Eskom	PROCEDURE	Nuclear Engineering

Title: **Processing of Industry Operating Experience in Nuclear Engineering**

Document Identifier:	**331-23**
Alternative Reference Number:	**ECG-714**
Area of Applicability:	**Nuclear Engineering**
Functional Area:	**Engineering Support**
Revision:	**4**
Total Pages:	**21**
Next Review Date:	**December2023**
Disclosure Classification:	**Controlled Disclosure**

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Date: 2020/12/03	Date: 2020/12/07	Date: 2020-12-07

Nuclear Additional Classification Information

Business Level:	**3**
Working Document:	**3**
Importance Classification:	**NSA**
NNR Approval:	**N/A**
Safety Committee Approval:	**N/A**
ALARA Review:	**N/A**
Functional Control Area:	**Engineering Support**

Contents

1. Introduction

This document describes the process and screening requirements that ensure that industry Operating Experience is incorporated into Nuclear Engineering (NE) activities and is correctly addressed by identified responsible persons within each department.

The objective of a Nuclear Engineering Operating Experience program is to use lessons learned from industry and operational units effectively and efficiently to improve plant safety and reliability and to reduce the number and consequence of events. Learning and applying these lessons is an integral part of Nuclear Engineering culture and is encouraged throughout the organisation. Nuclear Engineering regards operating experience as helpful and important and uses this information whenever the opportunity arises within proper governance guidelines.

2. Supporting Clauses

2.1 Scope

This procedure covers the identification; evaluation and processing of internal and external industry operational experience related to Nuclear Engineering activities.

2.1.1 Purpose

The purpose of this document is to:

Provide the framework within which the operating experience and significant industry events are effectively and efficiently used to improve safety and reliability by ensuring that relevant information is:

- screened and processed;
- communicated to those areas affected by the information;
- evaluated and considered in problem solving and/or preventive measures.

Define specific support available through agreements and to assist in processing significant events and/or problems identified by the in-house programmes. The Process Support Department provides a cross-functional role to the entire Nuclear Engineering to ensure effective distribution of the industry OE.

It is NOT the intent of this process to be all-inclusive in the identification, recording, trending and resolution of all events or problems.

The Koeberg Event Group (KEG) has been established to provide the required Operating Experience support.

2.1.2 Applicability

This document shall apply throughout Nuclear Engineering

2.1.3 Effective date

This procedure will be effective from the date of authorisation.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] 331-24: Screening of Operating Experience for Applicability and Significance.

[2] 238-131: Operating Experience Programme.

[3] 331-2 Nuclear Engineering Management Manual.

2.2.2 Informative

[4] IAEA-TECHDOC-1653: Best Practices in the Management of an Operating Experience Programme at Nuclear Power Plants

[5] WANO GL 2003-01 REV. 1: Guidelines for Operating Experience at Nuclear Power Plants

[6] INPO 12-013 REV.0: Performance Objectives and Criteria

[7] INPO 97-011: Guidelines for the Use of Operating Experience

[8] INPO 10-006 REV.4: Operating Experience Program

[9] ISO 9001 Quality Management Systems

2.3 Definitions

2.3.1 Affaire Ingénierie - EDF projects on generic problems affecting the French PWRs requiring the support of nuclear engineering experts.

2.3.2 Affaire Parc – EDF projects on generic problems affecting the French PWRs analysed by multi-disciplinary teams of experts.

2.3.3 Analyse Parc – EDF projects on generic problems experienced on the French PWRs addressed by experts from a single discipline.

2.3.4 ASN - Autorité Sûreté Nucléaire is the French regulator. Bulletins, Information Notices, Regulatory Issue Summaries, and Letters of the French ASN is available on www.asn.gouv.fr.

