Eskom	Procedure	Nuclear Engineering

Title: **Control of the Operating Technical Specifications**

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Content

Page

1. Introduction

Koeberg Nuclear Power Station's 'Operating Technical Specifications' is part of the plant's licence to operate and is updated continually. This document guides the update process.

2. Supporting Clauses

2.1 Scope

The change and review process for revisions, permanent changes and temporary changes to the Operating Technical Specifications, Koeberg Chemistry Specifications and associated documents, including authorisation and records, and withdrawal of temporary changes.

2.1.1 Purpose

To describe the process and responsibilities for the production and approval of changes to:

Operating Technical Specifications (OTS);

Operating Technical Specifications Justification documents;

Koeberg Chemistry Specifications (KCS), also called ChemSpecs;

Koeberg Chemistry Specification Justification documents;

Difference File – STE (EDF) vs OTS.

2.1.2 Applicability

Applicable to personnel involved in the revision or changes of the Operating Technical Specifications, the Koeberg Chemistry Specifications and associated documents.

Applicable to permanent and temporary changes to the Operating Technical Specifications, the Koeberg Chemistry Specifications and associated documents.

2.2 References

2.2.1 Normative References

[1] 335-2: Koeberg Power Station Management Manual

[2] 36-197: Koeberg Licensing Basis Manual

[3] 36-260: Safety Document Review Group (SDRG) Procedure

[4] EMESF020015 Ind. B: Exercice d'Application de la Doctrine des STE aux Prescriptions STE du Palier CPY (Note on the Application of the Doctrine to the STE)

[5] EMESF040404 Ind. D: Spécification Technique d'Exploitation PTD No.2 du Palier CPY {EDF STE (OTS)}

[6] ENFCRI030006 Ind. A: Champ Règlementaire des Spécification Technique d'Exploitation (EDF Doctrine)

[7] KSA-011: The Requirements for Controlled Documents

2.2.2 Informative References

[8] KAA-500: The Process for Controlled Documents

[9] KAA-687: KOSC Constitution

[10] KAA-688: Corrective Action Process

[11] 240-143604773 [KAA-709]: Safety Evaluation Process

[12] KAA-767: Process for the Management of Correspondence

[13] KAD-024: Nuclear Safety Engineer Function

[14] KBA0022OTS0000001: Operating Technical Specification

[15] KBA0022OTSJUSTIF1: Justification Chapter 1

[16] KBA0022OTSJUSTIF2: Justification Chapter 2

[17] KBA0022OTSJUSTIF3: Justification Chapter 3

[18] KBA0022OTS0000003: STE EDF / OTS Difference File

[19] KBA0022CHEMSPEC00: Koeberg Chemistry Specifications

[20] KBA0022CHEMJUSTIF1: Technical Bases for Koeberg Chemistry Specifications

[21] KBA0022CHEMJUSTIF2: Justification for the KNPS Chemistry Operating Specifications

[22] 240-155016896: KFA-051: OTS, KCS or Justification Document Change Request

[23] 240-155021403: KFA-052: OTS, KCS or Justification Document Change Review

[24] 240-155024320: KFA-053: OTS or KCS Change Authorisation

[25] 240-156067953: KGA-029: Safety Justification Preparation

[26] KNC-001: Chemistry Operating Specifications for Safety Related Systems

[27] KNC-002: Chemistry Operating Specifications for Availability Related Systems

[28] KTA-005: Training and Qualification Requirements For Safety Screeners and Evaluators

2.3 Definitions

2.3.1 Change Leader: A person who is an authorised Safety Evaluator in accordance with KTA-005, who has been appointed to lead an OTS change project.

2.3.2 Chemistry Specification Justification documents: There are two Justification documents:

2.3.2.1 Technical Basis for Koeberg Chemistry Specifications (ChemJustif1): (KBA0022CHEMJUSTIF1)This document provides the bases and justifications for the requirements prescribed in Koeberg Chemistry Specifications to improve clarity and avoid skewed interpretation.

2.3.2.2 Justification for the KNPS Chemistry Operating Specifications (ChemJustif2): (KBA0022CHEMJUSTIF2) – This document provides the technical bases for KNC-001 and KNC-002 (Chemistry Operating Specifications) and explains the rationale for the various plant chemistry strategies applied.

2.3.3 Emergency OTS Change: There is no emergency change process. If an urgent change is required the normal process shall be expedited.

2.3.4 Interpretation: The OTS justification documents provide clarification for interpretation of OTS. Should the OTS be unclear to the extent that it can be demonstrated that more than one option for compliance exists then the OTS justification shall be updated to clarify the interpretation and only when necessary should changes be made to OTS chapters.

2.3.5 Koeberg Chemistry Specifications (ChemSpecs, KCS): This document defines the regulatory Chemistry and Radiochemistry specifications and surveillance requirements for plant systems.

2.3.6 Operating Technical Specifications (OTS): This document contains the requirements for normal reactor operation in order to ensure the correct functioning of safety related systems in the event of an incident or accident. These requirements are intended to ensure the safety of workers and employees on site and the general public.

2.3.7 Operating Technical Specifications Justification documents: There are three Justification documents:

2.3.7.1 Operating Technical Specifications Justification document 1 (Justif1): Justification Chapter I provides the basis for the general requirements in OTS Chapter 1 (KBA0022OTS100GEN1).

2.3.7.2 Operating Technical Specifications Justification document 2 (Justif2): Justification Chapter II provides the basis for the safety and support functions for the six standard operating domains in OTS Chapters 2 to 7.

2.3.7.3 Operating Technical Specifications Justification document 3 (Justif3): Justification Chapter III provides the basis for the limiting conditions for operations in the six standard operating domains in OTS Chapters 2 to 7.

2.3.8 OTS Change Project Team: A group of people co-opted for their expertise regarding the proposed change subject matter. The team consists of the appointed change leader and the reviewers and contributors.

2.3.9 OTS Revision: A complete revision or re-issue of any one or more OTS chapters is effected when deemed necessary, either due to the number of OTS changes requiring permanent inclusion, or due to major evolutions in the design basis.

2.3.10 Permanent OTS Change: A permanent replacement, addition, or deletion of OTS requirements.

2.3.11 Real-Time OTS Change: An OTS change proposal that is being expedited in an attempt to avoid a limitation that is being imposed (or is impending) due to unavailable SSC or unachievable parameters. It is seen as poor safety culture to challenge established safety measures when production is threatened. Real-time changes are thus not allowed except in unusual circumstances. Each case shall be considered on merit, for example if the risk to the core due to complying with OTS is considered greater than extending the fallback delay period. Such risk could occur if one unit is on outage and a forced shutdown of the other is expected to lead to grid loss.

2.3.12 EDF STE vs OTS Difference File: A document listing the differences between the EDF CPY STE and Koeberg OTS, and giving explanations for the differences.

2.3.13 Temporary OTS Change: A temporary change, replacement, addition, or deletion of OTS requirements, necessitated by an act that cannot be performed as specified, for a specified period.

