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1.0 PURPOSE

1.1 Defines the constitution, mandate, roles, responsibilities, and administrative processes of the Plant Health Committee Strategic (PHC-S) and Production Meeting.

The PHC-S plays a central role in the plant health process by providing management governance, oversight, and support for resolution of issues affecting plant health.

PHC-S supports the rigorous and timely identification, risk assessment, prioritisation, and resolution of issues challenging plant reliability.

To establish actions for plant health issues that are not being acted on adequately by existing processes and to ensure adequate resolution.

2.0 SCOPE

2.1 This document outlines the terms of reference for the PHC Strategic Committee and Production Meeting.

3.0 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

- 3.1.1 **Bridging Strategy** A plan developed to mitigate the risk to the safe and reliable operation of the station, while an equipment issue is being resolved. Identified risk mitigation actions will be in place until the permanent resolution is implemented. Actions might involve a temporary alteration to plant, additional maintenance strategies, increased surveillance, or enhanced monitoring of the degraded condition that will be in place until the permanent resolution is implemented.
- 3.1.2 **Component Health Report** A report compiled by the Component Engineers to document the component performance and condition and to determine the component health colour rating.
- 3.1.3 **Equipment Reliability Change Request** This is an entry point for any ER change requests.

- 3.1.4 Excellence Plan A strategic document used to set direction in functional or cross-functional areas. The term stems from WANO Atlanta Centre (WANO AC) stations and is used for continuous improvement in operational performance. Excellence Plans typically include the principles found in INPO 19-003, Staying on Top Advancing a Culture of Continuous Improvement, to ensure these plans contain actions to drive sustainable improvements. Excellence plans do not have a pre-defined structure; however typically include GDAR Gaps, Drivers, Actions, Results. At Koeberg, Excellence Plans are also referred to as Business Plans or Roadmaps.
- 3.1.5 **Issue Owner** The individual responsible to make sure that an issue is acted on, who may actively participate in the work activities or may oversee the completion of work. Responsible for feedback on issues to the PHC.
- 3.1.6 **Plant Health Committee** The plant management team responsible for providing oversight on equipment reliability, plant health and plant performance. The committee establishes actions to make sure that important Plant Health Issues are acted on and resolved.
- 3.1.7 **Plant Health Committee Action** An action delegated by the PHC with due dates and responsible leads.
- 3.1.8 **Plant Health Committee Strategic Action List** A list of actions delegated by the PHC-S and maintained by the PHC-S Coordinator. See Appendix 5 and 6.
- 3.1.9 **Plant Health Issue** An issue that, if not addressed, is likely to result in reduced equipment reliability, degraded plant performance, or loss of plant availability.
- 3.1.10 **Programme Health Report** A report documenting the health of programmes.
- 3.1.11 **Single Point Vulnerability** A single component whose failure will result in an immediate automatic reactor trip, or an immediate production loss of greater than 20% power (components with an ER Classification of 'Critical', where the C1 or C2 criteria are met).
- 3.1.12 **System Health Action Plan** A plan developed by the System Engineer on the SystemIQ database in accordance with the prescribed template. This is to manage the System Health Issues and related actions that are required to improve the system health from red (unacceptable) or yellow (degraded) to white (monitor) and green (acceptable). The red and yellow system health action plans will be presented to PHC from the SystemIQ database on a prescribed basis.
- 3.1.13 **System Health Report** A periodic report compiled by the System Engineers on the SystemIQ database to document the system performance and condition and to determine the system health colour rating.

- 3.1.14 **SystemIQ Database** A web-based software application managed within Engineering and accessible to all site personnel. It is specifically for System Health Reporting, Action Plans, Walkdowns, E-logs and Operating Experience (http://kbpmas08/systemig_prod/main/main.aspx).
- 3.1.15 **Actions:**

Short-Term Action – Tasks or actions with a commitment date that must be accomplished within a short time frame within days or weeks but no longer than six months. Short-term actions will help to achieve the longer-term actions.

Medium Term Action – A list of actions that provides commitment dates to resolve plant health issues longer than 6 months but not exceeding 18 months.

Long Term Action – A list of actions that will be resolved 18 months or longer from that date the plant health Issue was raised. Actions that can generally be resolved during an outage or by following the modifications process.

- 3.2 Abbreviations
- 3.2.1 **CE** Component Engineering
- 3.2.2 **CSE** Conventional Systems Engineering
- 3.2.3 CURA Integrated Risk Management (IRM) Database
- 3.2.4 **DEC** Design Extension Condition
- 3.2.5 **EDF** Electricité de France
- 3.2.6 **EITER** Equipment Important to Emergency Response
- 3.2.7 **ER** Equipment Reliability
- 3.2.8 **ESE** Electrical Systems Engineering
- 3.2.9 **FLEX** Flexible Equipment
- 3.2.10 **IER** INPO Event Report
- 3.2.11 **IRIS** Industry Reporting and Information System (INPO Database)
- 3.2.12 **KORC** Koeberg Operations Review Committee
- 3.2.13 **KPI** Key Performance Indicator
- 3.2.14 **LCO** Limited Condition of Operation
- 3.2.15 **NCR** Non Conformance Report
- 3.2.16 **NSE** Nuclear Systems Engineering

3.2.17	ODMI - Operational Decision Making Issue
3.2.18	PHC-S - Plant Health Committee Strategic (also referred to PHC meeting)
3.2.19	POC – Programmes Oversight Committee
3.2.20	RE - Reliability Engineering
3.2.21	SDO - Short Duration Outage
3.2.22	SPV - Single Point Vulnerability
3.2.23	TAF – Temporary Alteration Form
4.0	REFERENCES
4.1	Referenced Documents
4.1.1	240-139089079, Rev 1: Programmes Oversight Committee (POC)
4.1.2	240-160324477, Rev 1: Design Extension Condition (DEC) Specifications and Surveillances
4.1.3	331-146, Rev 3: Technological Obsolescence Programme
4.1.4	335-2, Rev 5: Koeberg Nuclear Power Station Management Manual
4.1.5	EPRI 3002023780: Plant Health Committee Best Practices
4.1.6	INPO 19-002: Industry Reporting and Information System (IRIS)
4.1.7	INPO 21-002: Achieving High Levels Main Generator Turbine
4.1.8	KAA-500, Rev 14: The Process for Controlled Documents
4.1.9	KGU-011, Rev 9: Preparation of System, Structure or Component Life of Plant Plans (LOPPs)
4.1.10	KSA-011, Rev 14: The Requirements for Controlled Documents
4.2	Applicable Documents
4.2.1	240-151571634: Nuclear Operating Unit Meeting Critique Form
4.2.2	32-391: Integrated Risk Management Standard
4.2.3	331-88: Temporary Alterations to Plant, Plant Structures or Operating Parameters that affect the Design Base
4.2.4	IER L2-16-9: Level 2 INPO Event Report (IER) Integrated Risk – Healthy Technical Conscience
4.2.5	IER-L2-21-4: Response Improving Plant Reliability