2.3.5 Controlled disclosure: controlled disclosure to external parties (either enforced by law or discretionary).

2.3.6 FROG – Nuclear island OEM forums for issues pertaining to the 900 MWe units built by Framatome.

2.3.7 Senior Managers- Refers to the General Managers; Specialists and Middle Managers.

2.3.8 Significant Industry Events – For NE these are limited to WANO SOER, SER and SEN.

2.3.9 SOERs –WANO- transmit recommendations based on operating experience for a significant problem area important to nuclear safety or plant reliability.

2.3.10 TRs – WANO-Topical reports are intended to communicate information from focused analyses of specific topics to promptly alert the industry to identified adverse trends.

2.3.11 US NRC - The Nuclear Regulatory Commission is an independent agency of the United States government tasked with protecting public health and safety related to nuclear energy Bulletins, Information Notices, Regulatory Issue Summaries, and Generic Letters of the NRC are prepared to identify issues of potential generic significance**.**

2.4 Abbreviations

Abbreviation	Description
AFT	EDF - Affaire Technique
AI	EDF - Affaire Ingénierie
AnP	EDF - Analyse Parc
AP	EDF - Affaire Parc
ASN	French Autorité Sûreté Nucléaire
CA	Corrective Action
CAP	Corrective Action Programme
CR	Condition Report
CTE	Technical Operational Committee (EdF)
DCC	Document Control Centre
EdF	Electricité de France
EFR	Effectiveness Review
ES	Engineering Support
ESRM	Engineering Strategic Review Meeting
E3C	Eskom/EDF Engineering Committee meeting
ETMM	Engineering Technical Management Meeting
FROG	Framatome Owners Group
IAEA	International Atomic Energy Association
INPO	Institute of Nuclear Plant Operators
IRSN	French Institut de Radioprotection et de Sûreté Nucléaire
KEG	Koeberg Event Group
KIT	Koeberg Integrated Team
NBE	Nuclear Build Engineering
NE	Nuclear Engineering
NRC	The Nuclear Regulatory Commission of the United States
OE	Operating Experience
SME	Subject Matter Expert
SSC	Systems Structures Components
TCR	Training Change Request
WANO	World Association of Nuclear Operators

2.5 Roles and Responsibilities

The KIT screens industry experience, prior to being cascaded to the entire organisation. The Engineering Support (ES) group receives and process the OE using the Nuclear Engineering guide, 331-24, Screening of Operating Experience for Applicability and Significance. The screening process is intended to identify issues that require more in-depth evaluation. During this initial evaluation, potential vulnerabilities that could result in similar events are identified and shared with the relevant NE line group.. After the detailed evaluation, corrective actions that address identified weaknesses or improvements are raised in DevonWay by the line group

Essential elements of an operating experience information flowchart are provided in appendix ***A***

2.5.1 ES Responsibilities

2.5.1.1 Receive OE from KIT. This represents OE with potential applicability on Koeberg units and EDF Affairs.

2.5.1.2 The received OE is reviewed and lead groups/persons in NE identified and allocated (typically during the KIT/EDF weekly meeting). In the case of EDF affaires, the treatment will then follow the process as described in Appendix B also see 2.5.2). However, OE that forms part of the Eskom/EDF Top 10 items will be treated at the E3C.

2.5.1.3 Agreement is obtained from the identified line group manager on a due date for the detailed evaluation of allocated OE.

2.5.1.4 ES updates DevonWay with OE evaluation due date and allocation.

2.5.1.5 For EDF Affairs, ES presents the summary to ETMM. The ETMM decides on NE lead and confirms the priority. ES updates DevonWay as required.

2.5.2 The review of EDF Affaires (i.e. Affaire Parc; Affaire Ingénierie; Analyse Parc and Affaire Technique) follows the process as outlined in Appendix B:

2.5.2.1 ES presents the affaires at ETMM (i.e. subsequent to the initial screening at KIT) for screening and subsequent assignment of lead groups.

2.5.2.2 ETMM then screens the Affaire (s) and confirms/assign a lead group. For Affaires not applicable to NE, KIT will assign to the relevant line groups. ***Note!*** Regardless of who is the owner of the affaire, the treatment follow the same process.

