means of written, authorised procedures, work instructions, specifications or drawings, as appropriate.

9.3 Documents related to nuclear safety shall be prepared, reviewed and verified by technically competent personnel and accepted by designated individuals. Authorised personnel shall perform preparation of these documents and technically competent parties who were not responsible for the original document preparation shall carry out reviews.

9.4 Where approved procedures and instructions, relating to nuclear safety, are not available due to unforeseen circumstances, temporary procedures and instructions shall be prepared and utilised. The compilation and authorisation of these temporary documents shall be in accordance with written, authorised procedures.

9.5 All procedures and work instructions relating to nuclear safety shall be reviewed at prescribed intervals. Revisions and changes to procedures, instructions and drawings shall be processed in the same manner as the original.

9.6 A document control procedure, for ensuring the utilisation of the correct document revision, shall be documented, authorised, and implemented.

9.7 Procedures and work instructions shall include appropriate quantitative or qualitative acceptance criteria in order to assure that safety significant activities are or have been satisfactorily accomplished.

10. DESIGN

10.1 Design and design changes for all equipment, items and activities related to nuclear safety shall be controlled by written, authorised procedures and shall be executed by technically competent, authorised personnel who have experience and training commensurate with this function.

10.2 All design and design changes, having an impact on nuclear safety, must referenced in a safety case which must be approved by the CNS prior to implementation.

10.3 Adequacy of designs, related to nuclear safety, shall be verified by design reviews. Reviews shall be conducted by design reviews, alternative calculations or a suitable testing programme. Personnel who are at least as competent as the designer shall independently undertake verification of these designs.

10.4 The impact on nuclear safety due to changes in plant configuration and operating procedures, including modifications, maintenance, equivalencies, inspection and testing schedules or techniques shall be assessed in terms of acceptable risk.

11. PROCUREMENT AND MATERIAL CONTROL

11.1 The procurement activity of safety related items including purchase requisition, specification preparation, purchase contract/order, pre-award assessment, vendor qualification and approval, award of contract/order. Vendor control and surveillance, in-process inspection, documentation review, item qualification, shipping, receipt inspection, storage and handling of items and equipment shall be detailed in written, authorised documents to ensure that the appropriate documentation, identification, traceability, acceptability qualification and certification conforms to specified requirements.

12. PROCESS CONTROL

12.1.1 A broad description of the purpose, objective, function, operation and responsibilities of each area of activity shall be set down in writing.

12.1.2 The definitive requirements with respect to parameters, settings, limits, tolerances as well as all quantitative and qualitative aspects of the requirements shall be clearly defined in written, approved documents, procedures or work instructions.

12.1.3 The training and qualification requirements of personnel so that confidence can be obtained in the satisfactory execution of the job function shall be defined.

12.1.4 The generation and completion of substantiating reports and the maintenance of records, which shall provide objective evidence of the extent to which the requirements have been attained, shall be effectively implemented.

12.2 The following shall be addressed by those Functional Management functions designated by KNPS Executive Management as responsible and shall be based on the design and safety criteria approved by the CNS.

12.2.1 Management, Organisation and Administration, including:-
Plant Organisation and Management Structure; Quality Management Programme; Regulatory and other Statutory Requirements; Nuclear Safety Assurance Programme; Document Control and Records Management; Management Review Process.

12.2.2 Operations, including:-
Structure of the Operating Organisation; Responsibility, Administration and Functional Control; Operations Facilities, Operator Aids; General Operating

Rules and Procedures; Plant Operating History; Conduct of Operations.

12.2.3 Training and Qualification, including:-
Organisation and Functional Control; Training Facilities, Equipment and Material; the Simulator; Reactor and Senior Reactor Operators: all levels of Nuclear Plant Operators; Maintenance Personnel; Technical Support Personnel; Radiation Protection Personnel; Chemistry Personnel; Top Management; General Employee Training; Contractor Training.

12.2.4 Technical Support, including:-
Organisation and Functional Control; Monitoring Programme; Operational Experience Feedback; Plant Modifications; Reactor Engineering; Fuel Management; Computer and Software Capabilities; Security Programme; Fire Protection Programme; Systems Engineering; Accident Management; Risk Management.

12.2.5 Maintenance, including:-
Organisation and Functional Control; Maintenance Programme; Modification Programme; Material Conditions, Facilities and Equipment; Procedures, Records and Histories; Conduct and Control of Maintenance Activities; Preventive, Predictive and Corrective Maintenance; In-service Inspections; Stores Management; Inventory Control; Procurement; Outage Management.

12.2.6 Emergency Planning, including:-
Organisation and Functional Control; Emergency Plans and Procedures; Emergency Response Facilities; Emergency Equipment and Resources; Training Drills and Exercises; Liaison with Public and Media; Radiation Protection and Technical Support during Emergencies.

12.2.7 Radiation Protection, including:-
Organisation and Functional Control; Radiation Exposure/Radiation Work Permits; Radiation Protection Instrumentation, Equipment and Facilities; Personnel Dosimetry; Radioactive Waste Management; Effluent Monitoring and Control; Environmental Surveillances.