4.2.6	PO&C 2019	9-1: WANO Performance Objectives and Criteria
4.2.7	INPO 10-00	05: Principles for Maintaining an Effective Technical Conscience
4.2.8	INPO 21-00	03: Achieving and sustaining high plant reliability
4.2.9	KAA-501:	Project Management Process for Koeberg Nuclear Power Station Modifications
4.2.10	KAA-688:	The Corrective Action Process
4.2.11	KAA-690:	Operability Determination
4.2.12	KAA-721:	Online Work Management Process
4.2.13	KAA-840:	Non-Conformance (NC) Process
4.2.14	KAA-846:	Protected Equipment Program
4.2.15	KAA-913:	Integrated Equipment Reliability Process
4.2.16	KAG-003:	Maintenance and Inventory Control of Emergency Management Facilities and Equipment
4.2.17	KFA-071:	Request for NCR-CA Extension
4.2.18	KGU-031:	System Health Report Guide
4.2.19	KGA-113:	Integrated Operational Risk Management
4.2.20	KGU-038:	Single Point Vulnerability (SPV) Evaluation Process
4.2.21	KSA-097:	Fire Prevention Standard for Stores and Storage Practices
4.2.22	IER L2-16-	9: Level 2 INPO Event Report (IER) Integrated Risk – Healthy Technical Conscience
4.2.23	INPO 22-00	1: Parts Quality and Availability to Support Plant Reliability
4.2.24	INPO 19-00	O3: Staying on Top – Advancing a Culture of Continuous Improvement

5.0 RESPONSIBILITIES

PHC-S plays a central role in the plant health process by providing management governance, oversight, and support for resolution of issues affecting plant health. PHC-S supports the rigorous and timely identification, risk assessment, prioritisation, and resolution of issues challenging plant reliability.

The PHC Strategic and the Production Meeting responsibilities are set out as follows:

5.1 PHC Strategic

Strategically focusses on programmes and processes and provides oversight and direction to effectively resolve long term ER Issues. The PHC-S scope may include:

- Emergent Equipment Reliability Issues: Review new Equipment Reliability
 issues that have been identified since the last meeting. (e.g. adverse trends,
 component failures that have been investigated). This should not be a
 duplication of issues discussed in the production meeting.
- PHC-S shall ratify and approve the Top ER Issues list and supply oversight and support to drive actions to resolution.
- Provides oversight on Single Point Vulnerability (SPV) Risk Management when escalated by the Programmes Oversight Committee.
- Health Reports: Reviews at least red and yellow System and Component Health Action Plan status and provides management support to restore the health of plant systems.
- Reviews equipment performance issues and significant changes that are identified in the System Life of Plant Plan.
- Reviews and ratifies production risks and bridging strategies (Integrated Risk Management/CURA Risks). Any new plant health risk should be presented at the next available PHC meeting.

This includes tracking and close out of CURA Risk controls and/or treatment tasks.

- Provides oversight and assistance to other forums in terms of nuclear safety, production risks and plant threats.
- Reviews Condition Monitoring Reports periodically and Pump Performance when adverse trends are reported.
- Ratify and provides oversight on the ER Excellence Plan.

- Provides oversight and support on risks or deficiencies associated with degraded plant support equipment, fire protection equipment and plant equipment important to emergency response.
- Provides oversight on IER L2-21-4, 'Improving Plant Reliability' NOU
 response actions with the aim to reduce equipment related noteworthy
 consequential events.

5.2 Composition of the PHC Strategic:

5.2.1 PHC Strategic shall comprise of the following Principals:

- Plant Manager (Chairman)
- Operating Manager (quorum)
- Systems Engineering Manager (quorum)
- Maintenance Manager (quorum)
- Middle Manager Engineering (ER Lead)
- Work Management
- Reliability Engineering Manager
- Supply Chain Operations Manager
- Chemistry Manager
- Nuclear Services Manager
- ISED Manager
- Production Meeting Chairman

Compulsory attendance by all Head of Departments listed above to facilitate with strategic decisions to manage and resolve known degraded equipment vulnerabilities in a timely manner.

5.2.2 Alternate PHC-S Principals

Delegation of principals is discouraged. Only persons with full delegation of authority shall form part of the meeting principals.

5.3 **Responsibilities of PHC Strategic Principals** 5.3.1 Chairman 5.3.1.1 Drive PHC-S to maintain a strategic focus. (eliminate "for information only" presentations) 5.3.1.2 Makes sure that the PHC-S meeting has the quorum requirements to ensure appropriate cross-functional review, acceptance, and challenge of PHC meeting topics and actions. 5.3.1.3 Makes sure that the relevant technical expertise is present for review of topics on the agenda. 5.3.1.4 Demonstrates intolerance to Plant Health issues. 5.3.1.5 Encourages participation and candid discussions from all PHC-S principals 5.3.1.6 Requests differing points of view during discussions. 5.3.1.7 Identifies actions, if any, for the principals based on meeting discussions. 5.3.1.8 Makes sure that each identified Plant Health issue has an assigned lead or sponsor to drive resolution of corrective actions to improve system health. 5.3.1.9 Maintains a strong emphasis on ownership, accountability, and cross-functional teamwork. 5.3.1.10 May cancel the PHC-S Meeting or may request an ad-hoc PHC-S Meeting when necessary. 5.3.1.11 Appoints a PHC-S coordinator. 5.3.2 **Principals** 5.3.2.1 Attends meetings and makes sure that the organisation is driving actions to prioritise and resolve Plant Health Issues. 5.3.2.2 Discusses the availability of plant resources and be able to commit those resources to activities identified by the PHC-S to improve equipment reliability and station availability. 5.3.2.3 Provides support and takes ownership of actions approved by PHC-S to address overall plant health recovery. 5.3.2.4 Reviews presentations made to PHC-S and determine if PHC-S action and / or follow-up is required. 5.3.2.5 Makes sure that the organisation is driving actions to select and resolve Plant Health Issues that improve both the short and long-term health of the station.