2.5.2.3 NE Line group/SME reviews the affaire for priority (as per appendix D of 331-24) and present the outcome to ETMM.

2.5.2.4 The Affaire document translation from French to English is performed according to the priority and arranged by NE ES

2.5.2.5 The translation is provided to the assigned Engineer/SME for initial review. During this initial review the SME will provide a realistic deadline in which to produce a Koeberg position letter

2.5.2.6 KIT or NE ES will then load the Affaire document in DevonWay as a CR type World Event (WE).

2.5.2.7 KIT or NE ES (whoever loaded the event) will then have 30 days to raise a CA for the Engineer / SME to review the Affaire document, based on a CA review date agreed by both parties.

2.5.2.8 The Engineer / SME will then perform the review of the Affaire document and load/upload the necessary Koeberg Position letter and possible CAs in order to close out the CA raised in (2.5.2.6) above.

2.5.2.9 Once the Koeberg position letter has been uploaded in DevonWay, the Affaire can be closed.

2.5.2.10 The HOD/NSA will perform the Effectiveness Review of the close-out actions.

2.5.2.11 Engineering Support will manage and ensure the integrity of the Industry OE database, track issues to completion.

2.5.3 Duties and Functions of Nuclear Engineering Line Departments/ Groups

The following are the responsibilities of the line departments/ groups:

2.5.3.1 The responsible/assigned person identified by their respective HOG/NE manager assesses the information to determine the probability and potential impact.

2.5.3.2 Identify areas for improvement in their area of responsibilities. In the case of significant industry events, establish the NE and Koeberg position, relative to the existing situation and identify improvement actions.

2.5.3.3 The responsible / assigned person presents the Eskom position and identified mitigation actions to the ETMM.

2.5.3.4 Making applicable operating experience widely available to appropriate personnel in a manner that encourages routine use, and getting the most value from it.

2.5.3.5 Integrating the information into the normal work plan, training material and/or outage programme by proposing or planning modifications, testing and inspections, or updating documentation.

2.5.3.6 Periodically reviewing how effectively, the operating experience information is used. The outcome will in turn be used to proactively identify recurring issues.

2.5.3.7 To assist with the internalisation of operating experience within the group. In this way, it will enhance the manner in which NE conducts business and the value of understanding this information.

2.5.3.8 Discussing the operating experience information with other station groups and assist with any investigation into station events, where relevant.

2.5.3.9 Identifying and sharing instances where using the OE information has helped to minimise or eliminate problems, increased performance, or improved plant safety.

2.5.3.10 Submitting the OE Master package to DCC as an official record, once the initial corrective actions have been completed.

2.6 Process for Monitoring

This process will be monitored in accordance with requirements as stipulated in KGA-053.

2.7 Related/Supporting Documents

This document is related to 331-24 and the following forms:

- 331-97: Effectiveness Review (Collective)
- 331-140: Effectiveness Review (Individual Corrective Action)

3. The Process

Methods of using operating experience within Nuclear Engineering are structured to provide applicable information to the appropriate personnel timeously, i.e. ensuring that the relevant persons receive it in time to avoid similar events happening here or to improve our systems.

3.1 Receiving OE

The OE Group in NE ES will, upon request, query the web sites, available through contractual agreements, for new items on a weekly basis for new OE items. The OE Group shall also check if an item has been previously received and processed.

If it has been received and processed, the OE Group shall liaise with the previously identified responsible person in order for them to compare the previous “Recommendations” and evaluate if further work is required for this item. If it has not been received, the OE is processed as a new item.

3.2 Screening of OE for Applicability and Urgency

Screening of OE is conducted by the NE ES OE group following the guidance provided in the Guide 331-24: Screening of Operating Experience for Applicability and Significance. Based on this initial screening, a priority for evaluation of the OE is determined.

3.3 Assigning OE to Responsible Departments

3.3.1 Assigning of a significant industry event or other OE to the appropriate Nuclear Engineering Department’s designated responsible person is done by ES after consultation and/or through the appropriate Nuclear Engineering Forum.