2.3.14 Waivers: No OTS or KCS waiver process exists, the Temporary OTS Change process is used instead.

2.4 Abbreviations

Abbreviation	Explanation
BDBA	Beyond-Design-Basis Accident
CA	Corrective Action
DBA	Design Basis Accident
EDF	Electricité de France
GOR	General Operating Rules
I&T	Inspection and Test
IPD-K	Integrated Plant Design - Koeberg
ISED	Independent Safety Evaluation Department
KCS	Koeberg Chemistry Specifications
KNLD	Koeberg Nuclear Licensing Department
KORC	Koeberg Operational Review Committee
KOSC	Koeberg Operability Sub-Committee
LAN	Local Area Network
NAD	Nuclear Analysis Department
NAR	NNR Approval Request
NGE	Nuclear Generation Engineering
NNR	National Nuclear Regulator
OHS	Occupational Health and Safety
OPG	Operating Procedure Group
OTS	Operating Technical Specifications
PSA	Probabilistic Safety Assessment
PSM	Power Station Manager
RE	Reliability Engineering
RP	Radiation Protection
SAR	Safety Analysis Report
SCG	Safety Case Group
SDE	System Design Engineering
SE	System Engineering
SDRG	Safety Documentation Review Group
SM (IPD-K)	Senior Manager (Integrated Plant Design - Koeberg)
SRO	Senior Reactor Operator
SSC	Systems, Structures, Components
STE	Spécifications Techniques d'Exploitation – EDF's OTS
TCR	Training Change Request
TD & RM	Technical Documentation and Records Management
WFRM	Work Flow Responsibility Matrix

2.5 Roles and Responsibilities

2.5.1 Integrated Plant Design - Koeberg

2.5.1.1 Integrated Plant Design - Koeberg (IPD-K) is responsible for the configuration control and maintenance of OTS, KCS and their justification documents.

2.5.1.2 The senior manager of IPD-K is responsible for ensuring that the allocated resources to maintain the OTS and the KCS are sufficient. This may include the appointment of a project team for extensive changes.

2.5.2 The Safety Case Group (SCG)

The Safety Case Group (responsible for SAR, OTS, KCS and SRSM):

- ensures that the purpose, scope and content of the OTS and KCS are maintained according to accepted principles and standards;
- makes available the Change Leader for each OTS and KCS change project;
- makes available in internal reviewer for each OTS and KCS change project;
- monitors OTS changes to ensure compliance to OTS principles;
- provides guidance and advice to OTS users and to staff tasked with the maintenance of the OTS.

2.5.3 Engineering Review

2.5.3.1 OTS and KCS changes shall be reviewed by the relevant specialist.

2.5.3.2 Various Engineering Group and SME reviewers of changes are responsible for the technical correctness of the changes. The SCG shall resolve reviewer comments pertaining to technical correctness or fitness for use prior to seeking approval from the NNR. The SCG will take account of reviewer comments pertaining to, for example, the cost or difficulty of compliance with the change; such comments do not have to be resolved with the reviewer, although the SCG is required to inform KORC or KOSC of such comments and their resolution. The review shall consider the impact of the change on plant processes and statutory programmes.

2.5.4 Operating Department

The Operating Department is responsible for ensuring plant operations compliance with the OTS. Operating Department and Operating Procedures Group (OPG) reviewers of OTS changes are responsible for ensuring that the changed requirements can be safely met or carried out. Operating and OPG shall ensure that the changed requirements are unambiguous and are correctly reflected in other applicable operating documents.

2.5.5 Chemistry Department

Chemistry is responsible for ensuring compliance with the KCS. Chemistry reviewers of KCS changes are responsible for ensuring that the changed requirements can be safely

met or carried out. Chemistry shall ensure that the changed requirements are unambiguous and are correctly reflected in other applicable documents.

2.5.6 OTS and associated documents change review

The KFA-052 form is used for the official station acceptance of the change. The form allows for review, comment and acceptance.

Reviews required are shown in the table below:

Reviewer	OTS	OTS Justification documents	KCS	KCS Justification documents	Difference Files
Operating	✓	✓	✓		
Operating Procedures Group	✓	✓	✓		
Safety Engineers	✓	✓	✓		
Probabilistic Safety Assessment	✓		✓		
Radiation Protection	✓		✓		
Chemistry			✓	✓	
Design Engineering	✓				
System Engineering	✓				
Reliability Engineering	✓				
Inspection & Test	✓				
KOSC	✓		✓		
SDRG	✓		✓		
NNR	✓		✓		

2.5.6.1 Operating review

The reviewer is asked to:
- make general comments for discussion at KOSC;
- comment on safety reservations, for resolution prior to KOSC;
- sign the following declaration:
I am satisfied that the proposal is safe and implementable, that the impact of the proposal on my area of responsibility has been identified and that the quality of the changed OTS or KCS is acceptable, particularly w.r.t. clarity of requirements. Any deviation from this is recorded above.

2.5.6.2 OPG review

The reviewer is asked to:
- identify whether:
-- a KAB-035 update is required;
-- a PT schedule change is required;
-- a KWB-OP-LOG-012 update is required;
-- other operating procedure updates are required
-- other document updates are required
- make any general remarks they may have;
- make any comments they may have;
- comment on the safety impact;
- recommended an expiry date or condition;

- sign the following declaration:
I am satisfied that the proposal is safe, that the impact of the proposal on my area of responsibility has been identified and that the quality of the changed OTS or associated document(s) is acceptable. Any deviation from this is recorded above.

2.5.6.3 Safety Engineers

The reviewer is asked to:
- make general comments;
- comment on safety reservations, for resolution prior to KOSC;
- sign the following declaration:
I am satisfied that the proposal is safe and implementable, that the impact of the proposal on my area of responsibility has been identified and that the quality of the changed OTS or KCS is acceptable, particularly w.r.t. clarity of requirements. Any deviation from this is recorded above.

2.5.6.4 PSA review

The reviewer is asked to:
- identify whether a PSA update is needed;
- make any comments they may have;
- sign the following declaration:
I am satisfied that the proposal is safe and that the impact of the proposal on my area of responsibility has been identified. Any deviation from this is recorded above.

2.5.6.5 Radiation Protection (RP) review

The reviewer is asked to:
- identify whether an ALARA update is needed;
- make any comments they may have;
- sign the following declaration:
I am satisfied that the proposal is safe from an RP perspective and that the impact of the proposal on my area of responsibility has been identified. Any deviation from this is recorded above.

2.5.6.6 Chemistry review

The reviewer is asked to:
- identify whether:
-- a Technical Bases for Koeberg Chemistry Specifications update is needed;
-- a Justification for the Koeberg NPS Chemistry Operating Specifications update is needed;
-- for an OTS change, a Chemistry Operating Specifications update is needed;
-- a Chemistry Sampling Procedure update is needed;

- make any comments they may have;
- sign the following declaration:
I am satisfied that the impact of the proposal on my area of responsibility has been identified. Any deviation from this is recorded above.

2.5.6.7 Design Engineering (SDE) review

The reviewer is asked to:
- identify whether:
-- a Set-Point Manual update is required;
-- any other updates are is required;

- indicate the documents that were reviewed and which require updates;
- comment on the safety impact:
- give any remarks they may have;
- sign the following declaration:

I am satisfied that the impact of the proposal on Engineering and Maintenance has been identified. Any deviation from this is recorded above.

2.5.6.8 System Engineering (SE) review

The reviewer is asked to:
- indicate whether the OTS change requires the update of any other documents;
- indicate the documents that were reviewed and which require updates, including procedures, Maintenance processes, tests, etc. to be updated;
- comment on the safety impact:
- give any remarks they may have;
- sign the following declaration:

I am satisfied that the impact of the proposal on Engineering and Maintenance has been identified. Any deviation from this is recorded above.

2.5.6.9 Reliability Engineering (RE) review

The reviewer is asked to:
- indicate whether a Maintenance Basis Schedule update is required;
- indicate whether any document updates are required;
- indicate whether any information system updates are required;
- give any remarks they may have;
- sign the following declaration:

I am satisfied that the impact of the proposal on Engineering and Maintenance has been identified. Any deviation from this is recorded above.