5.3.3 Systems Engineering Manager

- 5.3.3.1 In addition to the role of the Principal outlined in 5.3.2, the Systems Engineering Manager provides support to the System Engineers to complete actions to resolve the Plant Health Issues.
- 5.3.3.2 Makes sure that Plant Health Issue/Action on the System Health Action Plans are developed, maintained, and updated on the SystemIQ Database to track System Health improvement.
- 5.3.3.3 Escalate emergent and longstanding plant technical issues affecting system reliability during the extended time between system health reporting periods.

5.3.4 Work Management

- 5.3.4.1 In addition to the role of Principal outlined in 5.3.2, the Work Control Manager is to present major equipment issues to the PHC for oversight and support.
- 5.3.4.2 Provide an overview of the Work Management performance indicators for PHC oversight and proactively identify any adverse trends.

5.3.5 Reliability Engineering Manager

- 5.3.5.1 In addition to the role of Principal outlined in 5.3.2 the Reliability Engineering Manager will oversee the equipment reliability process at the station.
- 5.3.5.2 Maintains a list of unmitigated and mitigated SPVs and makes visible the SPV Risk Management for PHC-S oversight.
- 5.3.5.3 Provides support on topics relevant to the equipment reliability process.
- 5.3.5.4 Provides periodic update on the station's PM programme health.
- 5.3.5.5 Provides periodic update on the station's ER excellence plans.

5.3.6 Supply Chain Operations Manager

- 5.3.6.1 In addition to the role of Principal outlined in 5.3.2 the Supply Chain Operations Manager will provide support to resolve red and yellow systems & component strategic spares and critical spares indicators.
- 5.3.6.2 Provides support to resolve long outstanding spares issues, in particular those related to Top ER Issues, non-conformances (NC), temporary alterations (TAFs), equivalencies and obsolescence to improve plant health.
- 5.3.6.3 Provide overview of high-risk spares on a periodic basis.

5.3.7 Maintenance Manager

- 5.3.7.1 In addition to the role of Principal outlined in 5.3.2, the Maintenance Manager will provide input on maintenance aspects of all Plant Health Issues presented at PHC-S.
- 5.3.7.2 Reports back on delayed execution of work for priority issues.
- 5.3.7.3 Discusses the availability of plant resources and be able to commit those resources to activities identified by the PHC-S to improve equipment reliability and plant availability.

5.3.8 Operating Manager

- 5.3.8.1 In addition to the role of a Principal outlined in 5.3.2, the Production Manager remains vigilant on plant issues that may risk safe operation of the plant and threatens the site licence requirements.
- 5.3.8.2 Makes sure that the decisions made in PHC-S comply with all the operating requirements of the site nuclear licence and Operating Technical Specifications.
- 5.3.8.3 Raises emergent issues that were not adequately resolved in the Production meeting to PHC for oversight and overall support to drive corrective actions.
- 5.3.8.4 Reports on the Ops burdens affecting the operational focus indicators and corrective actions required to progress recovery.

5.3.9 ISED Manager

- 5.3.9.1 In addition to the role of a Principal outlined in 5.3.2, the ISED Manager will provide oversight on nuclear safety aspects of all Plant Health Issues presented at PHC-S.
- 5.3.9.2 Remains vigilant on high level potential nuclear safety aspects and reports these to PHC-S.

5.3.10 Middle Manager Engineering (ER Lead)

- 5.3.10.1 In addition to the role of a Principal outlined in 5.3.2, the Programmes Oversight Committee Chairman will oversee the Programme Oversight Committee (POC) (a sub-committee of PHC-S) and will provide management oversight of existing, future and under-developing programmes.
- 5.3.10.2 Provides periodic feedback to PHC-S on the Programme Oversight Committee (POC) matters and elevate issues such as red and yellow Programme Health Reports that require PHC-S oversight.
- 5.3.10.3 Informs the meeting of Obsolescence related issues that require PHC-S oversight.

5.3.11 Production Meeting Chairman

5.3.11.1 In addition to the role of a Principal outlined in 5.3.2, the Production Meeting Chairman will elevate medium term plant health issues that cannot be resolved at the weekly Production meeting.

5.3.12 Chemistry Manager

- 5.3.12.1 In addition to the role of Principal outlined in 5.3.2, the Chemistry Manager will provide input on Chemistry aspects of all Plant Health issues presented at PHC-S.
- 5.3.12.2 Informs the meeting of Chemistry Performance Index challenges and any other challenges related to control of chemistry in the plant.
- 5.3.12.3 Highlight high risk issues in the chemistry plant areas that may affect nuclear safety and safe operation of the plant.

5.3.13 Nuclear Services Manager

- 5.3.13.1 In addition to the role of Principal outlined in 5.3.2, the Nuclear Services

 Manager will provide input on Nuclear Emergency Preparedness aspects related to emergency equipment reliability.
- 5.3.13.2 Informs the meeting of high-risk issues on water performance management.
- 5.3.13.3 Informs the meeting of reliability issues that are escalated by the Fire Forum.

5.3.14 PHC Strategic Coordinator

- 5.3.14.1 Establishes and maintains an auditable process on PHC Strategic Meeting activities by the use of meeting agendas, attendance lists, meeting minutes and action lists.
- 5.3.14.2 Arranges the PHC Strategic Meetings according to the agreed schedule (or adhoc) and communicates the meeting agenda, previous meeting minutes, PHC-S action list to all attendees before the meeting.
- 5.3.14.3 Records minutes of the PHC Strategic Meetings and documents the decisions made and actions assigned. Actions are to be included on the PHC-S Action List.
- 5.3.14.4 Informs relevant personnel of decisions taken by the PHC-S and in particular, decisions that require action.
- 5.3.14.5 Organises PHC-S self-assessments once per year or as directed by the PHC Chairman.
- 5.3.14.6 Manages topic scheduling according to PHC-S requirements. See Appendix 1

- 5.3.14.7 Liaises with the other station meeting coordinators (e.g. KORC) where required to make sure that actions relevant to the PHC-S are completed.
- 5.3.14.8 Maintains the agenda matrix (including Top ER Issues), attendance register, meeting critique form and PHC-S effectiveness indicator.
- 5.3.14.9 Distribute minutes of the previous meeting, agenda and action list in advance.
- 5.3.14.10 Informs Production Meeting of high probability events (Likelihood D & E) from CURA risks endorsed at PHC-S. This should additionally be included in the Agenda. The intent is for Production Meeting to provide short- and medium-term oversight on the control tasks.