3.3.2 If necessary, the Chairman of the Engineering Technical Management Meeting (ETMM) can designate the responsible person. This is done when a clear owner is not apparent, or if there is a dispute as to the correct ownership.

3.3.3 The ES OE Group shall brief the relevant Manager (and responsible person if identified) on the significant industry event or OE and the identified priority and evaluation requirements.

3.3.4 An OE package shall be provided to the relevant Manager or designated responsible person, for assessment, within 30 days of its assignment to her/him. The OE package should consist of (as minimum):

- A copy of the OE or significant industry event and all associated documentation and/or a translated summary containing relevant information to assist in decision-making.
- A cover letter explaining/describing what is required.
- The OE package will be captured in DevonWay after discussion with the relevant Manager or designated person (i.e. after first presentation of OE at ETMM) to concur with ES on the following:

- Review of the OE document (s).
- Due date(s) by when the Koeberg position (i.e. identical/possible issues identified and agreed corrective action(s)) can be provided/implemented.

3.4 Evaluation of OE by Responsible/Assigned Department/Group

3.4.1 This review will be tracked as a CA. The review process must include confirmation of applicability and significance to Nuclear Engineering.

3.4.2 The appointed responsible person shall provide a written proposal of the Nuclear Engineering position with regard to the recommendations / issues covered in the OE or significant industry event, also identifying any CAs to be raised to ensure the issue is dispositioned effectively. All CAs must be captured in the CAP database, DevonWay, by the line. For OE that is not applicable to Koeberg upon review, a memo to that effect should be provided and loaded on DevonWay.

3.4.3 The appointed responsible person shall present the proposed NE position, for Affaires & SOERs, and the corrective actions to the Engineering Technical Management Meeting (ETMM) for approval.

3.4.4 In the case of significant OE related to EdF projects (AP, AI, AnP, AFT), the responsible person may request EdF, through KIT, to review the Nuclear Engineering position in cases where the position differs from the EdF position. This would mainly be where the difference to the EdF significant event is not reconcilable at the ETMM.

3.4.5 Should the initial information sourced from EdF OE not be sufficient for decision making, queries can be raised, using form 240-131963662: NE Technical Support Request Form, to obtain the required information.

3.5 Closing of Corrective Actions and Status Tracking of EDF "Affaires"

3.5.1 The appointed responsible person i.e. NE ES responsible for OE, shall monitor the closing of CAs raised for the assigned persons to review the EDF affaire documents. The CA closure should be supported by the Nuclear Engineering position, detailed evaluation and identification of any required corrective actions. A check is done to verify the new corrective actions have been opened in DevonWay.

3.5.2 All close-out evidence shall be provided to the ES in order to update the database.

3.5.3 ES OE Group is responsible for updating the database of EdF "Affaires" (AP, AI, AnP, AFT) and this includes status monitoring and updates presentations to the relevant forum.

3.6 Effectiveness Evaluation

3.6.1 Effectiveness Reviews (EFR) shall be performed by an NE Group Head and or the NSA, for significant industry events. This involves review of the evaluation, verifying appropriate close-out of the related CAs and considering the effectiveness of obtaining the intent of the significant industry event.

EFRs for significant industry events are required to be completed every 3 years. Refer to Appendices D & E.

3.6.2 When the causes of significant industry events are analysed, operating experience is routinely reviewed to determine if and why previous, lessons were not effectively learned or effectively applied

3.7 Effectiveness Review Documentation

3.7.1 As a minimum, the Effectiveness Review should document the following:

- implementation of the Corrective Actions (CAs);
- timelines for the implementation of the CA(s);
- challenges to the CA(s).

3.7.2 The results of the Effectiveness Review should be documented in *Appendices D* and *E*. The name of SME and the responsible Manager should be identified in the Appendices. Both *Appendix D* and *Appendix E* should be completed, even for one CA.