2.5.6.10 Inspection & Test (I&T) review

The reviewer is asked to:
- indicate whether an In-Service Inspection or Test update is required;
- indicate whether any documents updates are required;
- indicate whether any information system updates are required;
- indicate required updates;
- give any remarks they may have;
- sign the following declaration:

I am satisfied that the impact of the proposal on Engineering and Maintenance has been identified. Any deviation from this is recorded above.

2.6 Process for Monitoring

No monitoring process is specified since the OTS, Chemistry Specifications and their justification documents are continuously in use, and are continually updated and improved.

2.7 Records

The change package is a station lifetime record. The change package consists of the completed KFA-053 form, the marked-up change pages and the Safety Evaluation Process documents raised in accordance with this procedure.

The review package (KFA-052) provides guidance for the review process and is not kept as an official record.

3. DESCRIPTION OF THE OTS

3.1 Background and Structure

The OTS is based on the principles of the EDF GOR Chapter III and provides a set of rules to be followed during normal operation in order to maintain the unit within the operating envelope assumed by the accident studies in the Koeberg SAR.

The OTS, therefore:

- specifies the normal operating limits to ensure compliance with the SAR accident analysis assumptions;
- prescribes the operability requirements of the safety functions and SSCs necessary for managing the incidents and accidents described in the SAR;
- prescribes compulsory remedial measures and the required plant fallback domains should a fallback be required in order to maintain the main safety functions. The OTS also specifies the period that the unit may remain in the current domain before fallback, given the inoperability of an SSC.

The three fundamental safety functions to be maintained are:

- control of reactivity;
- evacuation of residual power (core cooling);
- confinement of radioactive substances.

The support functions for these three safety functions are also ensured, namely: electrical power, ventilation, compressed air, cooling and fire protection functions. The principles were adopted from the EDF STE and Doctrine, which provide insight into the EDF practice (references [4], [5] and [6]).

The combined OTS (KBA0022OTS0000001) consists of eight separate chapters, each chapter being a separate record, used and maintained as a standalone document with its own unique reference. Refer to 3.4.

3.2 Inclusion Criteria

Five primary criteria regulate the inclusion of requirements into the OTS. These are:

- **Criterion #1: Initial conditions of transients covered by design base studies for Condition II, III and IV incidents and accidents.**

  The OTS specifies the operating limits for neutronic, thermal and hydraulic, parameters, as well as the safety functions and the configurations of SSCs.

  Chemistry and radiochemistry parameters are contained in the Koeberg Chemistry Specifications

- **Criterion #2: Automatic and short-term actions following a DBA initiating event.**

  The OTS specifies the safety functions required for a reactor shutdown, protection or safeguard role during the initial phases following Condition II, Condition III and Condition IV initiating events.

- **Criterion #3: Safe shut-down and maintaining the unit in a safe state following a DBA initiating event.**

  The OTS specifies the safety functions necessary for safe shut-down and maintaining the reactor in a safe state in accordance with the DBA studies. In addition, in conjunction with associated support functions (including the information enabling the unit status to be monitored), it allows an optimal mitigation strategy.

- **Criterion #4: Reaching a safe end-state following a BDBA as described in the SAR.**

  The OTS specifies the provisions necessary for reducing the risk of core melt and radioactive releases, as well as support functions and plant information to verify plant safety and inform mitigation strategies.

- **Criterion #5: Integrity of the fission product barriers and the confinement of the nuclear island buildings and the control room.**

  The OTS specifies the limits which, if exceeded, will degrade one of the three confinement barriers. This includes systems or components whose failure will result in the loss of integrity of one of the barriers. In addition, it includes functions required regarding SAR studies, to ensure confinement of the buildings of the nuclear island and the control room in incident and accident conditions.

These inclusion criteria along with Koeberg specific PSA insights have largely determined the content (requirements and actions) of the OTS. Appendix 7 of this document provides a list of the applicable criteria for all the requirements in the various plant domains in the OTS.

3.3 Additional Requirements

Additional requirements have been included into the OTS which do not strictly meet the inclusion criteria described in 3.2. These are:

- **Criterion V:** Equipment or limits linked to protection of the confinement barriers but whose unavailability or non-compliance has long-term cumulative consequence on the integrity of the barriers (corrosion, equipment fatigue …). This includes chemistry specifications (KCS) for AHP, APG, ASG, EAS, PTR, RCP, REA, RIS, and RRA systems. (V = Vieillissement = Ageing)

- **Criterion M**: Principally ventilation. Also the RIC flux measurement channels and boron meter. (M = Moyens = Means)

- **Criterion AI**: Fire detection and protection provided by JDT, JP and the DVF systems; seismic measurement provided by the KIS system. (AI = Agressions Internes = Internal Threats, also includes external threats)

- **Criterion CN:** Demineralised water for normal operations provided by the REA system. (CN = Conduite Normale = ‘Normal Conditions’)

- **Criterion R:** The KRT activity measurement channels and monitors for personnel protection. (R = Radioprotection)

- **Criterion AR:** Requirements for effluent releases such as the monitoring by the KRT system, the NAB stack flow rate and the TEG system. (AR = Arrêtés de Rejets = 'effluent controls')

In addition to the five primary criteria discussed in 3.2, Appendix 7 also links the OTS requirements to the criteria stated above.

3.4 OTS Content

Chapter 1 describes the basic principles of nuclear safety. It introduces and defines standard operating domains. It provides an overview of the safety functions that ensure the integrity of the barriers between the fuel and the environment. It presents the safety functions that are required and explains the OTS Event Groups that are declared when there is a deviation from requirements. It further describes general rules describing actions required in case of either inoperability of safety functions or exceeding the operating limits.
01-KBA0022OTS100GEN1

Chapters 2 to 7 are for the six operating domains, and list OTS Events, which specify operating parameter conditions. The events provide Required Actions and initiation times and repair times for when system or component parameters exceed specified conditions. The chemistry and radiochemistry requirements that were in OTS Revision 6 have been moved to the Koeberg Chemistry Specification.
02-KBA0022OTS2000RP1, 03-KBA0022OTS30SDSG1, 04-KBA0022OTS4SDRRA1, 05-KBA0022OTS50MCSD1, 06-KBA0022OTS600RSD1, 07-KBA0022OTS700RCD1

Chapter 8 provides the definitions of terms used in the OTS. It provides greater detail for system requirements and actions.
08-KBA0022OTS800DEF1

These files are located in G:\OTS and SRSM\OTS 7\

3.4.1 Justification documents content

OTS Justification document 1 gives bases and justifications for OTS document 1: General.
KBA0022OTSJUSTIF1

OTS Justification document 2 gives bases and justifications for the four safety functions: Reactivity, Cooling, Confinement and Support.
KBA0022OTSJUSTIF2

OTS Justification document 3 gives bases and justifications for OTS Event conditions and Required Actions (initiation times and repair times).
KBA0022OTSJUSTIF3

These files are located in G:\OTS and SRSM\OTS 7 Justification\

3.4.2 Interpretation of OTS

The OTS justification documents provide clarification for interpretation of OTS. Should the OTS be unclear to the extent that more than one option for compliance exists then the OTS justification can be updated to clarify the interpretation. Changes to OTS chapters should be avoided unless absolutely necessary, considering conformity with EDF's OTS.