5.4 Production Meeting

Act as a sub-committee of PHC Strategic to focus on short- and medium-term plant issues that impact on the safe and reliable operation of the plant.

Focus on timeous resolution of short-term high probability events that may originate from CURA risks or various other sources.

5.4.1 Composition of the Production Meeting:

Production Meeting shall comprise of the following:

The Plant Manager appoints the Production Meeting Chairman in writing.

- Operating Support Manager (chair)
- Work Control Manager (quorum)
- Duty Work Controller
- Mechanical Maintenance Services Manager (quorum)
- Electrical Maintenance Services Manager (quorum)
- Instrumentation Maintenance Services Manager (quorum)
- Nuclear Engineering Design & Specification (as required)
- Systems Engineering Manager (who represents CE, CSE, ESE and NSE) (quorum)
- Programme Engineering (RE & MRG) as required
- Procurement (quorum)
- Nuclear Projects Manager as required
- Safety Engineer (quorum)
- Chemistry Manager (quorum)

5.4.2 **Responsibilities of Production Meeting Chairman** 5.4.2.1 Chairs the Production Meeting meetings. 5.4.2.2 Ensures that quorum is established at all meetings. 5.4.2.3 Ensures that the focus of the meeting is to resolve short to medium term ER challenges. 5.4.2.4 Informs PHC-S of any significant unresolved ER Issue that may require PHC-S oversight. 5.4.2.5 Escalate issues that have not been resolved in the medium term for consideration for the top ER issues list and PHC-S oversight. 5.4.2.6 Drive resolution of the Production Meeting Focus Indicators. 5.4.2.7 Promotes ownership by creating an environment that fosters and encourages workers and supervisors to take responsibility for and pride in plant reliability. 5.4.2.8 Drives and enforces ownership and accountability in respect of adhering to action commitments and due dates. 5.4.3 **Responsibilities of Production Meeting Members** 5.4.3.1 Ensure the safe and reliable operation of the units by overseeing the scheduled activities and resolve short to medium term plant issues, emergent risk whilst maintaining operational focus. 5.4.3.2 Reviews Equipment Reliability challenges that have been identified by the Prioritisation Meeting but may require increased oversight and support (Production Meeting Action list). 5.4.3.3 Reviews emergent ER challenges that have been identified. (Top ER Issues) 5.4.3.4 Reviews operational deviations with specific emphasis on eliminating and mitigating the risk due to operator work arounds, operator burdens, control room deficiencies, control room defective alarms and fire impairment plans (see Appendix 3). 5.4.3.5 Review Potential Non-Compliance (work activity that has exceeded 50% of its Grace period) to the Preventive Maintenance requirements. 5.4.3.6 Provides oversight on ODMIs. 5.4.3.7 Challenge each other and enforce accountability of adhering to resolution of actions and due dates.

6.0 PROCEDURE

6.1 Plant Health Committee Meetings

6.1.1 Frequency of Meetings (relevant to both PHC-S and Production Meeting)

- 6.1.1.1 The frequency of the Meetings will align with the station calendar.
 - PHC-S: a minimum of 12 meeting per annum will be considered as target met.
 - Production Meeting: occurs weekly. Short- and medium-term issues are reviewed and addressed on a weekly basis.
- 6.1.1.2 Ad-hoc meetings can be scheduled for production risk/strategic issues requiring urgent attention. The standard agenda items will be waived for ad-hoc meetings.
- 6.1.1.3 Meetings will take place during outages and SDOs unless otherwise instructed by the relevant Committee Chairman.

6.1.2 Principals, Members and Quorum

- 6.1.2.1 The Power Station Manager appoints in writing the PHC-S Chairman and includes the roles and responsibilities of the Chairman.
- 6.1.2.2 The PHC-S principals are listed in section 5.3.2 and anyone fulfilling those roles has the responsibility of the PHC-S principals.
- 6.1.2.3 The quorum requirements may be waived during outages, SDOs and ad-hoc meetings at the discretion of the relevant Committee Chairman.
- 6.1.2.4 It is expected that all principals attend the PHC-S Meetings when on site.

 Attendance by an alternate when Principals are available for quorum is discouraged and is **not** consistent with achieving the purpose of the PHC-S Meetings. The PHC-S Chairman shall determine whether a meeting can proceed if an alternate is present for Principal.
 - Other plant or corporate personnel may attend PHC-S and Production meetings at the request of the relevant meeting Chairman.
- 6.1.2.5 In the event that quorum is not met, any decisions taken at the meeting need to be ratified at the next meeting where there is quorum. This will take the form of a review of the previous meeting minutes, decisions and actions and acceptance by the relevant Chairman.
- 6.1.2.6 Complete reading the relevant list in accordance with Appendix 2 (The reader must certify by signature that the latest revision of the applicable procedure was read)

6.1.3 Attendance (relevant to both PHC-S and Production Meeting)

- 6.1.3.1 When the PHC-S Chairman is unavailable, the PHC-S Chairman role may be delegated to the Operating Manager or the Engineering Manager.
- 6.1.3.2 When the Production Meeting Chairman is unavailable, the Production Meeting Chairman role will be fulfilled by the Operations Support Manager.
- 6.1.3.3 Other plant or corporate personnel may attend a PHC-S meeting at the request of the PHC Chairman.
- 6.1.3.4 Presenters should be accompanied by the line manager for support.

6.1.4 Agenda

6.1.4.1 The meeting agenda is established based on plant specific needs and it also includes items for resolution of Plant Health Issues or other topics that require special plant management attention as determined by the PHC-S Principals.

NOTE: PHC-S Meeting Agenda (Example) as per Appendix 3.