3.7.3 The EFR assignment for the corrective actions should include adequate information to provide objective evidence of completion of the corrective action(s).

3.7.4 The EFR assignment for the effectiveness review should provide objective evidence of completion of the effectiveness review. Documentation should include the corrective action implementation date, the types and number of challenges, and any similar failures.

3.7.5 The basis for the answers to the questions in *Appendix E* should be identified for an acceptable Effectiveness Review.

3.8 Training Requirements

3.8.1 High level generic OE responsibilities and training options for Nuclear Engineering staff are shown in Appendix C. NE line functions are responsible for their own training requirements and programmes.

3.8.2 The ES can assist in identifying and sourcing potential training programmes or exposure opportunities related to OE.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Anton Kotze	Chief Engineer: Nuclear Engineering
Ahmed Kamroodien	Middle Manager- Programmes Engineering
Bravance Mashele	Senior Manager-Integrated Plant Design (Koeberg)
Israel Sekoko	Middle Manager -Nuclear Analysis and Siting
Nizaam Ryland	Middle Manager -Systems Engineering
Linda Lukwe	Manager Engineering (Acting)-Engineering Support
Maxwell Msabala	Senior Manager (Acting)-Integrated Plant Design (Fleet)
Mmeli Fipaza	Senior Manager (Acting)-AHTR
Ravid Goldstein	Middle Manager -System Design Engineering
Mario Simons	Senior Engineer: ISED
Sadika Touffie	Manager - Nuclear Engineering
Ditsietsi Malale	Middle Manager (Acting)- Integrated Plant Design (Koeberg)

5. Revisions

Date	Rev.	Compiler	Remarks
December 2020	4	MM Ngoepe-Ndou	Full Review
July 2018	3	MM Ngoepe-Ndou	Updating appendices D & E.
November 2017	2	MM Ngoepe-Ndou	Full review
February 2014	1	RJ Wilczewski	Revision carried out to include required actions subsequent to IRA 1130 open by NSA on the “Affaires Parc”
August 2012	0	RJ Wilczewski	New document compiled to define the NE process for industry OE