3.5 Koeberg Chemistry Specification Content

This document defines the regulatory chemistry and radiochemistry specifications and surveillance specifications and surveillance requirements for plant systems, to provide assurance that nuclear safety is not compromised by adverse chemistry conditions. It stipulates the mandatory chemistry and radiochemistry specifications, their limiting values, surveillance frequencies, as well as the actions to take when a parameter is exceeded.
KBA0022CHEMSPEC00

3.5.1 Justification documents content

Technical Basis for Koeberg Chemistry Specifications (ChemJustif1)
This document provides the bases and justifications for the requirements prescribed in Koeberg Chemistry Specifications to improve clarity and avoid skewed interpretation.
KBA0022CHEMJUSTIF1

Justification for the KNPS Chemistry Operating Specifications (ChemJustif2)
This document provides the technical bases for KNC-001 and KNC-002 (Chemistry Operating Specifications) and explains the rationale for the various plant chemistry strategies applied.
KBA0022CHEMJUSTIF2

3.6 STE (EDF) vs. OTS

3.6.1 Alignment with EDF's OTS (STE)

The design of Koeberg Nuclear Power Station is based on the design of EDF's Tricastin power station, which is an EDF 900 MW CPY type plant – EDF has 38 CPY units.

Koeberg's OTS developed, until revision 6, differently from EDF's STE and, based on a strategic agreement between Koeberg and EDF, it was decided to align Koeberg's OTS with that EDF's CPY STE, leading to Koeberg's OTS revision 7. As a result, much of Koeberg's current OTS is almost a direct translation of EDF's CPY STE.

Due to the alignment with EDF's STE, operating and OTS discussions with EDF are significantly simplified and details and differences are easily addressed. It is important, therefore, to make as few OTS changes as possible, and to maintain alignment with EDF's STE as much as possible.

3.6.2 Difference Files: STE (EDF) vs. OTS

The Difference Files compare the STE (EDF) with OTS, item by item. Reasons are given for the differences between OTS and the STE.

3.7 OTS Change Index

The OTS Change Index lists all the OTS changes since OTS rev. 0 was published, and indicates the status of each change.
G:\OTS and SRSM\OTS Change Index\OTS Change Index.pdf

4. Procedure

4.1 Terms used in the numbering of OTS changes

The format of a change number is Cα-nnn and a Title or a Short Description, e.g. CO-058 JDT mod 06085.

Cα is replaced with letters as follows:

Cα	**Change type**
CO	OTS Change
TCO	Temporary OTS Change
CJ	OTS Justification Change
CC	Chemspecs Change
TCC	Temporary Chemspecs Change
CCJ	Chemspecs Justification Change

The nnn numeric value is from 001 to 999. Numbers are taken sequentially, not repeated for different change types. If there is a CO-501 then there cannot be a CC-501, it would have to be CC-502.

When a Justification document is changed to align with a change of an OTS or ChemSpec document then it does not get a separate number, i.e. if CO-501 also requires changes to an OTS Justification document then they both go under CO-501. If changing only a Justification document without requiring a change of the 'main' document, then CJ-nnn (or CCJ-nnn) is used.

4.2 The process is described in:

Appendix 1: Permanent (CO) and temporary (TCO) OTS changes;

Appendix 2: Withdrawal of temporary OTS changes;

Appendix 3: Permanent (CC) and temporary (TCC) KCS changes;

Appendix 4: OTS Justification document (CJ) changes;

Appendix 5: Chemistry Specification Justification document changes;

Appendix 6: Difference File changes: OTS vs. STE (EDF).

4.3 Temporary OTS changes have a specified period or condition of validity. Should an extension of validity be required, the change shall require re-approval.

4.4 The change process is initiated by filling in an OTS Change Request (KFA-051) and submitting it to the SCG, who will consider the merit of the request. If a change is justified, the SCG will draft the change and use an OTS Change Review (KFA-052) to manage the change process in accordance with Appendix 1 to Appendix 6 as appropriate.

If the SCG considers the requested change not justified, the OTS Change Request is returned to the requestor, stating the reason for rejection.

4.5 OTS Change Request 240-155016896 (KFA-051), OTS Change Review 240-155021403 (KFA-052) and Authorised OTS Change 240-155024320 (KFA-053) are available electronically as templates.

5. Acceptance

Revision 1 of this document was seen and accepted by:

Name	Designation
Neil Middleton	Manager, Operating
Ken Warren	Operating Procedures Group
Aminah Stephanus	Safety Engineers
Lufuno Mahlangu	Probabilistic Safety Assessment Group
Tertius Karsten	Radiation Protection
Nestor van Eeden	Nuclear Strategy and Regulation
Mandisi Stwayi	Chemistry
Ravid Goldstein	Design Engineering
Johann Austin	System Engineering
Susan van Wyk	Reliability Engineering
Thabo Ralegoma	Inspection & Test

Revision 2 of this document was seen and accepted by:

Name	Designation
A Rijnsburger	Senior Advisor, Safety Case Group
F Hendricks	Senior Advisor, IPD-K

6. Revisions

Note: Start with the latest Revision History in the first row and go backwards.

Date	Rev.	Compiler	Remarks
October 2021	2	C Pretorius	New instructions included for CR 123735, and experience based improvements
March 2020	1	C Pretorius	Revision of old format Koeberg document KAA-689 rev. 7 to rev. 1 in the current 240… number format
December 2019	0	C Pretorius	First Issue Draft

7. Appendices

Appendix 1 – Permanent and Temporary OTS Changes – Work Flow

Appendix 2 – Withdrawal of Temporary OTS Changes – Work Flow

Appendix 3 – Permanent and Temporary Koeberg Chemistry Specification, Changes – Work Flow

Appendix 4 – OTS Justification Changes – Work Flow

Appendix 5 – Chemistry Specification, Justification Document Changes – Work Flow

Appendix 6 – STE EDF / OTS Difference File – Work Flow

Appendix 7 – Inclusion Criteria and Requirements

Appendix 8 – Justification for Revision

Appendix 1 OTS Changes: Permanent (CO) and Temporary (TCO)

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 1: PERMANENT AND TEMPORARY OTS CHANGES

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	SCG	Radiation Protection	Operating, OPG	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	Change Leader	SM (IPD-K)	System Engineering	PSM	NOTES & REFERENCES
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Receive a request for a permanent or temporary change, or a new OTS revision is required.	[R]												KFA-051. A change can be for e.g.: - a plant modification; - updating erroneous information; - Response to a Request (KAD-024).
2. Assess the request for applicability.	[R]				(I)								Also consider [12], [13], [14], §3.0 and Appendix 7. Seek KOSC guidance if required.
3. Is the change necessary?	Y/N												YES: Go to Step 5. NO: Go to Step 4. If a Real Time Change* is required, obtain the PSM's approval to proceed. * see definition 2.3.11
4. Return request to originator, giving a reason.	[R]												KFA-051.
5. Discuss the change request and an informal implementation plan.	[R]								[S]	[C]			
6. Draft the OTS change.	[S]	(S)	(S)	(S)					[R]				Perform a Safety Screening and, if required by the Safety Evaluation Process (KAA-709), a Safety Evaluation and a Safety Justification.
7. Operating, OPG and Safety Engineers review the drafted change (refer to 2.5.4 and 2.5.6). Attach supporting documents to the change draft.			[R]										OPG and Operating complete KFA-052 sections. Involve Production and Maintenance as necessary.