- 6.1.4.2 Each presentation to the PHC Strategic should include a slide/section with the following information:
 - a) Reason for presenting to the PHC-S (clear concise purpose)
 - b) PHC-S support required

6.2 PHC Tools

6.2.1 PHC Action List

- 6.2.1.1 Actions assigned by the PHC-S should be treated with the appropriate priority.
- 6.2.1.2 Each action shall have a clear description, responsible lead and due date.
- 6.2.1.3 Actions may only be removed from the Action List once the PHC-S agrees that the action has been adequately concluded. (Applicable to both PHC-S and Production Meeting).
- 6.2.1.4 The PHC-S coordinator maintains the open items Action List and maintains a list of closed actions for record purposes. See Appendix 5 is specific to PHC-S.
- The Production meeting issues are tracked on the Daily Plant Status Report updated by the Operating Shift Manager or delegate.

6.2.2 Plant Health Key Performance Indicators (KPIs)

Plant Health KPIs are indicated on the PHC-S Agenda and updated on a monthly basis, (see Appendix 3). The KPIs are established by the meeting and are subject to change.

- 6.2.2.1 Performance Indicators, trending and monitoring of recovery plans:
 - Equipment Related Noteworthy Consequential Events (IRIS)
 - Unmitigated Single Point Vulnerabilities (SPV) (PIC
 - System health performance
 - CURA risks (Production Domain)
 - NCRs
 - TAFs (PIC)

NOTE: For Operational Focus Indicators see Appendix 4.

6.3 Criteria for Escalation of ER Issues:

Production Meeting to PHC-S

- When ER Issues are of a Strategic nature.
- When trends have developed on SSCs emerging from chronic issues hindering plant performance.
- Unique organisational challenges impacting plant availability and reliability.

6.4 PHC-S Organisational Effectiveness

- 6.4.1 A minimum of 12 PHC-S meetings per annum will be considered as target met.
- 6.4.2 PHC-S effectiveness will be measured on commitments versus time taken to RESOLVE issue actions.

The commitment list will be referred to as the 'Top Equipment Reliability (ER) Issues Tracking List'. (See Appendix 6 for guidelines to be followed to select Top ER Issues).

7.0 RECORDS

- 7.1 No records requiring storage in the documentation centre (TD&RM) are generated by this procedure.
- 7.2 PHC Strategic Agendas, Minutes and Actions Lists will be kept in the folder; G:\Koeberg\Plant Engineering\Reliability Engineering\PHC Strategic Meeting, updated by the PHC-S coordinator.
- 7.3 Production Meeting Issues List will be kept for a period of 3 months in the folder; G:\Koeberg\Operating\OPS DAILY REPORT\Daily Communication Pack Archive updated by the Operating Manager or delegate.
- 7.4 Meeting critique form (240-151571634) will be completed to record, review, and trend the Production Meeting and PHC-S observations.

8.0 ATTACHMENTS

- Appendix 1 Work Flow Responsibility Matrix PHC Strategic Function
- Appendix 2 Reading List
- Appendix 3 PHC Strategic Meeting Agenda (Example)
- Appendix 4 Operational Focus Indicators (Example)
- Appendix 5 PHC Strategic Action List (Example)
- Appendix 6 Top Equipment Reliability (ER) Issues Tracking List (Example)
- Appendix 7 Plant Health Issues To Consider For PHC-S
- Appendix 8 Top Equipment Reliability Issues Selection Criteria
- Appendix 9 Justification

WORK FLOW RESPONS	SIBILIT	Y MA	TRIX				Α	PPEN	DIX 1	– PHO	STR	ATEG	IC FUNCTION
				OR	GANI	SATIC	N/FL	JNCTI	ON				
R - Responsible A - Approve F - File	PHC STRATEGIC COODINATOR	PRESENTERS / MANAGERS	PHC STRATEGIC CHAIRMAN	PRINCIPALS									NOTES & REFERENCES
ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	
PLANNING & ORGANISING OF MEETINGS	-		-	-	-	-	-	-	-				
Determines routine & ad-hoc meetings.	(S)—		– [R] 										See 5.3.1
Determines the agenda for each meeting.	[R] _		— (I)										
Collates & distribute pre-reading material.	↓ [R]−	—(I)—	— [I]—	—(I)									
1.4 Coordinates quorum of members.	(I)—		- [Ř]–	-(C)									
Ensures the subject matter experts and support persons are in attendance.		(S)											
2. CONDUCTING A PHC MEETING													
2.1 Establish quorum.			[R]										See 5.3.1.2
2.2 The agenda of the meeting is followed.			↓ [R]										
2.3 Records the meeting. Capture all proposals, acceptances, justifications, and rejections of the meeting.	[R]												
2.4 Identify actions for committee members / dept. sponsor / individual.	(S)-	-(C)-	↓ - [R]-	-(C)									
Capture actions and tracking of actions and administer close-out.	[R]												
Stores electronic copies of minutes & supporting documents.	[R]												
Collates feedback to KORC or other Station meetings as applicable.	[R] -		(C)										
3. FACILITATES THE APPOINTMENT OF PRINCIPALS													
3.1 Identifies the need for new appointments.	(S)—		↓ _[R]–	—(I)									
3.2 Facilitates appointment letters as applicable	[R]												

READING LIST

(This list is a guideline. Please ensure that the latest version of procedures is in force)

DOCUMENT NUM	BER	PHC-S
32-391	Integrated Risk Management Standard	х
331-88	Temporary Alterations to Plant	x
KAA-501	Project Management Process for Koeberg Nuclear Power Station Modifications	x
KAA-688	Corrective Action Process	х
KAA-690	Operability Determinations	x
KAA-721	Online Work Management Process	х
KAA-771	Outage Scope Control Process	х
KAA-826	Plant Health Committee (PHC) Constitution	х
KAA-840	Non-Conformance (NC) Process	x
KAA-846	Protected Equipment Program	х
KAA-913	Integrated Equipment Reliability Process	Х
KAG-003	Maintenance And Inventory Control of Emergency Management Facilities and Equipment	Х
KGU-031	System Health Reporting Guide	x
KGA-113	Integrated Operational Risk Management	х
KGU-038	Single Point Vulnerabilities (SPV) Evaluation Process	X
KSA-126	Control of Statutory and Non-Statutory Work Activities	X
KSA-097	Fire Prevention Standard for Stores and Storage Practices	X
KFA-071	Request for NCR-CA Extension	Х
IER L2-16-9	Level 2 INPO Event Report (IER) Integrated Risk – Healthy Technical Conscience	Х
INPO 21-003	Achieving and Sustaining High Plant Reliability	х
IER-L2-21-4	Response Improving Plant Reliability	Х
INPO 22-002	Achieving High Levels Main Generator Turbine Reliability	Х
INPO 22-001	Parts Quality and Availability to Support Plant Reliability	х
INPO 19-003	Staying on Top – Advancing a Culture of Continuous Improvement	Х
PO&C 2019-1	WANO Performance Objectives and Criteria	Х