12.2.8 Chemistry, including:-
Organisation and Functional Control; Chemical Treatment, Materials Concept, Activity Build-up and Corrosion; Operational History and Records; Laboratories, Equipment and Instruments; Quality Control of operational Chemicals; Radiochemical Measurements; Environmental Samples of Radio Active Waste.

13. INSPECTION AND TESTING

13.1 To assess conformance with the documented specifications, procedures, work instructions and drawings, a programme for verification and inspection of items, services, modifications, maintenance, requalifications and activities affecting quality shall be established, authorised and implemented. This programme shall be designed to ensure that confidence is gained in the operation of the plant and that by its implementation the plant is operated commensurate with the design and safety criteria as approved by the CNS.

13.2 Documentary evidence of compliance with regard to prescribed tests and inspections performed during or as a result of maintenance, installation or operation activities shall be available on completion of the specific activity. Only items, equipment, components or systems that have passed the prescribed inspection and test requirements are to be used, installed and operated.

13.3 An inspection and periodic testing programme shall be implemented to ensure that systems and equipment related to nuclear safety will continue to operate according to design requirements and that parameters kept within prescribed limits or will act to place the plant in a safe condition if the prescribed limits are exceeded.

13.4 Personnel designated as responsible for performing verification and inspection functions shall be qualified and certificated and shall be independent from the function being performed.

13.5 Provision shall be made within the operating schedule of the plant to permit the performance of testing and periodic inspections in a timely manner.

13.6 Measures shall be established to identify the status of individual items and for indicating the operating status of systems and components to prevent their inadvertent operation and/or use when implementing the inspection and test programmes.

13.7 All inspection, measuring and test equipment in use shall be calibrated and adjusted against certificated equipment having traceability to National or International standards.

14. DEFICIENCIES AND CORRECTIVE ACTION

14.1 All deficiencies in plant/equipment performance, processes or system procedures shall be reported in accordance with authorised procedures.

14.2 The reported deficiencies shall cover the area of plant systems, component

failures and malfunctions, documentation discrepancies, quality assurance programme deficiencies (verifications, records, calibrations etc.) and personnel related deficiencies (lack of training, failure to follow procedures etc.)

14.3 The root cause of the deficiencies shall be determined to establish the significance and the impact of the deficiency with respect to risk and safety implications. The root cause analysis of the deficiency should be conducted to the depth necessary to establish the appropriate corrective action necessary to prevent repetition of the deficiency.

14.4 Deficiency reports shall be generated and classified by the originating department and be independently reviewed to confirm classification and to assign a priority, importance rating and LCO's where necessary. The assignment of the responsibility for identification and implementation of the corrective action shall also be allocated to the responsible department.

14.5 Conditions adverse to quality, which may have an impact on nuclear safety and the actions taken to obviate them, shall be reported to the KNPS Executive Management and to the CNS.

14.6 Where there is a lack of documented Quality Assurance procedure requirements or where there is non-compliance with a procedure or where a procedure is unable to control and manage the process for which it was intended, the Quality Management Function shall, in consultation and agreement with the KNPS Executive Management, stop the process or take such measures to ensure that the process is brought under control.

15. RECORDS

15.1 Procedures shall be established and authorised for identifying, collecting, indexing, filing, storing, maintaining and disposition of quality records.

15.2 A quality records system to demonstrate achievement of the quality criteria and the effective operation of the quality programme shall be implemented and retained, to the satisfaction of the CNS, for the entire operational phase of the power station.

15.3 All records shall be accurate, authentic, legible, reproducible, complete and traceable to the item, equipment, process, operation or activity involved. Records shall be stored and maintained in such a way that they are readily retrievable in facilities that provide a suitable environment to minimize deterioration or damage and to prevent loss. Retention times and types of records shall be established in writing.

15.4 All documentation generated during deficiency reporting, management reviews, audits, surveillances, inspections and investigations are to be treated as quality

records.

16. MONITORING PROGRAMME

16.1 An integrated monitoring programme consisting of system and compliance audits, surveillances, inspections and management (peer) reviews must be planned and carried out at appropriate intervals to verify compliance with all aspects of the quality management programme in order to continually measure the effectiveness of the programme.

16.2 The schedule and justification for the planned activities comprising the monitoring programme must be submitted for CNS approval prior to the end of October of each calendar year. The CNS may, or request KNPS to, undertake additional monitoring if and when deemed necessary.

16.3 Appropriately trained personnel, who do not have direct responsibilities in the areas being monitored, must conduct the monitoring programme in accordance with documented procedures.

16.4 Reports of all monitoring activities shall be documented and must be assessed by the management having responsibility in the monitored area in order to assign or agree to suitable corrective action plans.

16.5 Follow-up of the corrective actions, by those delegated as responsible for the implementation of the monitoring programme, must be taken to assure that corrective actions have been implemented and that recurrence of previously recorded deficiencies has been prevented.

16.6 A comprehensive programme of systematic audits must be planned are carried out to verify compliance with all aspects of the quality management programme to determine the effectiveness of the programme.

16.7 The audit must be performed in accordance with documented procedures by appropriately trained personnel not have direct responsibilities in the areas being audited.

16.8 Audit results shall be documented and reviewed by management having responsibility in the audited area. Follow-up actions, including the re-audit of deficient areas shall be taken as appropriate.