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 1: PERMANENT AND TEMPORARY OTS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	SCG	Radiation Protection	Operating, OPG	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	Change Leader	SM (IPD-K)	System Engineering	PSM	NOTES & REFERENCES
	1	2	3	4	5	6	7	8	9	10	11	12	
8. Engineering groups review (refer to 2.5.3 and 2.5.6). Attach supporting documents to the change draft.	[R]										[R]		Design Eng., System Eng. and Reliability Eng., and I&T complete KFA-052 sections.
9. PSA review (refer to 2.5.6). Attach supporting documents to the change draft.	[S]			[R]									Review for risk implications and impact on PSA. Complete KFA-052 section.
10 RP and Chemistry review (refer to 2.5.6). Attach supporting documents to the change draft.	[S]	[R]											Verify the impact on Radiation Protection and Chemistry. Complete KFA-052 section.
11. Review the change draft.	[S]								[R]				
12. Is the change supported by all reviewers?									Y/N				YES: Go to Step 13. NO: Go to Step 2. If necessary, convene a project team meeting with SM (IPD-K) in attendance if required.
13. Compile formal change.									[R]				Compile KFA-053.
14. Obtain compilation and review signatures.	(S)		[A]						[R]				Sign KFA-053.
15. Present change package to KOSC (KAA-687).	[S]				[S]				[R]				KFA-053, compiled change and KAA-709 Screening etc..
16. SDRG review. Change approved?					Y/N								YES: Go to Step 18. NO: Go to Step 17. Document KOSC and SDRG meeting numbers in the KFA-053.
17. Return to the relevant step in the compilation process for resolution.	[S]								[R]				
18. Review the change package.	(S)					[R]							

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 1: PERMANENT AND TEMPORARY OTS CHANGES

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A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ←→ Secondary Flow

ACTIVITIES	1 SCG	2 Radiation Protection	3 Operating, OPG	4 Nuclear Analysis & Siting	5 KOSC / KORC	6 SDRG	7 NNR	8 TD & RM	9 Change Leader	10 SM (IPD-K)	11 System Engineering	12 PSM	NOTES & REFERENCES
19. Change approved?						Y/N →							YES: Go to Step 20. NO: Go to Step 17. Document approval status in KFA-053.
20. Raise a TCR.									[R]				Training Change Request KFT-004 (KAA-780)

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 1: PERMANENT AND TEMPORARY OTS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ←→ Secondary Flow

ACTIVITIES	ORGANISATION / FUNCTION												NOTES & REFERENCES
	SCG	Radiation Protection	Operating, OPG	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	Change Leader	SM (IPD-K)	System Engineering	PSM	
	1	2	3	4	5	6	7	8	9	10	11	12	
21. Prepare and submit a Nuclear Approval Request (NAR).	[S]				[S]				[R]				KNLD forwards the change to the NNR.
22. NAR approved?	[I]						Y/N						YES: Go to Step 23. NO: Return to Step 17. Document approval status in KFA-053.
23. Check NAR validity: Have other NARs affecting any of the changed pages been approved since submittal of this NAR?	[S]								Y/N				YES: Go to Step 24. NO: Go to Step 30.
24. Revise the affected pages (Step 23) to take cognisance of the current revision.	[S]								[R]				
25. Is the combination of changes (Step 23) per page compatible, i.e. the previously approved change does not technically affect the current change being processed?	[S]								Y/N				YES: Go to Step 26.1. NO: Go to Step 17.
26. Independent review confirms that:													
26.1 The changed pages are technically compatible;						Y/N							YES: Go to Step 26.2. NO: Go to Step 17.
26.2 The combination is non-conflicting.						Y/N							YES: Go to Step 27. NO: Go to Step 23.
27. Inform the KOSC of the Step 23 change.	[S]								[R]				Forward the information to the KOSC secretary to report at the next KOSC meeting.
28. Submit an updated NAR to KNLD for submittal to the NNR.	[S]				[S]				[R]				KNLD forwards the change to the NNR.
29. Re-check NAR validity.													Return to step 23.

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 1: PERMANENT AND TEMPORARY OTS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ←→ Secondary Flow

ACTIVITIES	ORGANISATION / FUNCTION												NOTES & REFERENCES
	SCG	Radiation Protection	Operating, OPG	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	Change Leader	SM (IPD-K)	System Engineering	PSM	
	1	2	3	4	5	6	7	8	9	10	11	12	
30. Obtain authorisation signature.	[S]								[R]	[A]			From step 23.
31. Check that all listed document changes (KFA-051 and KFA-052) have been completed before OTS change implementation.	[R]												
32. Obtain acceptance signature.	[R]											[A]	
33. Update the change package, the change index and the master electronic version of the OTS.	[R]												Ensure that all affected documents, identified during change production and review are changed accordingly.
34. Forward the change package to TD & RM.	[R]							[S]					For urgent changes, arrange a copy for Operating.
35. Distribute controlled copies and update the electronic documentation management system.								[R]					In accordance with KAA-767.
36. Raise an action in accordance with existing station process for the removal of temporary OTS changes.	[R] [•]												In accordance with KAA-688

Appendix 2 OTS Temporary Change (TCO) Withdrawal

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 2: WITHDRAWAL OF TEMPORARY OTS CHANGES

R – Responsible A – Approve F – File • – Outside Matrix Scope Y/N or N/Y – Decision C – Concur I – Informed S – Service [ ] – Mandatory Requirement ( ) – As Appropriate/Required Flow Path: Main Flow Secondary Flow	ORGANISATION / FUNCTION												NOTES & REFERENCES
	OEG / OTS	RADIATION PROTECTION	OPERATING	TD & RM									
ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	
1. Monitor the validity of temporary changes.	[R]			[S]									Review the OTS Change Index G:\OTS and SRSM\OTS Change Index
2. On expiry, update the change index and affected page status. Indexes to reflect the expiry of the temporary change. Also update the electronic file.	[R]												Revise the OTS Change Index as appropriate.
3. Forward the index pages and the OTS pages to replace the temporary change to TD & RM for distribution. Also update the OTS electronic master file.	[R]												
4. Distribute controlled copies and update the electronic documentation database.				[•]									KAA-767.

Appendix 3 KCS Changes: Permanent (CC) and Temporary (TCC)

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 3: PERMANENT AND TEMPORARY KOEBERG CHEMISTRY SPECIFICATIONS CHANGES

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ⟷ Secondary Flow

ACTIVITIES	ORGANISATION / FUNCTION												NOTES & REFERENCES
	OEG/ OTS	RADIATION PROTECTION	OPERATING	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	CHANGE LEADER	SM (IPD-K)	CHEMISTRY	PSM	
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Receive a request for a change (permanent or temporary) or a new Koeberg Chemistry Specification revision required.	[R]												KFA-051. A change can be for e.g.: - a plant modification; - updating erroneous information; - Response to a Request (KAD-024).
2. Assess the request for applicability.	[R]				(I)						[R]		Also consider §3.0. Seek KOSC guidance if required.
3. Is the change necessary?	Y/N												YES: Go to Step 5. NO: Go to Step 4. If a Real Time Change* is required, obtain the PSM's approval to proceed * see definition 2.3.11.
4. Return request to originator, giving a reason.	[R]												KFA-051.
5. Discuss the change request and an informal implementation plan.	[R]								[S]	[C]			
6. Draft the KCS change.	[S]	(S)	(S)	(S)					[R]				Perform a Safety Screening and, if required by the Safety Evaluation Process (KAA-709), a Safety Evaluation and a Safety Justification.
7. Operating, OPG and Safety Engineers review the drafted change (refer to 2.5.4 and 2.5.6). Attach supporting documents to the change draft.			[R]										OPG and Operating complete KFA-052 sections. Involve Production and Maintenance as necessary.
8. Chemistry review (refer to 2.5.5 and 2.5.6). Attach supporting documents to the change draft.	[R]										[R]		Chemistry completes KFA-052 section.