I certify that I have completed the PHC-S / Production Meeting reading list/s

Name:	Date:
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PHC STRATEGIC MEETING AGENDA (EXAMPLE)

NOTICE OF THE PHC-S MEETING No.1/2023 TO BE HELD ON THURSDAY, 2 February 2023 FROM 10h15 – 12h00 in the MAB Nuclear Executive Boardroom

SHR 2022 Q3			,	otal #days open) days on 01/02/23	CURA Risks		FLR 12 MMA		No. of TAFs		C (mon		NIs
	Red	Yellow	Blue	<10000	RISKS				(monthly)				
U1	2	5	Green	<25000	Lvl 1	1	U1	1.47	U1	11	U1	1	3
U2	3	3	Yellow	<50000	Lvl 2	29	U2	18.89	U2	7	U2	1	
U9	2	4	Red	>50000			Station	7.06	U0/6/9	3			

Operational Focus (31-Jan-2023)	Unit 1 on outage	Unit 2	Unit 9
Operator Workarounds (OW)		0	0
Operator Burdens (OB)		3	2
Control Room Deficiencies (CRD)		4	0
Control Room alarms Sustained – Not state or testing (AA)		2	4
Fire Impairment Plans (FIP)		0	0
Reactivity Management (RMAG)		97.4	-

LEADERSHIP EXCELLENCE BEHAVIOURS			
Attribute	Description		
Be punctual	Urgency – do what we say we are going to do, on time.		
Be prepared	Do not disempower but understand the details		
Be engaged	Talk to and engage with our staff		
Be critical	Do not tolerate deviations from standards and expectations		
Be accountable	Own all elements of our business by not making excuses		

Be accor	Untable Own all elements of our business by not making excuses	Time	Sponsor /
NO.	SUBJECT	10h15-10h23	Presenter
1.	Opening:	3	V Paul
	1.1 Welcome		
	1.2 Apologies and quorum		
	1.3 Adoption of the Agenda		
2.	Safety Message, Critique	2	S Van Wyk
	Timekeeper	1	V Gajoo
3.	Declaration of Interest	1	All
4.	Verification of minutes of previous meeting/s		All
4.1	Minutes of Meeting No. 1/2023 held on [19-Jan-2023]	3	All
5.	Action items from previous minutes	10h25-10h45	
5.1	Chronic System: Progress feedback on the Contract placement of 9XCA Degraded Boiler Stack	20	G Patiwe
6.	Matters for approval	10h45-11h15	
6.1	Yellow SHR: Intake Basin recover plan action	30	E Petersen
7.	Matters for information/Noting	11h15-11h55	
7.1	Operational Feedback:	15	M Vuba
	 To elevate any operational focus issues that requires cross- functional support / PHC-S support 		
	To elevate issues arising from the weekly Production Meeting		
8.	Attachment:	25	Various
	CURA Risks Look-Ahead		
9.	Closure / Critique	11h55-12h00	

APPENDIX 4 OPERATIONAL FOCUS INDICATORS (EXAMPLE)

			OPERATOR DEV	IATIONS			
			Operational F	ocus			
Indicator		Blue	Green	Yellow		Red	Current
Operator Workarounds (OW)		0	1	2		≥ 3	0
Operator Burdens (OB)		2	3	4		≥ 5	2
Control Room Deficiencies (CRD)		0 - 4	5 - 10	11 - 14		≥ 15	0
(Not state, tes	n alarms sustained - sting or PTW) (AA)	0 - 1	2 - 3	4		≥ 5	5
	ent Plans (FIP)	0	1	2	≥3		0
Operability De Operational D Issue (ODMI)	eterminations (OD) Decision-Making						1
CURRENT O	PERABILITY DETEI	RMINATION STATUS	(KAA 690)				
Date	Trigram	Comments			Туре	Resolution Date	Lead
		CURREN	T AUTHORISED OPE	EN ODMI'S (KAA-	-839)		
Date	Trigram		Comments		Туре	Resolution Date	Lead
2019-11-26	9REA001/2BA	9REA001BA and 9R	EA002BA Oxygen ab	ove KNC-001	ODMI	2023-03-31	NSE
CONTROL R	OOM ALARMS SUS	STAINED (Common Pa	anel) - Not due to pla	ent state or testin	ıa .		
Date	AA	Descr		Resolution	Type	Lead	Resolution Date
2021-09-03	9TEG507AA	High oxygen concentration or analyser fault - unable to reset the alarm - Link to		Repair	AA	IMS	2023-01-31
2023-01-23	9LNF001AA	501MG - SPARES Insulation Fault sustained. Defect 26338366		Repair	AA	EM9	2023-02-02
2022-05-13	9RRB720AA	On 9RRB700AR fault lamp "501AR Fuse Fail" is lit.		Repair	AA	EMS	2023-03-01
2019-04-04	9RRB830AA			Repair	AA	EMS	2023-03-01
2023-01-19	9SED001AA	9SED003SN PTW	W Repair		AA		
DEFECTIVE	CONTROL DOGG	IOTPUMENTATION OF					
	_	NSTRUMENTATION (<u> </u>	I D 1 11	T =	1	In 10 5 :
Date	Component	Descr	iption	Resolution	Туре	Lead	Resolution Date
		TAINED (NAB Contro					
Date	AA	Description		Resolution	Туре	Lead	Resolution Date
2021-09-03	9TEG504AA	9TEG506AA - High oxygen concentration - unable to reset the alarm - link to Proc fb		Repair	N/A	IMS	2023-01-31
DEFECT: (T	CONTROL DOGG	HOTPHINENT ATION (IAD Ot I D				
	1	NSTRUMENTATION (I	•	Decelor.	т.	114	Decelotic D. (
Date	Component	Descr	iption	Resolution	Туре	Lead	Resolution Date
		<u> </u>					<u> </u>

PHC STRATEGIC ACTION LIST (EXAMPLE)

The PHC-S coordinator maintains the open items Action List and maintains a list of closed actions for record purposes.