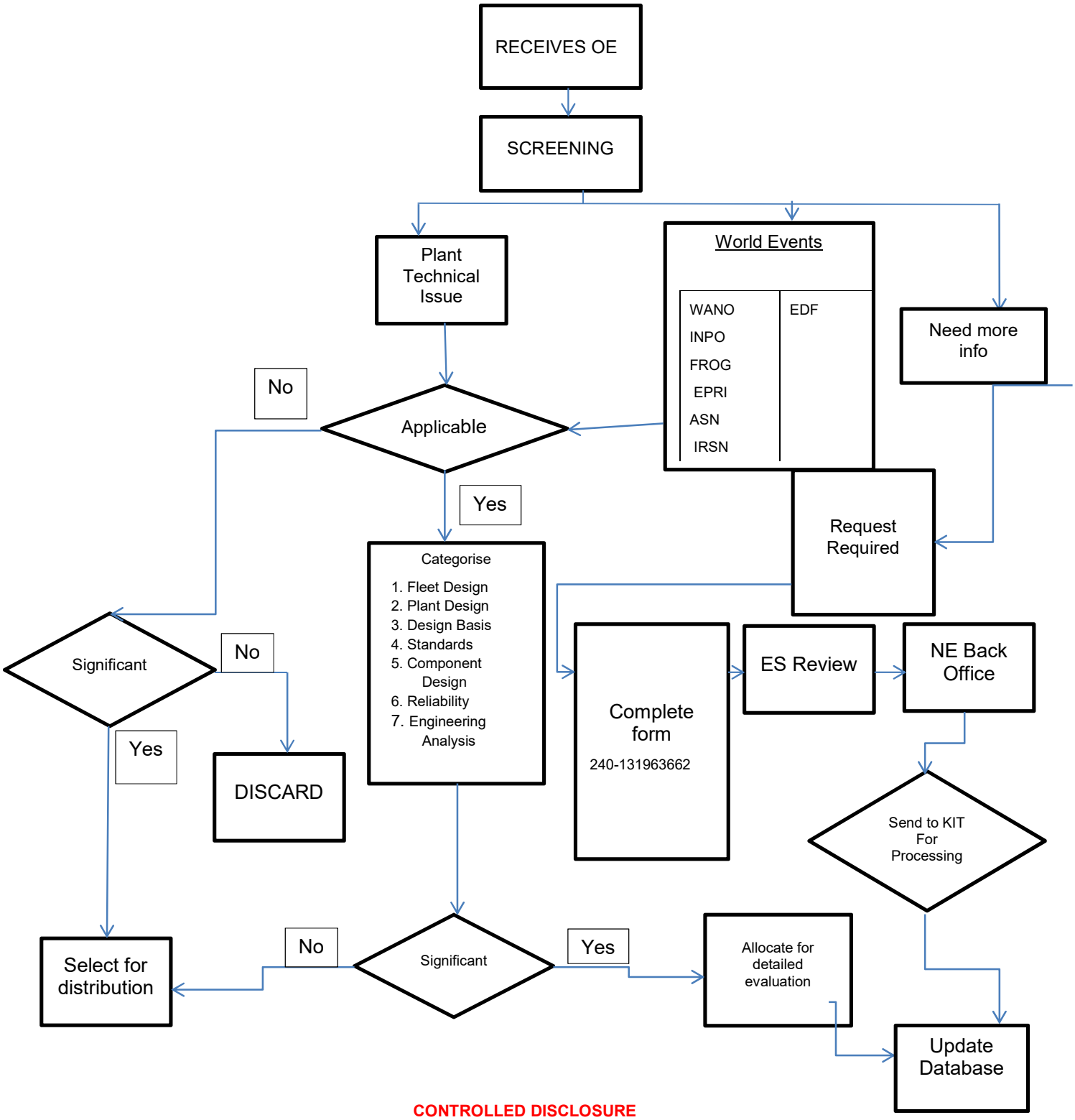
6. Development Team

- Not Applicable

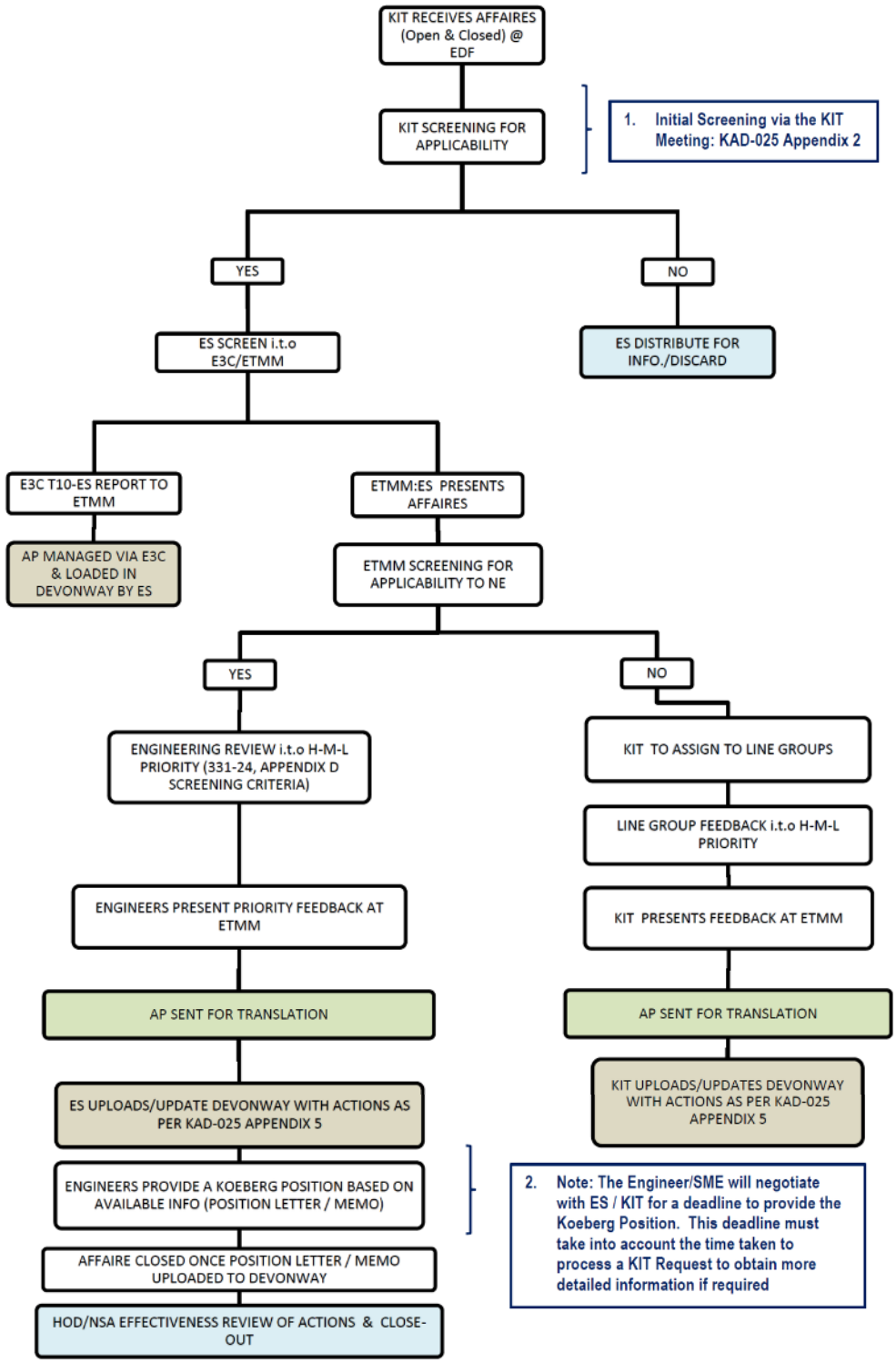
7. Acknowledgements

- Not Applicable

Appendix A: Industry Operating Experience Process Flow Chart



Appendix B : Treatment of EDF AFFAIRES



Appendix C : Operating Experience, Process Knowledge and Training Options

Positions Involved	OE Outputs & Responsibilities	OE Skills	Local Training Courses Available	International Training Courses Available	International Exposure Opportunities
Executive	• Maintain Vision • Maintain a Strong Nuclear Safety Focus	• Nuclear Safety Focus • Media Impact • Strategic Decision Making	• Executive Problem Solving	• INPO Reactor Technology for Utility Executives • Executive Seminar • Emory University-Nuclear Governance	• INPO CEO Meeting • WANO Governors Board Meeting
Top Management-E Bands and Department Managers	• Maintain a Strong Nuclear Safety Focus • Remove Barriers • Commit Resources • Give Direction • OE ownership & compliance	• Nuclear safety Focus • Communication; Spokesperson • Media Impact • Screen OE for Executives • Strategic Decision Making	• Decision Making	• INPO: Senior Nuclear Plant Management • INPO: Risk-informed Operational Decision Management	• INPO CEO Meeting • WANO Governors Board Meeting • EDF Strategic Liaison • WANO Peer Review Exit Presentations for Team Leaders
Department Managers	• Identify Beneficial Areas of High Return • Ensure Integrity of Action Plans	• Nuclear safety Focus • Production Focus • Human Performance Fundamentals • Planning & Organising • Observation Skills Training	• Performance • Problem Solving • SRO Licence • Nuclear Engineers Course • Root Cause Analysis • DevonWay User Training • Observation Skills	• INPO Professional Development for Shift Managers; Maintenance Supervisors; Engineering Supervisors; Radiation Protection & Chemistry Supervisors. • INPO Human Performance Fundamentals.	• WANO Peer Reviews