WORK FLOW RESPONSIBILITY MATRIX	**APPENDIX 3: PERMANENT AND TEMPORARY KOEBERG CHEMISTRY SPECIFICATIONS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	**ORGANISATION / FUNCTION**												**NOTES & REFERENCES**
	OEG/ OTS	RADIATION PROTECTION	OPERATING	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	CHANGE LEADER	SM (IPD-K)	CHEMISTRY	PSM	
	1	2	3	4	5	6	7	8	9	10	11	12	
9. PSA review (refer to 2.5.6). Attach supporting documents to the change draft.	[S]			[R]									Review for risk implications and impact on PSA. Complete KFA-052 section.
10 RP review (refer to 2.5.6).	[S]	[R]											Verify the impact on Radiation Protection. Complete KFA-052 section.
11. Review the change draft.	[S]								[R]				
12. Is the change supported by all reviewers?									Y/N				YES: Go to Step 13. NO: Go to Step 2. If necessary, convene a project team meeting with SM (IPD-K) in attendance if required.
13. Compile formal change.									[R]				Compile KFA-053.
14. Obtain compilation and review signatures.	(S)		[A]						[R]				Sign KFA-053.
15. Present change to KOSC (KAA-687).	[S]				[S]				[R]				KFA-053, compiled change and KAA-709 Screening etc..
16. SDRG review. Change approved?					Y/N								YES: Go to Step 18. NO: Go to Step 17. Document KOSC and SDRG meeting numbers in the KFA-053.
17. Return to the relevant step in the compilation process for resolution.	[S]								[R]				
18. Review the change package	(S)					[R]							
19. Change approved?						Y/N							YES: Go to Step 20. NO: Go to Step 17. Document approval status in KFA-053.
20. Raise a TCR.									[R]				Training Change Request KFT-004 (KAA-780)
21. Prepare and submit an NAR.	[S]				[S]				[R]				KNLD forwards the change to the NNR.
22. NAR approved?	[I]						Y/N						YES: Go to Step 23. NO: Return to Step 17.

WORK FLOW RESPONSIBILITY MATRIX

APPENDIX 3: PERMANENT AND TEMPORARY KOEBERG CHEMISTRY SPECIFICATIONS CHANGES

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ←→ Secondary Flow

ACTIVITIES	1 OEG/ OTS	2 RADIATION PROTECTION	3 OPERATING	4 Nuclear Analysis & Siting	5 KOSC / KORC	6 SDRG	7 NNR	8 TD & RM	9 CHANGE LEADER	10 SM (IPD-K)	11 CHEMISTRY	12 PSM	NOTES & REFERENCES
													Document approval status in KFA-053.
23. Check NAR validity: Have other NARs affecting any of the changed pages been approved since submittal of this NAR?	[S]								Y/N				YES: Go to Step 24. NO: Go to Step 30.
24. Revise the affected pages (Step 23) to take cognisance of the current revision.	[S]								[R]				
25. Is the combination of changes (Step 23) per page only editorial, i.e. the previously approved change does not technically affect the current change being processed?	[S]								Y/N				YES: Go to Step 26.1. NO: Go to Step 17.
26. Independent review confirms that:													
26.1 The changed pages are technically compatible;						Y/N							YES: Go to Step 26.2. NO: Go to Step 17.
26.2 The combination is non-conflicting.						Y/N							YES: Go to Step 27. NO: Go to Step 23.
27. Inform the KOSC of the step 23 change.	[S]								[R]				Forward the information to the KOSC secretary to report at the next KOSC meeting.
28. Submit an updated NAR to KNLD for submittal to the NNR.	[S]				[S]				[R]				KNLD forwards the change to the NNR.
29. Re-check NAR validity.													Return to step 23
30. Obtain authorisation signature.	[S]								[R]	[A]			From step 23
31. Check that all listed document changes (KFA-051 and KFA-052) have been completed before Koeberg Chemistry Specification change	[R]												

WORK FLOW RESPONSIBILITY MATRIX	**APPENDIX 3: PERMANENT AND TEMPORARY KOEBERG CHEMISTRY SPECIFICATIONS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	**ORGANISATION / FUNCTION**												**NOTES & REFERENCES**
	OEG/ OTS	RADIATION PROTECTION	OPERATING	Nuclear Analysis & Siting	KOSC / KORC	SDRG	NNR	TD & RM	CHANGE LEADER	SM (IPD-K)	CHEMISTRY	PSM	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
implementation.													
32. Obtain acceptance signature.	[R]											[A]	
33. Update the change package, the change index and the master electronic version of the Koeberg Chemistry Specification.	[R]												Ensure that all affected documents, identified during change production and review are changed accordingly.
34. Forward the change package to TD & RM.	[R]							[S]					For urgent changes, arrange a copy for Operating.
35. Distribute controlled copies and update the electronic documentation management system.								[R]					In accordance with KAA-767.
36. Raise an action in accordance with existing station process for the removal of temporary Koeberg Chemistry Specification changes.	[R] [•]												In accordance with KAA-688

Appendix 4 OTS Justification Changes (CJ)

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 4: OTS JUSTIFICATION CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	ORGANISATION / FUNCTION												NOTES & REFERENCES
	OEG/ OTS	RADIATION PROTECTION	OPERATING	NAD	KOSC / KORC	TD & RM	CHANGE LEADER	SM (IPD-K)					
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Receive a request for a change, or a new OTS Justification revision is required.	[R]												KFA-051.
2. Assess the request for applicability.	[R]				(I)								Seek KOSC guidance if required.
3. Is the change necessary?	Y/N												YES: Go to Step 5. NO: Go to Step 4.
4. Return request to originator, giving a reason.	[R]												KFA-051.
5. Discuss the change request and an informal implementation plan.	[R]						[S]	[C]					
6. Draft the change.	[S]	(S)	(S)	(S)			[R]						Evaluate the change in terms of the KAA-709 process.
7. Operating, OPG and Safety Engineers review the drafted change (refer to 2.5.4 and 2.5.6). Attach supporting documents to the change draft.			[R]										OPG and Operating complete KFA-052 sections. The Safety Engineers do an informal review.
8. Review the change draft.	[S]						[R]						
9. Is the change supported by all reviewers?							Y/N						YES: Go to Step 10. NO: Go to Step 2. If necessary, convene a project team meeting with SM (IPD-K) in attendance if required.
10 Compile formal change.							[R]						
11 Obtain compilation and review signatures.	(S)		[A]				[R]						Sign the document.