PHC STRATEGIC OPEN ACTIONS							
Category	Date Raised	Description	Feedback	Principal Lead	Feedback Date		
Chronic / Long	2018	9XCA – Degraded Boiler Stack Status /	2-Mar-2022 Status of Contract: Contact was not yet placed. Waiting on response from the Deviations Committee to give direction on the indemnity clauses. There has been no contract placed yet.	G Patiwe/S Fisa	Every meeting		
standing issues		yellow SHR	20-Apr - Degraded and Risk to production /personnel safety. NCR was extended to Oct 2023	A Kamroodien/C Gribble	3-monthly		
Chronic / Long standing issues	2018	Waste Systems / yellow SHR	16-Feb Various defects; Kobus Mostert was requested to get a group together that consists of WM, Ops and MEX to get commitment to a recovery plan to resolution.	N Ryland	30-Mar-23		
Top ER Issue	2018	DEG Chiller Mod	Mod completion date of 30-Mar is at risk due to resources that were removed by Contractor. Feedback was provided in Aug 2022; due to the many challenges the final commissioning, training and handover of the DEG Chiller mod was postponed to 30-Sept-2022. The chair encouraged the lead to make every effort to meet the date of 30 Sept. All chillers completed. Maintenance training and PM strategies must still be completed. PM strategies and SAP Imp oversight by Production Meeting. Top ER issues is kept open until it is Retired at PHC-S	J Sauermann	28-Feb-23		
Top ER Issue	2019	Weather Station	17-Aug-22 Updated presentation was done on 17-Aug-2022 on the structural analysis and Engineering position to replace the Met Tower. See minutes. Revised CURA risk presented on 17Nov that included the New Met Mast for resolution Dec 2024.	A Maumela	01-Mar-23		
Top ER Issue	2018	EPP Severely degraded material condition / yellow SHR	Track CURA Risk actions in every PHC-S meeting	N Ryland	30-Jul-23		
Top ER Issue	2018	Cranes / red SHR	20-Apr Resolution of defects on Cask lifting crane – Jul-22, Polar Crane O126. Polar, Gantry, Turbine Hall and CRF Cranes are operable with open defects. Long term health of Cranes 20-Jul-22 – update was provided on the Cranes and the due date of 31 July was extended to Nov-2022 on some of the cranes. See minutes.	S Fisa	30-Apr-23		
Operational Focus	Apr-22	KPIs	Review the performance measure of the OONs and TOIs.	N Middleton/ M Vuba	30-Mar-23		

TOP EQUIPMENT RELIABILITY (ER) ISSUES TRACKING LIST (EXAMPLE)

(₽ Eskom								
Station Equipment Reliability (ER)								
Performance Monitoring-Top ER Issues								
Description	Trigramme	CURA Risk Level	System Health Colour	Lead	Resolution Date			
Recurring breakdowns of major solid waste system (TES) components breakdown (E.g. mixer, 9 TES 001 EG). The mixer is performing and being monitored. The design of Mod# 1717TES will be completed in June 2023	9 TES	N/A	White (Monitor)	L Nomnganga	2023-12-30			
Recurring tripping of TEU evaporators due to high conductivity and clogged reference columns. The delays in waste treatment due to frequent maintenance results in reduced waste holding capacity. The long term resolution is replacement of the evaporator under Mod09086TEU	9 TEU	III	Yellow (Degraded)	L Nomnganga	2025-12-30			
Nuclear island chilled water system (DEG) chiller trips (unavailability) and rapid use of R-11 stockpile. Installiation of DEG chiller modification have been completed. Awaiting final completion of all PM Strategies, Maintenance training and final hand over.	1/2 DEG	II	White (Monitor)	J Sauermann	2022-01-30			
JPD/JPP Seam weld leaks on fire system piping. CR 117010 to address high and medium risk spool pieces	1/2 JPP/JPD	II	White (Monitor)	L Magatya	2023-08-30			
Failure of Rotork actuators, leading to loss of production or incurrence of fallback LCOs, co Operated Valves (MOVs)	aused by unavail	ability of Rotork	actuator spares, which	poses a risk to reliability	of Motor			
Equivalency request (25540768 for type 30AB and 25540764 for type 7/11AB) was raised for Specification Engineering for possible replacement actuator.	Various	II	N/A	R Kannemeyer	2023-02-28			
PO 4503057300 (PR 1074553660) was placed for procurement of 103 nuclear actuators, only for one unit that has arrived on site. This action is complete.	Various	II	N/A	V Gajoo	Completed			
PR 1074556502 was raised for procurement of 101 nuclear actuators, for the other unit, order to be placed after the Procurement Tender Committee approval	Various	II	N/A	V Gajoo / S Fisa	2023-02-28			
Overhaul actuators in Outages x26, various notifications have been raised on SAP and waiting for spares for execution	Various	II	N/A	S Fisa	2023-12-31			
Emergency Diesel Generators - system reliability challenged by obsolete spares								
Emergency Diesel Generators - system reliability challenged by obsolete spares. Equivalency 2462	2 1/2 LHj	Ш	White (Monitor)	R Kannemeyer	2023-02-28			
Emergency diesel generator inoperability, caused by prematurely degraded radiators, as a result of no spares (General Electric exit as technical consultant and spare parts supplier) resulting in inoperability and possible unit shutdown.	1/2LHP, 2LHQ, 9LHS	II	White (Monitor)	L Nomnganga	2023-12-31			
Control & Instrumentation Aging and Obsolescence								
Repeated postponement of obsolete generator and power transmission protection system (GPA) protection replacement (CR 112327 - Modification 04030)	1/2GPA	II	Yellow (Degraded)	S Phemba	2024-12-31			
KRG control Bailey 9020 modules renewal: Many modules have already been renewed. The rest will be renewed in outages X25. [86 in O-124]. Unit 1 is on track the team has completed 90% of all replacement. The other 10 % of the spares is still to be delivered and will be completed in Outage 126. Unit 2 is 91.4 %. The ER issue will be closed out after O226.	1/2 KRG	IV	White (Monitor)	S Fisa	2023-12-30 (O226)			

Notes:

Additional information that may be included:

- How well is the cause understood?
- Include whether an action is a control or treatment task.