Appendix C: Operating Experience, Process Knowledge and Training Options (Continued)

Positions Involved	OE Outputs & Responsibilities	OE Skills	Local Training Courses Available	International Training Courses Available	International Exposure Opportunities
Group Managers	• Financial Control • Progress reporting • Identify Skills & Training Needs • Ensure Integrity of Information	• Nuclear Safety Focus • Technical Knowledge • Influence Decision Making • Human Performance Fundamentals • Report Writing • Planning & Organising • Delegation & Control • Negotiation	• SRO/RO Licence • Nuclear Engineers Course • Problem Solving • Root Cause Analysis • DevonWay Training • Observation Skills Training	• Not Applicable	• WANO Peer Reviews
Nuclear Engineering Personnel	• On-going Review • Team Decisions • Subject & Thematic Planning • Action Tracking & Monitoring	• Analyse Information • Review & Evaluate Reports • Root Cause Analysis • Problem Resolution • Decision Making • Facilitation • Report Writing	• Nuclear Technicians Course • RO Licence • Problem Investigation • Root Cause Analysis • Observation Skills Training • DevonWay User Training • Report Writing	• INPO Human Performance Fundamentals; High Performance Teams • Event Investigations	• Sabbaticals-Commanche Peak-EDF

Appendix D : Effectiveness Review Format – Collective Review 331-97

Eskom	Nuclear Engineering Effectiveness Review (Collective Review)	Unique Identifier: 331-97 Revision: 1 Page: 1 of 1 Associated Procedure : KAA-688 & 331-23

Effectiveness Review DevonWay No.:	CA.:	Source Document CR No.:

Total No. of Corrective Actions Evaluated:		No. of Corrective Actions Determined to be Effective:		No. of Corrective Actions Determined to be Ineffective	

Collectively, are the corrective actions effective?	YES	☐	NO	☐	New CA No.	

Provide basis for collective effectiveness of corrective actions (attach additional page(s) as necessary)

Identify required actions (if any), in addition to those actions already identified for each individual corrective action plan. These actions may include, but are not limited to:
☐ Reschedule the Effectiveness Review – Provide new Due Date:
☐ Revise the existing corrective actions to provide further clarification, direction, support, etc. (Provide detail)
☐ Other (Identify):

Comment:

Effectiveness Review Approval					
Reviewer (SME) Name:		Signature:		Date:	
Senior Manager Name:		Signature:		Date:	
CAR Chairman:		Signature:		Date:	

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Appendix E : Effectiveness Review Format – Individual Corrective Action 331-140

Eskom	Nuclear Engineering Effectiveness Review (Individual Corrective Action)	Reference No: 331-140 Revision: 1 Page: 1 of 1 Associated Procedure: KAA-688 & 331-23

Source Document CR No.: (DevonWay No. or Other Identification)		Corrective Action No. / Finding: (DevonWay No. or Other Identification)	

Description of the Corrective Action:		
Answer the following 5 questions and document applicable evidence for each question. (Attach additional page(s) as necessary).	*(Select one response for each)*	
1. Is the corrective action appropriate to prevent or minimise recurrence of the condition? (provide basis for answer here)	YES ☐	NO ☐
2. Has the corrective action been properly implemented? If so, when? (provide basis for answer here)	YES ☐	NO ☐
3. Has the timeline of the corrective action implementation been appropriate? (provide basis for answer here)	YES ☐	NO ☐
4. Has the corrective action had an opportunity to prove its effectiveness? If so, how and when? (provide basis for answer here)	YES ☐	NO ☐
5. Have there been any similar failures? If so, is recurrence rate acceptable? (provide basis for answer here)	YES ☐	NO ☐
Document the rationale used in the determination of the effectiveness of the corrective action. If Not Effective, provide a description of actions to be taken (if any). Attach additional page(s) as necessary. (Include CR No.)		

Reviewer (SME) Name:		Signature:		Date:	
Senior Manager Name:		Signature:		Date:	

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