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 4: OTS JUSTIFICATION CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	ORGANISATION / FUNCTION												NOTES & REFERENCES
	OEG/ OTS	RADIATION PROTECTION	OPERATING	NAD	KOSC / KORC	TD & RM	CHANGE LEADER	SM (IPD-K)					
	1	2	3	4	5	6	7	8	9	10	11	12	
12. Change approved?							Y/N						YES: Go to Step 14. NO: Go to Step 13.
13. Return to the relevant step in the compilation process for resolution.	[S]						[R]						
14. Update the change package, the change index and the master electronic version of the OTS Justification.	[R]												
15. Forward the change package to TD&RM.	[R]					[S]							
16. Distribute controlled copies and update the electronic documentation management system.						[R] [•]							

Appendix 5 Chemistry Specification Justification Changes (CCJ)

WORK FLOW RESPONSIBILITY MATRIX | **APPENDIX 5: CHEMISTRY SPECIFICATION JUSTIFICATION DOCUMENTS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ORGANISATION / FUNCTION

ACTIVITIES	1 OEG/ OTS	2 RADIATION PROTECTION	3 OPERATING DEPARTMENT	4 Nuclear Analysis & Siting	5 KOSC / KORC	6 NUCLEAR PLANT CHEMISTRY	7 TD & RM	8 CHANGE LEADER	9 SM (IPD-K)	10	11	12	**NOTES & REFERENCES**
1. Receive a request for a change or a new Chemistry Specification Justification revision is required.	[R]												KFA-051.
2. Assess the request for applicability.	[R]				(I)								Seek KOSC guidance if required.
3. Is the change necessary?	Y/N												YES: Go to Step 5. NO: Go to Step 4.
4. Return request to originator giving a reason.	[R]												KFA-051.
5. Discuss the change request and an informal implementation plan.	[R]							[S]	[C]				
6. Draft the change.	[S]	(S)	(S)	(S)				[R]					Evaluate the change in terms of the KAA-709 process
7. Chemistry reviews the drafted change (refer to 2.5.5 and 2.5.6). Attach supporting documents to the change draft.						[R]							Chemistry completes KFA-052 section.
8. Review the change draft.	[S]							[R]					
9. Is the change supported by all reviewers?								Y/N					YES: Go to Step 10. NO: Go to Step 2. If necessary, convene a project team meeting with SM (IPD-K) in attendance if required.
10 Compile formal change.								[R]					
11. Obtain compilation and review signatures.	(S)		[A]					[R]					Sign the document.

WORK FLOW RESPONSIBILITY MATRIX	**APPENDIX 5: CHEMISTRY SPECIFICATION JUSTIFICATION DOCUMENTS CHANGES**

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow Secondary Flow

ACTIVITIES	1 OEG/ OTS	2 RADIATION PROTECTION	3 OPERATING DEPARTMENT	4 Nuclear Analysis & Siting	5 KOSC / KORC	6 NUCLEAR PLANT CHEMISTRY	7 TD & RM	8 CHANGE LEADER	9 SM (IPD-K)	10	11	12	**NOTES & REFERENCES**
	ORGANISATION / FUNCTION												
12. Change approved?								Y/N					YES: Go to Step 14. NO: Go to Step 13.
13. Return to the relevant step in the compilation process for resolution.	[S]							[R]					
14. Update the change package, and the master electronic version of the relevant Chemistry Specification Justification Document.	[R]												

CONTROLLED DISCLOSURE

Appendix 6 Difference File changes: OTS vs. STE (EDF)

WORK FLOW RESPONSIBILITY MATRIX	APPENDIX 6: STE EDF / OTS DIFFERENCE FILE

R – Responsible
A – Approve
F – File
• – Outside Matrix Scope
Y/N or N/Y – Decision
C – Concur
I – Informed
S – Service
[ ] – Mandatory Requirement
( ) – As Appropriate/Required
Flow Path:
Main Flow ⟷ Secondary Flow

ACTIVITIES	1 OEG/ OTS	2 TD & RM	3 CHANGE LEADER	4 SM (IPD-K)	5	6	7	8	9	10	11	12	NOTES & REFERENCES
1. Receive a request for a change to the Difference Files.	[R]												KFA-051.
2. Assess the request for applicability.	[R]												
3. Is the change necessary?	Y/N												YES: Go to Step 5. NO: Go to Step 4.
4. Return request to originator giving a reason.	[R]												KFA-051.
5. Discuss the change request and an informal implementation plan.	[R]		[S]	[C]									
6. Draft the change.	[S]		[R]										
7. SCG reviews the change draft.	[R]												KFA-052. Attach supporting documents to the change package.
8. Review the change draft.	[S]		[R]										
9 Is the change supported by reviewer?			Y/N										YES: Go to Step 10. NO: Go to Step 2. If necessary, convene a project team meeting with SM (IPD-K) in attendance if required.
10. Compile formal change.			[R]										
11. Obtain compilation and review signatures.	(S)		[R]										Sign the document.
12. Update the change package, and the master electronic version of the Difference Files.	[R]												

Appendix 7 Inclusion Criteria and Requirements

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	SD / SG	SD / RRA	MCSD	RSD	RCD
1 - REACTIVITY SAFETY FUNCTION								
RCP PTR REN	**Boron Concentration**	• Primary circuit C_B	1	1	1	1	1	
		• Moderator temperature coefficient	1					
		• Boron meter	M	M	M	3	3	
		• Alarm: C_B decrease greater than 50 ppm				3	3	
		• Spent fuel pool C_B	1	1	1	1	1	1
RGL	**Rod Positions**	• Shutdown rod bank	1	1, 2	1, 2	1	1	
		• Control rod bank	1	1	1	1	1	
		• RGL system	2					
RIS REA	**Boration / Dilution**	• REA Boron (line, pump, tank, T°)	3	3	3	3	3	
		• REA water (line, pump, tank)	CN	CN				
		• C_B monitoring during dilution	1	1	1			
		• Pressuriser C_B shall not be less than the C_B of the rest of the reactor coolant circuit	1					
		• Anti-dilution protection	4	4				
RPN RIC RIC	**Reactor Power Control**	• RPN system (SR / IR / PR)	2, 3	2, 3	2, 3	3	3	
		• RIC system (flux measurement)	M					
		• Q(z) and $F^N_{\Delta H}$	1					

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	**SD / SG**	**SD / RRA**	**MCSD**	**RSD**	**RCD**
		• Axial Flux Differences	1					
		• Power Level • Power increase	1 1, 5					
		• QPTR	1					
		• Stretch-Out Operation	1, 5					
		• Additional requirements for fuel handling					1, 5	
2 - COOLING SAFETY FUNCTION								
RCP PTR	**Primary Coolant Inventory**	• RCP parameters (P, T, level)	1, 5	1, 5	1, 5	1	1	
		• SFP parameters (T, level)	1, 5	1, 5	1, 5	1, 5	1, 5	1, 5
		• SFP level					1	
		• Tube transfer						1
RCP RRA	**Circulation of Primary Coolant**	• Reactor coolant pumps in service	1	1	1			
		• RRA pump in service			1	1	1	
RIS RCV EAS VVP GCT PTR RRA RRI SEC	**Primary Coolant Make-Up**	• PTR 001 BA	2	2	2	3		
		• LHSI	2	2	4	4	4	
		• HHSI	2	2	4	4		
		• Accumulator	2	2				
		• RIS 004 BA	1	1				
		• EAS back-up to RIS	4	4	4			

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	SD / SG	SD / RRA	MCSD	RSD	RCD
ASG SER		• Charging line, seal water injection line, auxiliary spray, excess letdown.	3	3	3	3	3	
		• Additional requirement: primary circuit closed or not sufficiently opened				4		
		• Additional requirement: primary circuit sufficiently opened				4		
ASG EAS GCTa PTR RRA RRI SEC SER VVP	**Cooling Sources**	• SGs	1, 2	1, 2	4	4		
		• GCTa system	3	3	4	4		
		• MSIVs	2	2	4			
		• ARE isolation	2	2	4			
		• ASG pumps	2	2	4	4		
		• ASG tank	2	2	4	4		
		• SER make to ASG	4	4	4	4		
		• RRI / SEC system	2	2	1	1	1	1
		• RRA system	3	3	1	1	1	
		• JPD make-up to SFP	4	4	4	4	4	4
		• PTR system	1	1	1	1	1	1
		• Additional requirement: primary circuit closed or not sufficiently opened				1, 4		
3 - CONFINEMENT SAFETY FUNCTION								