PLANT HEALTH ISSUES TO CONSIDER FOR PHC-S

Equipment Reliability issues presented to the PHC for review and tracking may be derived from, but are not limited to, the following sources:

Monthly Agenda Topics for Discussions

- Production Meeting and Operational Focus overview
- Work Control KPIs overview
- PHC-S KPI overview
- Review 2-3 Top ER Issues
- New CURA Risks

Periodic Agenda Topics for Discussion

- System Health/Component Health & Reliability issues
- CURA Risk Review and close out of control tasks/treatment tasks
- Programmes Oversight Committee (POC) feedback; PH Reports, Obsolescence Working Group, Steam Generator Programme, Unmitigated SPVs
- LOPPs
- Obsolescence Issues
- Work Management MESSO Plan
- Chemistry Health Non-Conformances (overview and/or outage readiness)
- TAFs
- Feedback on high-risk spares
- Nuclear Safety Engineer Deviation Trend Report

Agenda Topics for Discussion at the Production Meeting

- Plant / Unit Status and risk to production
- KPIs for Operator deviations
- Safety Engineer concerns
- · Adverse trends on Chemistry
- Review of Major components out of service
- Short- and medium-term actions resolution
- Chemistry

TOP EQUIPMENT RELIABILITY ISSUES SELECTION CRITERIA

Identification of Top ER Issues

These guidelines are to be followed when selecting items for the Top ER Issues list. This list is often called Top 10 Issues within Industry; however, it was changed to Top ER Issues at Koeberg since there are not always 10:

- Issues should focus on plant concerns of a technical nature with emphasis on those issues affecting the reliability of critical systems, structures, and components (SSCs). This should include:
 - SSCs impacting or that could potentially impact on the availability of safety systems (core damage frequency contribution could be used as an input)
 - Issues that could potentially jeopardize the safe operation of the units (nuclear and/or plant safety)
 - Existing equipment reliability challenges (e.g. degraded material condition, spares obsolescence, etc.)
 - Operator concerns (including low operator confidence)
 - SSCs with a significant impact on station resources (e.g. maintenance, spares, high cost interventions)
 - Regulatory requirements
 - SSCs that have or could potentially impact plant production (UCLF / UCLF Risk / Outage delays)
 - SSCs that cause unplanned or frequent entries into LCOs
 - SSCs with unmitigated single failure vulnerabilities, e.g. SPV.
 - SSCs with long standing ER problems that have not been resolved
- Issues that are considered are those that require increased station focus / alignment to ensure the issue is fully understood and plans are in place to achieve full resolution in a timely manner.
- 3. Issues need to be specific and not merely general (e.g. should not just be "improve overall system reliability").
- 4. Items should not be programmatic or administrative in nature (e.g. should not be "improve the stations ability to identify obsolescence concerns").
- The aim should be that issues are resolved within two fuel cycles, for outage related resolution (to align with the outage philosophy), or within 18 months for online related resolution.
- Items not selected for the Top ER Issues may be considered for the Production Meeting issues list.

APPENDIX 8 (continued)

TOP EQUIPMENT RELIABILITY ISSUES SELECTION CRITERIA

NOTES

- An issue that already has planned Work Orders scheduled for a particular work week or outage, with minimal risk of not being completed as scheduled, would not be considered a candidate for the Top ER Issues.
- An issue that is being dealt with through a long-term project or modification, with minimal risk of not being completed as scheduled, is not considered a candidate for the Top ER Issues.
- Programmatic, Strategic and Long-term items need to be included in the Nuclear Technical Plan (NTP).

Top ER Issues Resolution

The following guidelines are to assist in the resolution of Top ER Issues:

- 1. The Plant Manager will ensure that each identified Top ER issue has an assigned lead.
- The lead will be responsible for assembling a team if necessary and developing
 the action plan to resolve the issues. All groups needed for a comprehensive and
 timely resolution of the issue must be represented (e.g. maintenance, operating
 and engineering).
- 3. Where the issue is included on the System Health Action Plan on a Red or Yellow system, this action plan can also be the Top ER issue resolution action plan.
- 4. Completion of major milestones should be communicated to management at the PHC-S with the expectation that this information be further communicated to relevant station personnel.
- 5. The action plan should be a working document (i.e. maintained current) with ongoing progress and, at a minimum should be updated monthly or when significant changes in status occur. As a guideline to quality and timeliness, assume that senior management at any time may use these action plans and they should therefore be maintained current and accurate.
- 6. When an issue is substantially complete, with a completion schedule established and remaining work scope well understood, scheduled and resources committed for full resolution of the issue, it can be removed from the Top ER issues list as determined by the PHC-S and tracked to closure using other plant processes.
- 7. Top ER Issues related to spares availability will be listed under one Top ER issue topic.
- 8. Top ER Issues related to spares availability will tact the bridging strategy/risk mitigation tasks. The intention is <u>NOT</u> to track purchase requests (PRs).
- 9. Top ER Issues related to spares availability will <u>EXCLUDE</u> strategic spares, which are tracked in a separate prioritised list.

JUSTIFICATION

Revision 9

- 1. Ful Review; changed PHO meeting to Production meeting, Chairman, additional quorum requirements and included Nuclear Services Manager roles and responsibilities.
- 2. To address CR 127108 WANO 2021 AFI RM.1 Managers have not mitigated the risk posed by important degraded equipment:

CR127108-005 GA to revise KAA-826 Revise the PHO constitution (Part of KAA-826, 'Plant Health Committee Constitution') to include specific technical sign off requirements for all principals and members (e.g. relevant reading list including KAA-846; KSA-097, KGA -113, RM.1 AFI and IER L2-16-9, which includes knowledge of Risk Management processes. (Insert PHC-S Principals Reading List, see Appendix 2)

Revise the PHC-S Constitution (KAA-826) to include periodic feedback to PHC-S on the FLEX, EITER, DEC (scope to be clarified) issues list. (EP Forum chairperson, Nuclear Services Manager), to provide feedback to PHC-S periodically.

- 3. CR 134883-003 GA Update PHC-S constitution (KAA-826). Replace ERI with the new PIC and IRIS information. Refer to the implementation of the IRIS and PIC databases and INPO 19-002 reporting requirements.
- 4. CR 125367-001 GA-005 GA Review the current meeting Observation cards used at PHC-S meetings for any improvement opportunity as it relates to the required collaborative focus on plant reliability and a culture of elimination rather than mitigation.