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	SD / SG	SD / RRA	MCSD	RSD	RCD
	First Barrier	• Gamma spectrometry activity and total noble gas activity	5					
APG EAS RCP RCV RIS RRA RRI SVA VVP	**Second Barrier Monitoring of the Second Barrier Integrity**	• Unidentified leakage	5	5	5	5		
		• Global leakage	5	5	5			
		• No pressure boundary leakage	5	5	5			
		• Primary to secondary leakage	5	5				
		• APG isolation	5	5				
		• Radiochemistry requirement (APG)	5	5	5			
	Overpressure Protection	• Pressuriser stable steam space	1, 5	1, 5	1, 5			
		• Normal spray line	3	3	3			
		• Pressuriser safety valves	5	5				
		• PORVs	3	3	4, 5	4, 5		
		• PORV block valves	5	5	5	5		
		• RRA safety valves and RRA connection			5	5		
		• RIS contactors racked out			5	5	5	
		• HHSI start-up inhibition			5	5	5	
		• RCP pump breakers				5	5	
	Corrosion Protection	• Chemistry requirements (RCP / AHP / ASG / APG)	V	V	V	V	V	

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	SD / SG	SD / RRA	MCSD	RSD	RCD
	Limitation of Thermal and Mechanical Stress	• Primary circuit temperature change rate		V	V	V		
		• SGs secondary side pressure		5	5	5	5	
		• Auxiliary spray use		5	5	5	5	
		• RCP pump stop			5			
	Required Conditions for Primary Circuit Opening	• Closed or not sufficiently open, sufficiently open				1		
EAS EBA EPP ETY EVR GCT VVP	**Third Barrier Containment Isolation**	• Penetrations of the containment isolation system	5	5	5	5	5	
		• Access to reactor building	5	5	5	5	5	
		• Fuel transfer tube	5	5	5	1, 5	1,5	
		• ETY penetration isolation	5	5	5	5	5	
		• EBA penetration isolation	5	5	5	5	5	
		• SG secondary side penetrations			5	5	5	
		• Requirements during fuel handling operation					5	
	Overpressure and Over-Temperature of the Third Barrier	• Reactor building temperature (EVC / EVR)	5	5	5			
		• Reactor building pressure	5	5	5			
		• EAS system	2, 5	2, 5	2, 5			
		• EAS tri-sodium phosphate	5	5				
		• VVP safety valves	2,5	2,5	5	5		

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	**SD / SG**	**SD / RRA**	**MCSD**	**RSD**	**RCD**
		• ETY mixing circuit and mobile recombiners	5	5	5			
	Structures Inside the Reactor Building	• Slabs, doors, penstock, polar crane	1, 5	1, 5	1, 5			
KRT	**Activity Measurement Channels**	• Monitoring of confinement barriers	3, 5	3, 5	3, 5	3, 5	3, 5	5
		• Monitoring of releases	AR	AR	AR	AR	AR	AR
		• Post-accident operation	3	3	3	3	3	
		• Personnel protection	5, R	5, R	5, R	5, R	5, R	5, R
DVC DVK DVN DVS DVW	**Confinement of Sensitive Locations**	• DVC iodine filtration function	5	5	5	5	5	
		• DVN normal extraction function • NAB stack flow rate	5 AR	5 AR	5 AR	5 AR	5 AR	5 AR
		• DVN iodine filtration function (NAB) and TEG iodine filtration function	5	5	5	5	5	5
		• DVW iodine extraction function (peripheral rooms)	5	5	5			
		• DVK iodine extraction function	5	5	5	5	5	5
		• DVS air supply function	5	5	5			
TEG TEP	**Treatment of Primary Waste**	• TEG (compressor)	AR	AR	AR			
		• TEP (head tank)	5	5				
4 - SUPPORT SAFETY FUNCTION								
Lxx	**Electrical Power**	• Off-site electrical sources	1	1	1	1	1	1

	SAFETY SUB-FUNCTION	REQUIREMENTS	OTS INCLUSION CRITERIA (para. 3.2 and 3.3 above)					
			RP	**SD / SG**	**SD / RRA**	**MCSD**	**RSD**	**RCD**
LLS	**Sources**	• On-site electrical sources	2	4	4	4	4	4
		• 9 LHS	4	4	4	4		
		• LLS system	4	4	4	4		
		• 6.6 kV and 380 V switchboards supplying equipment required by OTS	1, 2, 5	1, 2, 5	1, 2, 5	1, 4, 5	1, 4, 5	1, 5
	Control Instrumentation Electrical Sources	• 230, 220, 125, 48, 30 V switchboards supplying equipment required by OTS	1, 2, 5	1, 2, 5	1, 2, 5	1, 4, 5	1, 4, 5	1, 5
SAP	**Compressed Air Sources**	• SAP system	1	1	1	1	1	1
RPR	**Reactor Protection Channel**	• RPR system	2, 3, 4, 5	2, 3, 4, 5	2, 3, 4, 5			
JDT JPx	**Fire Detection and Protection**	• JDT system	AI	AI	AI	AI	AI	AI
		• JPx system	AI	AI	AI	AI	AI	AI
DEL DVC DVE DVF DVG DVH DVL DWS	**Air Conditioning and Ventilation**	• DEL system	1	1	1	1	1	1
		• DVC, DVE, DVL, DWS system	1	1	1	1	1	1
		• DVG, DVH system	2	2	4	4		
		• DVF system	AI	AI	AI	AI	AI	AI
KIS	**Seismic Monitoring Capability**	• KIS system	AI	AI	AI	AI	AI	AI

Appendix 8 Justification for Revision

Existing rev. page, para	New rev. page, para	Description of , Justification for Change
KAA-689 revision 7 – Full Review		
General		Procedure updated to address QA Audit (R97) findings.
		Procedure re-written to include the documents associated with OTS such as:
		Koeberg Chemistry Specifications which form part of the French GOR and stand equal to OTS.
		OTS Justification which forms a background to the OTS and explains the reasons behind the requirements.
		Technical Bases for the Koeberg Chemistry Specifications which forms a background to the Koeberg Chemistry Specifications and explains the reasons behind the requirements.
		Difference files which is a document listing the difference between the EDF OTS and Koeberg OTS and explains why some of the EDF requirements are not adopted for Koeberg.
General		Throughout NGE has been changed to IPD-K and DBG has been changed to OEG due to the restructuring of the Engineering Department.
General		Throughout the internal referencing has been updated to reflect additional steps or sections.
Cover page		The “Seen and Accepted” list has been updated to reflect the current process
3/contents	3/contents	Contents page updated to reflect additions
4/1.1	4/1.1	Purpose expanded to include the new documents associated with OTS
4-5/3	4-5/3	Definitions expanded to include the new documents associated with OTS
5-6/3	5-6/3	Abbreviations expanded to include OEG
	9/5.3 10/5.5	Step updated to include the Koeberg Chemistry Specifications.
	11/6.5	Chemistry added as a responsible group
10/7.1	11/7.1	Process description expanded to include associated documents and the WFRMs that govern them.
11/9 15/37	12/9 16/37	List of attachments updated. Note added to include KAA-688 This is to close out CA 92554
	18-21/App 3	New WFRM for changes to the Koeberg Chemistry Specifications.
	22-23/App 4	New WFRM for changes to the OTS Justification.
	24-25/App 5	New WFRM for changes to the Chemistry Specification Documents.
	26-27/App 6	New WFRM for changes to the OTS Difference Files.
17-26/App 3	28-37/App 7	List of OTS inclusion criteria – appendix renumbered.
27/App 4	38/App 8	Appendix re-named and re-numbered.
28-31/App 5	39-49/App 9	Appendix: re-named and re-numbered.